Final
Environmental Impact Statement

ROCK CREEK PROJECT

September 2001

U. S. Forest Service
Kootenai National Forest

Bob Castaneda
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Montana Department of
Environmental Quality

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Volume III

VOLUME III
DRAFT EIS

RESPONSES TO COMMENTS

This volume contains the public comments and the agencies' responses to those comments on the draft EIS and draft MPDES permit for the proposed Rock Creek project; Volume IV contains the comments and responses on the supplemental EIS. Please review the following suggestions for using this section.

There are four tables to facilitate your access to this volume. The first table, DEIS-1, lists the categories and codes for the comments; for example Geology, GEO 102, Tailings Facility Stability. The second table, Table DEIS-2, lists the comments related to the various petitions ("P") and postcards ("C") that were received. Numerous people signed or sent in these types of documents. If you signed or submitted one of these types of documents you will find a "P" or "C" included with the list of comments after your name in Table DEIS-3. You will need to go to Table DEIS-2 to identify which comments relate to the document(s) so listed. The third table, Table DEIS-3, lists the commentors in alphabetical order and provides an ID number for each person or organization; due to a change in KNF computer systems and programs the ID numbers for commentors on the draft and supplemental EISs are different. A commentor is anyone who submitted written comments in a personal letter, a form letter, a postcard, or a petition, and/or presented testimony at a hearing on the draft EIS and/or the draft MPDES permit. For each person or organization, there is a listing of the comment numbers where that person's or organization's comments can be found; for example 33-102 means the 33rd comment in the category section GEO-102, Tailings Facility Stability. Federal, state, local and tribal agency comment ID numbers are highlighted in the listings. When reviewing the comments, you can locate your ID number to see which of your comments was included. The fourth table, Table DEIS-4, lists the commentors by ID number. This table is useful when you see an ID number after a comment and wonder who made that comment. You could then go to the third table and see what other comments were made by the same person or agency. Copies of all letters, postcards, and petitions are on file at agency offices and are available for review and can be obtained for the cost of copying and postage.

The agencies are not required to respond to every comment made by every person. However, "all substantive comments received on the draft statement (or summaries thereof where the response has been exceptionally voluminous), should be attached to the final statement whether or not the comment is thought to merit individual discussion by the agency in the text of the statement" (40 CFR 1503.5(b)) Under state regulations, a final EIS must include "responses to substantive comments received on the draft EIS (ARM 17.4.619(1)). If the comment resulted in changes to the EIS text, then it is usually so stated in the response, but not all responses require that the text in the EIS be modified or supplemented. Persons who commented on the document, but whose comments were not considered substantive will have the phrase "Thank you for your comment" after their names rather than a listing of various comments (see Table DEIS-2). This includes those persons who merely expressed an opinion for or against the project, stated simple editorial comments, or restated portions of the EIS text without asking a specific comment.

Where possible, similar comments are grouped together or have been consolidated into a single comment (therefore, not all comments may be verbatim) and provided with a single response. Some grouped comments may list two or more pages of related comments from numerous people before the response is provided. The more unique and detailed comments usually have their own responses. Often there were overlaps between categories for some comments; each comment was placed in the most appropriate category or split up between several. If you are interested in certain issues, you may need to look at comments and responses in several categories. For example, acid rock drainage is primarily covered in GEO 104, Geochemistry, but might also be covered in WTR 300-310 sections, FISH 600-601 sections, T&E 501, bull trout, and possibly NEPA 800-802 sections and GEN 1600 depending upon what the focus of the comment was.

Table DEIS-1. List of comment categories and codes.

Subject Category	Category Code	Topics Covered	Subject Category	Category Code	Topics Covered
Geology	GEO-100	Geology	Water Resources (cont.)	WTR-307	Total Daily Maximum Load (TMDL)
	GEO-101	Subsidence		WTR-308	Idaho Water Quality Issues
	GEO-102	Tailings Facility Stability & Geotechnical Engineering		WTR-309	Wetlands & Nonwetland Waters of the U.S.
	GEO-103	Mineral Rights		WTR-310	404(b)(1) Permit
	GEO-104	Rock Characterization & Geochemistry	Biodiversity	BIO-400	Wildlife Habitat
Soils	SOIL-200	Soils		BIO-401	General Wildlife Species
	SOIL-201	Reclamation & (Revegetation)		BIO-402	Sensitive Wildlife Species
Water Resources	WTR-300	Surface Water Flow and Quantity		BIO-403	Management Indicator Species
	WTR-301	Ground Water Flow and Quantity		BIO-404	Vegetation
	WTR-302	Surface Water Quality		BIO-405	Plant Species of Special Concern
	WTR-303	Ground Water Quality		BIO-406	Old Growth
	WTR-304	Water Monitoring		BIO-407	Noxious Weeds
	WTR-305	Water Treatment	Threatenend and Endangered Species	TE-500	Terrestrial Threatened and Endangered Species (grizzly bears, bald eagle, lynx, gray wolves, water howlia, etc.)
	WTR-306	MPDES (Montana Pollution Discharge Elimination System) Permit and Process		TE-501	Aquatic Threatened and Endangered Species (bull trout)

Table DEIS-1. List of comment categories and codes (cont.)

Subject Category	Category Code	Topics Covered	Subject Category	Category Code	Topics Covered
Aquatics/fisheries	FISH-600	Invertebrates & Algae	Cultural/Tribal	CUL-1200	Cultural Resources
	FISH-601	General Fish Species and Habitat (game and non-game species)		CUL-1201	Native American Rights
	FISH-602	Sensitive Fish Species (west slope cutthroat trout)	Air/Climate	AIR-1300	Air Quality
	FISH-603	Amphibians	Socioeconomics	ECON-1400	Employment
Forest Plan	FLP-700	Forest Plan		ECON-1401	Economy
MEPA/NEPA	NEPA-800	MEPA/NEPA Process		ECON-1402	Community Services
	NEPA-801	Alternatives		ECON-1403	Land Use/Ownership
	NEPA-802	Cumulative Impacts		ECON-1404	Population/Demographics
Transportation	ROAD-900	Roads	Sound	SND-1500	Sound (noise)
	ROAD-901	Railroads and Rail Loadout Facility	Miscellaneous	MISC-1600	Miscellaneous
Recreation	REC-1000	Recreation		MISC-1601	Reclamation Bonding
	REC-1001	Wilderness		MISC-1602	Health & Safety
Scenic Resources	SCR-1100	Scenic Resources			

Table DEIS-2. ID Numbers and Comments for Postcards and Petitions

COMMENTOR'S ID #'s	Replacement Code	Comment Codes
1271, 1276, 1280, 1290, 1321, 1357, 1359, 1374, 1405, 1406, 1417, 1464, 1461, 1466, 1471, 1477, 1491, 1530, 1534, 1635, 1640, 1641, 1675, 1684, 1713, 1715, 1727, 1730, 1745, 1749, 1753, 1757, 1772, 1917, 1940, 1963, 2005, 2009, 2013, 2038, 2054, 2055, 2072, 2091, 2105, 2109, 2119-2139, 2141-2188, 2217, 2288-2403	Postcard = C	1-305
1196, 1246, 1270, 1296, 1344, 1345, 1347, 1362, 1371, 1484, 1485, 1506, 1516, 1529, 1532, 1553-1586, 1609, 1628, 1631, 1632, 1645, 1656, 1700, 1751, 1753, 1782-1911, 1943-1945, 2063, 2064, 4473	Petition #1 = P1	32-301, 1-305, 5-801, 27-801, 39-801, 2-1601
11, 1196, 1242, 1245, 1261, 1262, 1276, 1277, 1279, 1282, 1285, 1287, 1294, 1315, 1316, 1338, 1343, 1356, 1357, 1359, 1360, 1370, 1373, 1374, 1380, 1399, 1400, 1402, 1406, 1410, 1412, 1413, 1416, 1417, 1436, 1438, 1451, 1456, 1458, 1462, 1464-1466, 1469, 1471, 1472, 1474, 1476, 1477, 1482, 1486, 1488, 1491, 1501, 1504, 1508, 1532, 1533, 1537, 1560, 1566, 1601, 1613, 1631, 1635, 1639, 1640-1643, 1673-1675, 1681, 1682, 1698, 1705, 1715, 1727, 1742, 1745, 1753, 1756, 1757, 1759, 1760, 1763, 1764, 1769, 1772, 1774, 1777, 1778, 1780, 1913, 1915, 1917, 1921, 1922, 1926, 1932, 1963, 1964, 1971, 1972, 1975, 1987, 1993, 2009, 2013, 2015, 2019, 2021, 2025, 2028, 2032, 2039, 2055, 2057, 2068, 2070, 2082, 2098, 2103, 2105, 2109, 2113, 2126, 2127, 2132, 2134, 2137, 2139, 2140, 2143, 2152-2154, 2159, 2161, 2171, 2172, 2184, 2185, 2189, 2195, 2199, 2200, 2201, 2205, 2206, 2212, 2218, 2224, 2231, 2233, 2238, 2245, 2250, 2255, 2259, 2262, 2263, 2266, 2272, 2280, 2284, 2292, 2299, 2301, 2314, 2317-2320, 2328, 2338, 2345, 2350, 2353-2355, 2357, 2376, 2381, 2386-2389, 2394, 2404-2408, 2410-4471	Petition #2 = P2	32-301, 1-305, 39-801, 2-1601

Table DEIS-3. Alphabetical List of Commentors and their Comments

Name	ID #	Comment Code
5050 Baldy Mtn. Road	2285	Thank you for your comment
Abbott, Bob	3592	P2
Adamson, Jim	4241	P2
Adkins, Darrett	2416	P2
Adkins, Sharon K.	2415	P2
Adler, Kenneth P. & Irene	3994	P2
Agnello, Virginia	2962	P2
Ague, John & Susan	1358	9 -401, 5 -402, 9-1601
Ahern, Jim	3118	P2
Ailard, Tod	3650	P2
Aitken, Jeff	1985	Thank you for your comment
Akern, James W.	2813	P2
Akers, Katherine	3157	P2
Akevs, James E.	3360	P2
Aktepy, Ruth H.	1582	P1
Alarid, Kerrie	3241	P2
Albertson, Doug	3598	P2
Albright, Loren	2153	C, P2
Aldape, Dani	2273	Thank you for your comment
Aldrich, Erica	2757	P2
Aldrich, Jean	2697	P2
Aldrich, Jenny & Ben McCord	4142	P2
Aleda, Margaret	3283	P2
Allamandola, L.J.	4176	P2
Allard, Tamini S.	2509	P2
Allen, Michael A.	3576	P2
Allen, Stephanie	2561	P2
Allison, Debra	2589	P2
Almann, Nan	2146	C
Alton, Craig R.	2914	P2
Alton, Lois J.	2915	P2
Amato, Diane	3164	P2
Ambrose, Tim	3698	P2
American Builders	2397	C
Amicarella, Joet	3646	P2
Amsden, Ron	1297	2-1101
Amundson, Sharon	2662	P2
Andersen, Harold R.	1394	9-1601
Anderson, Christen	2854	P2
Anderson, David & Susan	3963	P2
Anderson, Jack D.	4268	P2
Anderson, Jennifer	2937	P2
Anderson, John	1463	1-308
Anderson, John A.	3960	P2
Anderson, Kyle	4462	P2
Anderson, Laurie K.	3409	P2
Anderson, Maury/ Hanson, Pat	1210	Thank you for your comment
Anderson, Rhett	4175	P2
Anderson, Shanli	2992	P2
Anderson, Steven E.	3410	P2
Anderson, Susan	3644	P2
Andrews, Scott	4266	P2
Anonymas	1299	3-1601, 1-1602

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Anzalone, S.A.	1676	9-1601
Apfel, Norman	2994	P2
Archie, Anne H.	1842	P1
Archie, Quentin	1843	P1
Arcieri, Henry	4182	P2
Argites, James B.	3245	P2
Armour, Becky	2737	P2
Armshem, Charles H.	2738	P2
Armstrong, Martin P.	3059	P2
Arndt, Catherine S.	3707	P2
Arndt, Emily	2472	P2
Arndt, Margaret	2931	P2
Arndt, Ralph F.	2584	P2
Arndt, Sara	3172	P2
Arnold, David & Jennifer	3849	P2
Arnold, G.	4225	P2
Arnold, Jeanne M.	2562	P2
ASARCO	1589	5-200, 6-200, 7-200, 8-200, 18-201, 19-201, 34-201, 14-302, 43-302, 51-302, 70-302, 11-303, 53-306, 59-306, 2-307, 18-309, 42-309, 45-309, 1-403, 2-403, 22-401, 13-402, 14-402, 15-402, 21-402, 22-402, 23-402, 24-402, 25-402, 26-402, 27-402, 28-402, 33-402, 5-403, 10-403, 11-403, 1-404, 2-404, 5-405, 8-405, 1-406, 8-406, 9-406, 10-406, 11-406, 12-406, 13-406, 15-406, 16-406, 17-406, 18-406, 19-406, 20-406, 22-406, 24-500, 34-500, 36-500, 37-500, 9-1601, 2-1603, 9-1700
Ashbrook, Velta	3366	P2
Asher, Ron	3703	P2
Asit, Bill	2903	P2
Asit, Sally	2904	P2
Atkins, Philip	1661	Thank you for your comment
Attaway, Ric	4177	P2
Auge, Darlene J.	2740	P2
Auge, Gene L.	2731	P2
Aunan, P.	2744	P2
Aunan, Pam	1759	P2
Aunan, Terri	3753	P2
Austin, Alice	1512	Thank you for your comment
Austin, Sally	2591	P2
Avedow, Melvin	2864	P2
Avery, Benjamin D. & Amy C.	4112	P2
Babber, Doug	2879	P2
Babcock, Ben	3605	P2
Babcock, Leroy	3662	P2
Badt, Chonnie	2452	P2
Bailey, Jeff	4165	P2
Bailey, S.	4179	P2
Bailey, Sandi	2539	P2
Baillie, Jim	1962	9-1600
Baker, Kim	3087	P2
Baker, Sharon M.	3327	P2
Bakken, Doug	4007	P2
Ball, Alan	3687	P2
Ball, Chad	1325	1-308
Ball, Jeanie	2834	P2
Ball, Kathy	1399	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Ball, Martha J.	2099	Thank you for your comment
Ball, Nancy J.	2098	P2, 63-304
Ball, Sandra A.	3738	P2
Ball, Sue	1324	1-308
Ball, Travis S.	1528	4-1100
Ball-Vadeboncoeur, John	1541	2-102
Ballard, Barney	2346	C
Ballard, W.W.	1391	9-1601
Ballett, Dave	4200	P2
Bane, Gary	4242	P2
Bankhead, Paul	1499	5-1600
Bankord, Brandy	4235	P2
Banks, Mary Lou	3393	P2
Bankson, Jeff & Kate	3835	P2
Banning, Don	2865	P2
Banning, Holly	2868	P2
Barberie, Herbert	2620	P2
Barcombe, Julie	1327	1-200, 32-301, 1-400, 2-1600
Barcus, Julia	4404	P2
Baribault, Lou	2202	Thank you for your comment
Baribault, Roxie	2204	Thank you for your comment
Barker, J.	2538	P2
Barnard, Larry	1860	P1
Barnes, Carla	3280	P2
Barnett, Tina	3406	P2
Barnett, William J.	3203	P2
Barough, Shasta	4293	P2
Barr, Mary	2437	P2
Barrett, Gabriela	1489	1-308, 7-500, 1-1301, 5-1301
Barrett, Junell	1687	Thank you for your comment
Barrett, Ken	1301	32-301, 1-308, 7-1101, 24-1101
Bartello, Dell	4423	P2
Barth, David	2954	P2
Bartlett, Amy R.	4212	P2
Bartlett, Chris	3992	P2
Bartlett, Mia	2194	Thank you for your comment
Bartron, Glen E.	4206	P2
Bass, Rick	1236	Thank you for your comment
Batey, Harry	4323	P2
Batrach, Kelly	3810	P2
Bauer, Gary	4271	P2
Bauer, Martha R.	2072	C
Bauge, John	1817	P1
Bauge, Keli B.	1816	P1
Baughn, Merritt L.	2475	P2
Baulieu, Joe	1665	Thank you for your comment
Baune, Dale	3314	P2
Baune, Darren	2486	P2
Baxter, Maureen	3060	P2
Beamer, Ken	2244	Thank you for your comment
Bean, Debbie & Brandy Pytle	4138	P2
Bearden, Jimmy W.	4275	P2
Beasley, Mike	4263	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Beaton, Thomas	1293	24-1101
Beatty, Kevin	2901	P2
Beauchene, Phyllis	3407	P2
Beaudin, Ken	1943	P1
Bechtold, Timothy	1788	P1
Beckes, Eugene	1697	32-301, 1-305, 7-500, 2-1602
Beckstrand, Daniel	2960	P2
Beebe, Teddye	1699	9-1601
Beehler, Victor	4371	P2
Beeman, Jeffrey T.	2311	C
Beeman, Sharon D.	2315	C
Bell, Dan	3036	P2
Bell, Ilene	2135	C
Bell, Virgle	3090	P2
Bellony, David	3758	P2
Bellony, Susan	3759	P2
Belzman, Steven	4332	P2
Bend, Jeffrey S.	4063	P2
Benefield, Helen	2292	C, P2
Bengford, Bob	3757	P2
Benner, Mary	1573	P1
Benner, Shawna	2602	P2
Benner, Vicki	2601	P2
Bennett, Dan	1848	P1
Bennett, Laurie	3029	P2
Bennett, William & Candyce	3805	P2
Benning, Marvin	3715	P2
Benoit, Renee	1707	39-302, 63-304, 2-1101
Benson, Barbara	2432	P2
Benson, C. Ivan & Nancy B.	4028	P2
Benson, Erik	1385	3-102, 23-102, 1-305, 1-308, 9-308
Benson, Jean S.	2559	P2
Benson, Lynn	2846	P2
Benson, Robert E.	1508	P2
Benson, Wendy	3856	P2
Bentser, Terry	4132	P2
Benuenuto, Mike	4247	P2
Berenzwerg, Karen	3851	P2
Berg, Flossie M.	3871	P2
Berghan, Jessica	4019	P2
Bergman, Kristin	4203	P2
Beringer, Elizabeth	1803	P1
Berliner, Dave	4269	P2
Berning, Cindy	4407	P2
Berning, Juline A.	3991	P2
Berning, Marvin & Annette	2023	Thank you for your comment
Berning, Seanna	3007	P2
Berrett, Junell	4491	Thank you for your comment
Berry, Jamie	3443	P2
Berry, William & Lois	1506	P1
Beshvnsky, David	3143	P2
Besler, Sandy	3032	P2
Bessler, Chris	1597	1-305

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Best, Ken	4010	P2
Best, Kenneth R.	3291	P2
Beth, Jill	3589	P2
Betts, Robert C.	2154	C, P2
Bevans, Alice I.	2887	P2
Beyer, Gilbert E.	4139	P2
Bezecny, Sharon	2313	C
Bezecny, Sharon	3377	P2
Bianco, Meyla C.	3199	P2
Bianco, Robin	2610	P2
Biddle, Billie Jo	2826	P2
Bier, Chris	2263	P2
Bieter, David H.	3421	P2
Bigham, Julie	3103	P2
Bilich, Dan	3457	P2
Billeyse, Betty Jean	1747	41-302, 10-400, 10 -403, 24 -401, 35 -402, 21-406, 31-500, 24-1101, 9-1602, 10-1700, 11-1700
Birchwood Kennels	1435	Thank you for your comment
Bird, Daniel	3352	P2
Bird, Maureen	3351	P2
Bishop, India	3218	P2
Bishop, Mike & Lois	3211	P2
Bismine, Pat	1590	32-301, 1-305
Bissonnette, Cris	1712	63-304, 1-305, 2-1101
Bissonnette, Michele	4500	Thank you for your comment
Bistodeau, Sharon	3388	P2
Bistten, Pat	3286	P2
Bittner, Joy	3459	P2
Bitton, Joanna	3999	P2
Bitton, Jocelyn	4001	P2
Bjerke, Laura N.	2496	P2
Bjorn, Dustin	3034	P2
Black, Anne	3791	P2
Black, Leonard	4058	P2
Blaese, Lisa	3174	P2
Blanc, Louis E.	2711	P2
Blanchard, Marshall	3964	P2
Blank, Tamara	1319	Thank you for your comment
Bledsoe, Kim	1775	Thank you for your comment
Bleecher, Darian	2860	P2
Bleecher, M.J.	2859	P2
Blegan, Brad	2107	25-300, 121-306
Blegen, Brad W.	3628	P2
Blockoff, Stuart	3528	P2
Blockoff, Susan	2726	P2
Blodgett, Crystal	2401	C
Blomgren, Eunice L.	1915	P2, 1-308, 1-400, 1-1300, 1-1602
Blood, Barbara	3767	P2
Blood, Lex	1879	P1
Bloom, Peggy	1356	P2, 6-1101, 1-1700
Bloxom, Dorothy	2140	C, P2
Bloxom, Julie	1641	C, P2, 1-308, 2-1101, 4-1200
Bochner, David W.	4047	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Bockus, Norm	2217	C
Boden, Janet E.	2316	C
Boden, Tim	2318	C, P2
Bodner, David W.	3915	P2
Bodner, Meeche	3217	P2
Boedgale, Cindy	2359	C
Boge, Michael	3751	P2
Boge, Mona	3750	P2
Boge, Richard & Nancy	2086	Thank you for your comment
Bogesvane, Jim	2766	P2
Bolin, Ann	1812	P1
Bolin, Jr., Ted	1813	P1
Bologna, Maria	2883	P2
Bombino, Victoria	4030	P2
Bond, Gary & Jeanne	2278	Thank you for your comment
Bond, Jeffrey S.	4232	P2
Bonner County Commissioners	**1446**	**32-301, 1-305, 11-308, 13-1600, 9-1602**
Bonner County Sportsmen's Assn.	1602	Thank you for your comment
Bonner County Assn. of Realtors	2061	Thank you for your comment
Bonner County Waterways Commissioner, Jan Meneely	**2391**	**C**
Bonzo, Wesley H.	3972	P2
Boody, Beuke	1893	P1
Boots, Deborah E.	1207	1-101, 42-303, 39-304, 63-304, 1-305, 29-306, 11-402, 29-402, 6-403, 14-406, 29-500, 6-1200, 3-1601, 5-1601, 7-1700
Bopp, Allan H.	1565	P1
Bopp, Jody	2670	P2
Bordenave, Pierre	2084	22-300, 31-301, 37-304, 1-305, 112-306
Borup, Cinde	1533	P2
Bosley, Dorothy	4270	P2
Botsford, Bruce	1901	P1
Bottcher, Lucille	1536	Thank you for your comment
Bough, Gary & Jennifer	4110	P2
Bowers, Karen	2389	C, P2
Bowers, Ted	1469	P2, 1-308
Bowker, Annie	3559	P2
Bowlin, Wendy J.	4366	P2
Bowman, Judy	2046	Thank you for your comment
Bowre, Mary	2426	P2
Boyle, Robert & Francesca	2593	P2
Braden, Kesava A.	1407	Thank you for your comment
Bradetich, Rhonda	4394	P2
Bradley, Diann	2323	C
Bradley, Susan C.	3840	P2
Bradshaw, Conduce	3004	P2
Brady, Erin	3154	P2
Brake Supply	1227	9-1601
Brannigan, Erin	3775	P2
Brannigan, Harvey	3242	P2
Bratley, Ernest	3928	P2
Braumiller, Christine	3226	P2
Braumiller, Tanya & Charles Meyer	3988	P2
Braun, David	2348	C

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Braun, Janeen	2200	P2
Braviz, Ingrid	2417	P2
Brecken, Rose	3178	P2
Breidenthal, Richard	1442	32-301
Breisacher, Deborah	2534	P2
Brek, John M.	4044	P2
Brent, Elias	2377	C
Brent, Elizabeth & J.B.	2396	C
Brewster, Leslie	3047	P2
Brewster, Lori	2210	Thank you for your comment
Bricker, Ted	3926	P2
Briggs, Kevin	3326	P2
Britton, Mike	1719	32-301, 25-303, 24-1101
Broberg, Len	1695	14-500, 15-500
Brockway, Jeanne M.	3107	P2
Brockway, W.B.	3106	P2
Brook, Larry	4373	P2
Brooks, Alex	1709	Thank you for your comment
Brooks, Jack & Lisa	1704	Thank you for your comment
Brooks, Molly	3807	P2
Brosgall, Adam	3695	P2
Brosh, Donna	3116	P2
Broughton, David	3219	P2
Brow, Jill	1467	Thank you for your comment
Brown, Brian	3612	P2
Brown, Chris C.	3565	P2
Brown, Doug A.	3643	P2
Brown, Erin	1971	Thank you for your comment
Brown, F.	3064	P2
Brown, Gail	1819	P1
Brown, George A.	1942	Thank you for your comment
Brown, Harvey L.	3611	P2
Brown, J.	4015	P2
Brown, Kathleen	1596	13 -401
Brown, Kathryn	4013	P2
Brown, Laurie	4403	P2
Brown, Rick	4256	P2
Brown, Steve	3050	P2
Brubaker, David A.	2418	P2
Bruce, Cicely K.	3035	P2
Bruck, Robert	3914	P2
Brunner, Gene	2209	Thank you for your comment
Bruno Family	2037	Thank you for your comment
Brunson, Sherry	2605	P2
Bry, Frank	3812	P2
Bry, W.K.	3811	P2
Bryant, Tamara	2451	P2
Brynteson, Janet	4392	P2
Buchanan, Melissa	3567	P2
Buck, Sharon	4382	P2
Budrick, Madeleine	1885	P1
Buentemeier, Ronald	1771	9-1601
Bull, Tom	1348	3-103, 1-305

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Bullock, Sam	2942	P2
Burda, Carey	2911	P2
Burge, Chic	1639	P2, 1-308, 29-309, 1-403, 10-500, 24-1101
Burgess, Val	2443	P2
Burke, Howard	3892	P2
Burnach, Shasta	3005	P2
Burnett, Lyle W.	3665	P2
Burns, Beverly	1635	C, P2, 38-102, 13-301, 47-302, 25-303, 1-305, 93-306
Burr, Timber	2769	P2
Burry, Jeff	2476	P2
Burt, Jan	3275	P2
Burt, Jan	3966	P2
Burton, Greg	1958	Thank you for your comment
Burwell, Phyllis A.	2225	Thank you for your comment
Busch, Edward R.	3587	P2
Bushway, Bruce	3550	P2
Butcher	2794	P2
butler, Barbara	3248	P2
Butler, Dan	4166	P2
Byler, Davie	1593	61-304
Byrne, Kerrie	1645	P1, 21-201, 3-302, 9-1101, 2-1602
Cabinet Resource Group; Cesar Hernandez	1780	P2, 12-100, 2-101, 3-101, 4-101, 14-102, 15-102, 16-102, 27-102, 32-102, 33-102, 34-102, 35-102, 2-104, 36-201, 4-300, 26-300, 6-301, 7-301, 11-301, 12-301, 13-301, 24-301, 25-301, 29-301, 30-301, 48-302, 58-302, 64-302, 68-302, 69-302, 5-303, 12-303, 13-303, 21-303, 25-303, 30-303, 1-304, 5-304, 9-304, 19-304, 24-304, 25-304, 26-304, 44-304, 60-304, 5-304, 1-305, 6-305, 8-305, 13-305, 14-305, 15-305, 16-305, 17-305, 26-305, 30-305, 34-305, 35-305, 9-306, 10-306, 11-306, 16-306, 22-306, 26-306, 35-306, 36-306, 37-306, 43-306, 69-306, 77-306, 88-306, 89-306, 90-306, 96-306, 100-306, 104-306, 105-306, 107-306, 108-306, 114-306, 116-306, 132-306, 133-306, 5-307, 4-309, 15-309, 7-400, 16-401, 3-402, 6-406, 2-407, 22-500, 25-500, 27-1101, 3-1602
Cabinet Resource Group; Bill Martin	1698	P2
Cabinet Resource Group; Young, Jill	1351	2-101, 18-302, 1-305, 12 -402, 4 -403, 4-1100, 7-1101, 4-1200, 5-1200, 9-1602, 3-1700, 3-170
Cable, Suzanne	1883	P1
Cabler, ruth	2423	P2
Cadwalader, Kim	4386	P2
Cady, Taylor	4233	P2
Cafferky, Bonnie	2975	P2
Cafferky, Rachel	2974	P2
Callan, Arthur D.	1663	22-500
Calvert, Richard	4383	P2
Cameron, Bonnie	3119	P2
Campbell, Alma	3702	P2
Campbell, G.T.	2439	P2
Campbell, Gail	2342	C
Campbell, Jan	2384	C
Campbell, Paula M.	3918	P2
Candee Jennifer	4246	P2
Cannon, Twilly	2075	Thank you for your comment
Canyon Coalition	1624	2-101, 3 -402, 7 -402, 12 -403, 7-1101
Capes, Peggy	1330	32-301, 1-305, 10 -401
Carbonaro, Lara	2612	P2
Carboneau-Kincaid, S.	3333	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Carboni, Denise	3391	P2
Carboni, Mareille	2963	P2
Carboni, R.	2293	C
Carboori, Richard	2089	Thank you for your comment
Carey, Bill	3444	P2
Carlson, Caleb	2350	C, P2
Carlson, John	2716	P2
Carlson, M.E.	2533	P2
Carlson, Milt	1881	P1
Carlson, Robert	2257	Thank you for your comment
Carlson, Steve	1415	Thank you for your comment
Carlton, Amber	3783	P2
Carol, Stephanie	4102	P2
Carr, Dallas	2077	Thank you for your comment
Carroll, Robert J.	2207	Thank you for your comment
Carroll, Steve	1799	P1
Carter, Andrea	2381	C, P2
Carter, Mardee	3530	P2
Carter, Sol/Selwyn	3953	P2
Cartwright, Adam S.	2895	P2
Casey, Jo	3105	P2
Casler, Ken	2598	P2
Casler, Ken	2038	C
Cassel, Ingri	2594	P2
Cassidy, Mark	1929	32-301, 1-305, 24-1101
Caudill, Monica	4369	P2
Caufield, Tim	3277	P2
Cauley, Ruder	2765	P2
Cawdrey, Nancy	1337	63-304, 1-308, 3-1605
Cawdrey, Nancy	4501	Thank you for your comment
Cawdrey, Steve	4498	Thank you for your comment
Centennial Development Company	1272	Thank you for your comment
Cernick, Stewart M.	1705	P2
Cernohouz, Amos J.	3854	P2
Cernohouz, Tom	3833	P2
Cernolog, Susan	2458	P2
Cex, Pam	2838	P2
Chambers, Chris	3411	P2
Chambers, Darcy	2568	P2
Chambers, Kathy	3412	P2
Chambers, Linda	3683	P2
Chaney, Linda	4228	P2
Chaplin, John	3861	P2
Chapman, Anna	3010	P2
Chapman, Lee	2715	P2
Chappell, Grant & Lois	2917	P2
Chapple, Jessica	3285	P2
Charzempa, David	4183	P2
Chase, Don	3839	P2
Chasteen, Brooke	4415	P2
Chenault, Cynthia	1921	P2
Chong, George	4461	P2
Christensen, Bob	3315	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Christiansen, Lani	4173	P2
Christie, Tim	3599	P2
Chung, Grace	2351	C
Church, Gayle	2743	P2
Ciccone, Rosalie	3591	P2
Cichosz, John	4070	P2
Cipriond, Andy	4291	P2
City of Troy	1251	Thank you for your comment
City of Sandpoint	1225	25-306, 11-308
City of Libby	1600	Thank you for your comment
City of Sandpoint / David Sawyer, Mayor	**2195**	**P2**
Clantinkler, Crystal	2402	C
Clark, A.J.	3782	P2
Clark, Bob	3579	P2
Clark, Bruce	1647	9 -401
Clark, Caley	3337	P2
Clark, Cherry	3796	P2
Clark, Colleen J.	3177	P2
Clark, E.	4298	P2
Clark, Eva	3890	P2
Clark Fork Pend Oreille Coalition	1223	5-101, 10-101, 17-102, 18-102, 23-102, 24-102, 25-102, 35-102, 2-103, 1-104, 2-104, 5-104, 6-104, 7-104, 8-104, 10-104, 16-104, 17-104, 6-200, 5-201, 6-201, 7-201, 10-201, 11-201, 25-201, 32-201, 36-201, 39-201, 40-201, 5-300, 11-300, 23-300, 24-300, 25-300, 10-301, 13-301, 14-301, 18-301, 31-301, 32-301, 48-301, 5-302, 12-302, 13-302, 17-302, 28-302, 30-302, 35-302, 36-302, 47-302, 48-302, 49-302, 59-302, 60-302, 64-302, 5-303, 7-303, 9-303, 13-303, 22-303, 31-303, 34-303, 38-303, 40-303, 42-303, 44-303, 3-304, 4-304, 7-304, 12-304, 16-304, 20-304, 23-304, 28-304, 32-304, 35-304, 50-304, 58-304, 1-305,2-305, 3-305, 7-305, 8-305, 11-305, 12-305, 18-305, 25-305, 29-305, 2-306, 3-306, 5-306, 8-306, 12-306, 14-306, 17-306 ~ 21-306, 24-306, 31-306, 32-306, 34-306, 39-306, 40-306, 54-306, 57-306, 60-306, 64-306 ~ 66-306, 68-306, 70-306, 74-306, 75-306, 79-306, 80-306, 84-306, 85-306, 86-306, 92-306, 93-306, 94-306, 97-306, 98-306, 99-306, 100-306, 106-306, 109-306, 110-306, 114-306, 117-306, 118-306, 122-306, 131-306, 138-306, 1-307, 3-307, 1-308, 7-308, 8-308, 9-308, 11-309, 12-309, 15-309, 24-309, 26-309, 14-401, 18-401, 19-401, 20-401, 23-401, 2-402, 17-402, 18-402, 19-402, 30-402, 31-402, 22-500, 24-500, 30-500, 10-1600, 4-1603, 8-1605
Clark Fork Pend Oreille Coalition; Gerth, Jean	1460	2-102, 16-303
Clark Fork Pend Oreille Coalition	1957	13-100, 1-104 13-301, 32-301, 64-302, 1-305, 17-305, 4-307, 3-308
Clark Fork Pend Oreille Coalition; Ann Band	1982	20-201, 32-301, 11-400, 37 -402, 2-1605
Clark, Janis	1354	1-305
Clark, Jim & Judith	1682	P2
Clark, Ken	1587	50-301, 50-304, 1-305, 1-1300, 8-1301
Clark, Laura	2152	C, P2
Clark, Lisa	3155	P2
Clark, Michael S.	2159	C, P2
Clark, Paul	1608	57-302, 8-308
Clark, Rebekah	2829	P2
Clark, Robert	1627	78-306
Clark, Rosalyn	2131	C
Clark, Rose A.	3721	P2
Clark, Thomas E.	3478	P2
Clarke, Carol M.	2632	P2
Clarke, Clay	4157	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Clarke, Judith	2590	P2
Clean Lakes Coordinating Council	2027	Thank you for your comment
Clemens, Jack L.	1380	P2
Clement, Teresa	4466	P2
Cleveland, Bradley	4437	P2
Clifton, Richard	2928	P2
Coalson, Janet W.	3956	P2
Coats, Carol	3460	P2
Coats, Dennis	3461	P2
Cobb, Jr., Fileds	1914	28-102, 23-201, 28-201, 12-302, 1-305, 112-306, 7-308, 6-405, 40-500, 4-1200, 9-1602
Cobb, Octavia	4000	P2
Coble, Lee	4141	P2
Coby, Gene	1950	Thank you for your comment
Coe, Jonathan	3771	P2
Coestafford, M.	3401	P2
Coeur d'Alene Tribe	**1991**	**26-102, 19-104, 33-201, 31-300, 13-301, 32-301, 33-301, 43-301, 48-301, 53-301, 4-302, 29-302, 63-302, 66-302, 42-303, 37-304, 1-305, 4-305, 63-306, 136-306, 9-1301, 10-1301**
Coffelt, Dale	4153	P2
Cohen, Feme	1839	P1
Coit, Julie	3838	P2
Coldwell, Douglas	3011	P2
Cole, Patrick J.	1447	1-101, 32-301, 1-305, 6-400, 7-1101
Coleman, Norene	2564	P2
Collett, Katherine A.	3016	P2
Collins, Art	2366	C
Collins, Cari A.	3685	P2
Collins, Diane	3468	P2
Collins, Kevin	3761	P2
Collins, Meghan	2279	Thank you for your comment
Collins, Shyla	2471	P2
Collins, Sondra L.	2367	C
Collinson, Donna	3294	P2
Collopy, Christine	1525	10-102, 39-302, 37-304, 63-304, 1-305, 2-1101
Combs, Ralph	1939	Thank you for your comment
Common Sensing inc.	1758	Thank you for your comment
Communities for a Great Northwest	1612	12-400, 2-500, 42-500, 9-1601
Compton, Carmen	1571	P1
Compton, Douglas	1572	P1
Compton, Elinor L.	1532	P1, P2, 12 -401, 7-1101
Compton, Mitchell Jr.	1362	P1, 1-308
Compton, Susan	1570	P1
Conces, Claudia	4381	P2
Confederated Salish & Kootenai Tribe	**1591**	**35-500, 4-1300, 5-1300, 6-1301, 7-1301**
Conklin, Dani	2658	P2
Conley, Kellie	4125	P2
Connelly, Connie	4134	P2
Conner, Denise	1880	P1
Conner, J.R.	1722	Thank you for your comment
Conner, Vance	2081	Thank you for your comment
Connolly, Linda	2666	P2
Connolly, W.F.	3716	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Contorelli, Cole	3720	P2
Cook, Dona	2814	P2
Cook, Lyndall L.	2411	P2
Cook, Rank	2815	P2
Coombe, Joyce	1877	P1
Cooper, Brenda	2262	P2
Cooper, Christine	1458	P2, 1-308
Cooper, Keita A.	2507	P2
Cooper, Richard D.	2506	P2
Cooper, Samantha	2455	P2
Cooper, Terry	2272	P2
Cope, Donna	4331	P2
Copeland, Dianna	3913	P2
Corcoran, Mary	3234	P2
Cornett, Marilyn	3126	P2
Cornwall, Bruce	2412	P2
Cornwall, Laura	2413	P2
Corps of Business and Professional	1977	Thank you for your comment
Corsaro, Sheri	3466	P2
Coulter, Emily J.	3549	P2
Coulter, Jeffery	3600	P2
Countryman, Charles	3227	P2
Coupal, Frank E.	1270	P1, 4-102, 13-301, 32-301, 40-301, 64-304, 3-1100, 24-1101
Coupal, Joyce	1987	P2, 4-304, 63-304, 1-305, 5-1602
Cousins, Anne	4238	P2
Coward, Charles B.	2869	P2
Cowley, Ann	3630	P2
Cowley, Dennis	3631	P2
Cox, Brian	3571	P2
Cox, Sarah	3572	P2
Crabb, Tom	3581	P2
Craig, Joanne	2454	P2
Crandall, Mary	2616	P2
Cranston, Nancy J.	4359	P2
Crawford, Don	1317	Thank you for your comment
Crawford, Iva	4490	Thank you for your comment
Crear, Michael	2752	P2
Creasey, Kay	4363	P2
Crettol, Joyce	4159	P2
Cripe, Don	1623	4-1601
Cripe, Marie	1660	9-1601
Crismore, William S.	1503	9-1601
Crisp, Fred L.	2008	Thank you for your comment
Crocker, Jessica	4387	P2
Crowe, Carole	2905	P2
Crowe, Randy G.	2909	P2
Crowley, Don	3690	P2
Crowley, Frank	1691	8-1602
Crowley, Jeanne	1511	Thank you for your comment
Crowley, Kamille	2793	P2
Crumb, Barbara	4056	P2
Crummer, C.H.	2419	P2
Cuberos, Tracie	3043	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Culp, Sherry	2577	P2
Cunen, Nat	4379	P2
Cunningham, Linda S.	3930	P2
Cunningham, Sandra R.	2110	Thank you for your comment
Currie, Cris	1320	2-1101
Curtis, Chris	4314	P2
Curtis, Rich	3350	P2
Cushmerr, Leslie	3300	P2
Cyr, Cathryn	2958	P2
Czap, Al	1963	C, P2
Czerminski, Michael H.	1823	P1
Czerwinski, Betty J.	1824	P1
Czerwinski, Michael H.	1434	Thank you for your comment
Czyson, Edward D.	3660	P2
D'Aoust, Brian G.	2010	4-304
D'Aoust, Susan Saxton	1726	10-1101
D'Aoust, Susan	3876	P2
D'Orazi, Thomas	3870	P2
Dagley, Virginia	2913	P2
Dahl, Harvey	3523	P2
Dahlstrom, Konrad	1738	41-302, 10-400, 24 -401, 35 -402, 10 -403, 21-406, 24-1101, 9-1602, 10-1700, 11-1700
Daisley, Pamela	2898	P2
Dallmann, Liana	3046	P2
Dally, Stephen	3229	P2
Daly, Bill	2232	Thank you for your comment
Daly, Rochelle N.	2165	C
Damereson, Kari	2976	P2
Dameron, Sue	2977	P2
Dammarell, Marlin	4234	P2
Dannenbrink, Tom	3786	P2
Dar, Kauser S.	4137	P2
Darley, Nancy	3176	P2
Darling, Noreen	3778	P2
Darling, Richard	1969	Thank you for your comment
Darling, Richard	3777	P2
Darling, Zanthi	4237	P2
Darrow, Elna	1908	P1
Darrow, George	1907	P1
Dasher, Diane	3417	P2
Daugharty, D.M.	3271	P2
Daugherty, Brian	3447	P2
Daugherty, Jim	1984	Thank you for your comment
Daugherty, Katherine	2956	P2
Davenport, Tom	3597	P2
David, Billye	3982	P2
David, Jeanne	2117	Thank you for your comment
David, Kelly S.	3916	P2
David, Kevin	4024	P2
David, Michael C.	3042	P2
Davidson, Matthew E.	3208	P2
Davis, Carmen	2640	P2
Davis, Donald B.	1646	9-1601

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Davis, Gary L.	2874	P2
Davis, Janet	1895	P1
Davis, Jayne	3976	P2
Davis, Jerry	1253	9-1601
Davis, John & Teri	2007	Thank you for your comment
Davis, Kim	1894	P1
Davis, Lewis	2819	P2
Davis, Mary J.	3220	P2
Davis, Mary J.	2816	P2
Davis, Pat	1838	P1
Davis, Teri A.	2639	P2
Davis, W.R. Michael	2772	P2
Davisen, J.C.	4185	P2
Dayharsh, John E.	3639	P2
Dayton, Jim	1898	P1
Dayton, Jim	1796	P1
De Amorim-Lima, Adriana	2206	P2
De Lepper, Fred	1857	P1
De Lorenza, Barbara	2659	P2
De Piozza, Carol Ann	1613	P2, 47-302, 1-308, 24-1101, 8-1700
Dean, Dick	3213	P2
Dean, Judy	4082	P2
Dear, Debbie	4278	P2
Dececchisty, Hillary	3141	P2
Dececchisty, Joseph B.	3140	P2
Decker, Larry	4210	P2
Decosller, M.	1426	32-301
Deem, Allane	2137	C, P2
Dees, Francisca	2143	C, P2
Deeter, Linda	4349	P2
Defenders of Wildlife, Northern Rockies Office	1603	32-301, 1-305, 25 -401, 12 -402, 22-500
DeHerrera, Carlos	4376	P2
Dehner, Chloe	3580	P2
Del Pino, Zephyr	2703	P2
Delamarter, Claire	2295	C
Delavergne, Marc J.	2586	P2
Delfino, Pat	3825	P2
Dellagnese, Devin	4091	P2
Dellagnese, John	4092	P2
Delong, Peter A. & Allison L.	4054	P2
Delucchi, Judy	3706	P2
Delvcchi, Josh	3305	P2
Demarco, Mike	1477	C, P2
Demarco, Pat	1940	C
Demers, David & Cindy Farmin R.	2672	P2
Dent, George L.	3641	P2
Dent, Pauline	3642	P2
Dept of the Interior	**1933**	**11-100, 2-101, 12-102, 2-104, 3-104, 15-104, 51-301, 35-303, 42-303, 50-303, 17-304, 1-310, 11-402, 22-500**
Dept of the Army Corps of Engineers	1912	8-101, 56-302, 2-309, 3-309, 7-309, 8-309, 22-309, 23-309, 46-309, 5-310, 6-310, 7-310
Dept of Fish, Wildlife & Parks	**1947**	**21 -401, 8 -403**

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Derigo, Vance J.	3837	P2
Dermott, Michael Lee	2322	C
Des Marias, Cheryl	1785	P1
Desilvery, Catlin	1797	P1
Desmond, Doreen	1930	Thank you for your comment
Dettwiler, Alice R.	1677	Thank you for your comment
Deutchman, Sandra & Phil	2000	Thank you for your comment
Deveny, Christine	1376	1-308, 7-500, 2-1101, 4-1600
Devereaux, Linda	4147	P2
Dewitt	2882	P2
Di Cicco, Lisa	4025	P2
Dick, Christine	1361	1-308, 2-1600, 6-1600, 9-1601, 2-1602
Dickensheets, Shawn	2891	P2
Dickson, Gail	3124	P2
Diedrich, Becky R.	3232	P2
Diedrich, Steve	3233	P2
Diedrich-Calhoun, Carl & Julie	2161	C, P2
Diehl, J.T.	2254	Thank you for your comment
Dierker, Arlene & Paul	2060	Thank you for your comment
Dietz, James	3153	P2
Dilday, Amy	4370	P2
Dillard, Don	4406	P2
Dilley, Robert	3486	P2
Dillon, Paula	2428	P2
Dinsmore, Rusty	1328	Thank you for your comment
Dishman, Dianne	3102	P2
Dishong, Diana	3346	P2
Dismuke, Mike A.	2327	C
Dixon, D.C.	1690	Thank you for your comment
Dixon, Deianlra S.	2955	P2
Dixon, Lynne	1869	P1
Dobay, Mike	3031	P2
Dobrowski, Pat & David	1521	Thank you for your comment
Doddem, Bernard	1804	P1
Dodge, Stephen	1247	Thank you for your comment
Dodson, Kurt	1599	Thank you for your comment
Dodson, Sherry	1744	41-302, 48-301, 6-306, 93-306, 10-400, 24-401, 35-402, 10-403, 21-406, 31-500, 24-1101, 9-1602, 10-1700, 11-1700
Doede, Richard	1372	Thank you for your comment
Dohrmann, Deborah A.	2341	C
Dole, Sarah	2302	C
Dolphin, Tony	3590	P2
Donaldson, Barry	3356	P2
Donerfeld, Mel	3726	P2
Dongill, Angela	4441	P2
Donnelly, John & Sara	1322	1-305
Donohue, Melissa	3747	P2
Donotrio, Mac	2050	Thank you for your comment
Dooley, Nancy	4276	P2
Dornbusch, Joseph E.	3555	P2
Dorrington, Thomas L.	3882	P2
Dougherty, Michael	1723	Thank you for your comment
Dougherty, Michael	2588	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Douglas, Don R.	2274	Thank you for your comment
Douglas, Don & Debra	4425	P2
Douglas, John D.	1341	1-308, 24-1101, 4-1200
Downard, Gayl	3279	P2
Downey, Janet	1900	P1
Downey, Patrick J.	1332	Thank you for your comment
Downing, Luke N.	1672	Thank you for your comment
Doyle, Sharon	3850	P2
Draltos, Chris	2778	P2
Drinkard, Stephen	3728	P2
Drinkard, Susan	3729	P2
Dubois, Kristi	1911	P1
Dubyk, Dean	4078	P2
Dudby, Steve	3186	P2
Dudley, Lass	1902	P1
Duir, Zauel J.	2518	P2
Dukes, Paul	1294	P2, 53-304, 11-308
Dulbarger, Paula	4199	P2
Dullea, Catherine L.	2277	Thank you for your comment
Dullea, Sean	3301	P2
Duma, Sheryl	2374	C
Dunn, Lorri	3864	P2
Dunn, Scott	3403	P2
Dunnagan, Robert & Nancy	1276	C,P2, 2-1101
Dunstan, Sally S.	2907	P2
Duperault, Mike	2495	P2
Duperault, Theresa	2492	P2
Dupree, Dawn	2949	P2
Duquette, Pam	1922	P2
Durnin, Michael	4104	P2
Dutro, Barbara	1221	35-306
Dwyer, Ed	1669	Thank you for your comment
Dye, Westley	2619	P2
Ealee, Timothy J.	3020	P2
Earhart, Tony	2643	P2
East Hope Marina	1739	35-302, 1-305, 1-308, 1-400
Eaton, Lynne	1828	P1
Eberle, Curtis	1752	Thank you for your comment
Eberle, Lois	4201	P2
Eberly, Mildred	1267	Thank you for your comment
Eckelberg, Don	1576	P1
Ecology Center	1670	23-102, 13-201, 41-303, 1-305, 6-308, 4-310, 9-400, 22-500, 6-1100, 2-1101, 3-1300, 5-1301
Economic Development Council, Inc.	1170	9-1601
Edge, Darlene	1854	P1
Edwards, Bob	3062	P2
Edwards, Jep	3627	P2
Edwards, John	1748	Thank you for your comment
Edwards, John R.	1336	13-301
Edwards, Leticia	2168	C
Edwards, Rebecca	2459	P2
Ehly, Pauline	2638	P2
Eikens, David N.	4321	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Eklwart, Tom	1875	P1
Elan, Beck	3134	P2
Elliott, Charlie	1416	C, P2, 10-302, 4-306
Elliott, Christine	2852	P2
Elliott, Jim	1634	5-102
Ellis, Rosemary	2183	C
Elsule, C.	4006	P2
Elzey, Melissa	3865	P2
Emerson, Ashley	1882	P1
Emerson, Mark	2017	7-302
Emery, Virgil	3071	P2
Emmer, James	3477	P2
Emmer, Wendy	2717	P2
Emmett, Margaret	2718	P2
Emory, Gina A.	4355	P2
Engel, D.W.	1455	11-300, 12-300, 13-300, 21-304, 30-304, 115-306, 6-309, 1-407, 9-500, 3-1200
Engstrom, Scotty	1961	2-310
Ennis, John	1482	P2, 8-302, 1-305, 1-308, 9-1602
Ennis, Nikki	3009	P2
Ensner, Jamie	3023	P2
Envik, Erik	2719	P2
Ercoline, Cindy	1685	Thank you for your comment
Ercoline, Wayne	1686	Thank you for your comment
Erickson	2707	P2
Erickson, Eleanor M.	2695	P2
Erickson, Jennifer	3602	P2
Erickson, Lawrence A.	1266	3-500, 9-1601
Erickson, Owen R.	1919	9-1601
Erickson, Todd M.	3566	P2
Erier, Bill	1424	Thank you for your comment
Eriksen, David N.	3455	P2
Eschleman, Judy	3950	P2
Esculanto, Rose	3108	P2
Eskelson, Jessica	1409	P2, 1-308
Eskelson, Jessica	2494	P2
Etter, Stephanie S.	3586	P2
Evans, Anna Lyn	2267	Thank you for your comment
Evans, Bob	1832	P1
Evans, Gary & Myrna A.	2188	C
Evans, Jane	4197	P2
Evans, Jenny	2936	P2
Evans, Judy	1430	Thank you for your comment
Evans, Thomas F.	2196	Thank you for your comment
Evans, Vera	3645	P2
Evensen-Lynor, Meredith	2526	P2
Evergreen Realty	2268	Thank you for your comment
Everson, Karen	2543	P2
Eyer, Kenneth M.	2184	C, P2
Eyer, Sally	2850	P2
Eygleston, Larne	4301	P2
Ezrael	3462	P2
F & H Mine Supply Inc.	1258	Thank you for your comment

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
F.H. Stoltze Land & Lumber Company	1369	9-1601
Fairbrother, Jennifer	3514	P2
Faletto, Betty	2542	P2
Fallat, Jim	2876	P2
Fallat, Margaret	2875	P2
Fallis, Shayne F.	3561	P2
Fallis, Theresa	2700	P2
Farmer, Jon	3055	P2
Farmin, Tammy	4284	P2
Farmin, Ted	1241	1-104, 11-302
Fasanello, Emily D.	3198	P2
Fassnacht, Debbie B.	3452	P2
Faucett, Allana	1742	P2, 41-302, 10-400, 24 -401, 35 -402, 10 -403, 21-406, 31-500, 24-1101, 9-1602, 10-1700, 11-1700
Faucett, Frank	1316	P2
Faulkner, Marle	3068	P2
Faulks, Dennis	3097	P2
Faulks, Sheri	3096	P2
Faville, Rush	2181	C
Fay, Mary E.	1884	P1
Fedak, Lora	3904	P2
Feeback, KD	1375	9-1601
Feeley, Michael	2406	P2
Feierabend, Rachel	3145	P2
Felts, Keith	4194	P2
Fenling, Andrew J.	3817	P2
Fergusen, Debbie	2219	Thank you for your comment
Ferguson, Evelyn	3944	P2
Feron, Tom & Carol	1329	35-305, 1-308, 11-308, 2-1101
Ferrante, Judith K.	3182	P2
Ferrante, Mariott	3181	P2
Ferrel, Jr., Charles M.	4111	P2
Ferrell, Doug	1440	1-305, 31-500, 7-1101
Ferrell, Melinda	1438	P2, 2-104, 58-302, 23-303, 49-303, 14-304, 65-304, 69-304, 13-305, 21-305, 22-305, 23-305, 5-309, 1-402, 7-403, 31-500, 7-1601, 8-1700,
Ferrier, Marina/Bromberg, Max	1730	C, 13-301, 26-302, 40-302, 47-302, 63-304, 1-305, 8-308, 10-400, 13-500, 9-1602
Ferrow, Theresa	1802	P1
Fiedler, Mary	3362	P2
Fielding, D.	3026	P2
Fields, Edwin	1688	Thank you for your comment
Fields, Marilyn	1822	P1
Fifth Grade Girl	1545	1-308, 1-403, 24-1101
Fifth Grader	1547	2-1600, 6-1600, 2-1602
Fifth Grader	1548	Thank you for your comment
Figlas, Edwin	1876	P1
Fincher, Pat	3980	P2
Finegan, Kim	1464	C, P2, 1-308
Finell, Fred	2693	P2
Finlay, Marianne	2453	P2
First National Bank In Libby	1281	9-1601
Fischer, Lana	4129	P2
Fisher, Forrest	4145	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Fisher, Jacqueline	4468	P2
Fisher, Joyce	3110	P2
Fisher, Stan	1494	Thank you for your comment
Fisher, Traci	3109	P2
Fister, Barb	3123	P2
Fitchett, Brent	1498	Thank you for your comment
Fitchett, Marsha	1539	10 -401, 24-1101
Fitzharris, Kerry	2345	C, P2
Fitzpatrick, Quinn	4053	P2
Five Valley's Audubon Society	2108	Thank you for your comment
Five Valleys Audubon Society/Bill Ballard	4475	47-306
Fix, William C.	3640	P2
Flanders, Brad	2502	P2
Flanigan, Chris	1454	1-305
Flanigan, Jackie	2298	C
Flansaas, Robert	1531	Thank you for your comment
Flary, Karrie	1546	Thank you for your comment
Flert, Claire	4230	P2
Fletcher, Charles G.	2747	P2
Fletcher, Gretta	2857	P2
Fletcher, Jeanine	2788	P2
Fletcher, Lynda	2748	P2
Flint, Greg	2319	C, P2
Flynn, Michael J. & Pamela R.	4039	P2
Fogarty, Dan	2301	C, P2
Fogarty, Margaret	2187	C
Fogarty, Sam	2047	Thank you for your comment
Fogarty, Shana	3331	P2
Foley, Larry	2375	C
Foord	4209	P2
Forbes, Carolyn H.	3069	P2
Ford, Jim L.	1476	P2
Forsberg, Ronald W.	2235	Thank you for your comment
Forsyth, John	4093	P2
Forsythe, Gordon	1414	6-303
Forsythe, Karen	3276	P2
Fortunati, Martha & Donald	1265	50-304, 2-1602
Foster, I.	2680	P2
Fournier, Barbara	2127	C, P2
Fousel, Delbert	4319	P2
Fowle, Michael	1750	32-301, 1-308
France, Carol	4353	P2
Francis, Julia	2943	P2
Francis, Michael	2951	P2
Franck, Christine	2732	P2
Franck, Laura	2510	P2
Franck, Stacey	2054	C
Frank, Alex & Becca	4088	P2
Frank, Hal	2025	P2
Frank, Loraine	2513	P2
Frank, Rodney & Justin	4218	P2
Fraser, E.	2125	C
Fraser, Elizabeth	4152	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Frazer, Judith	3541	P2
Frazier, Steve	2722	P2
Frechette, Robert J.	3656	P2
Fredborg, Malene	4034	P2
Frederick, Lolo K.	1733	32-301
Frederickson, C.	2679	P2
Fredlund, Marie	2441	P2
Freeland, Heather	3898	P2
Freid, Joel	4396	P2
Freir, Randy	2674	P2
Freyer, John	2088	Thank you for your comment
Frie, Stephanie	2636	P2
Friends of the Bitterroot	1633	2-101, 3 -402
Fries, E. Stephanie	3912	P2
Fries, Robert	1261	P2, 8-308
Fritsch, Richard	2768	P2
Fritz, Jane	1456	P2, 1-308
Frost, I.E.	3299	P2
Frost, Steve	2669	P2
Fulford, Joan	3921	P2
Full Spectrum Tours	1273	2-1600, 6-1600, 2-1602
Furtney, David J.	3867	P2
Fury, Lawrence	1279	P2
Gaddum, S.E.	2236	Thank you for your comment
Galand, Gwen	4345	P2
Gallaway, Rodd	1530	C, 13-301, 48-304, 24-1101
Ganbell, Christen	3732	P2
Ganbrit, Kenneth	2398	C
Ganssle, Karen	3197	P2
Garat, Pam	3188	P2
Garber, Willa A.	3815	P2
Garcia, Dan	3222	P2
Garcia, George	3730	P2
Garcia, Kathy	2399	C
Garcia, Paril	3986	P2
Garcia, Peggy	4436	P2
Gardner, Betty	3316	P2
Garland, Joe	1867	P1
Garman, Ron	2408	P2
Garner, Jeff	4302	P2
Garner, Teddi	3769	P2
Garrett, Tali	4380	P2
Garst, Susan	2709	P2
Gasper, Anne M.	3927	P2
Gauzza, George	4060	P2
Gavzza, Barbara	3935	P2
Gazzo, Paul	2042	29-302
GBL Corporation	2059	1-305
Geenson, Jessica	2754	P2
Gehlin, Dale	4156	P2
Geide, Robert	2036	Thank you for your comment
Geide, Susan	4059	P2
Geiger, Connie	1865	P1, 29-302, 63-304, 121-306

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Geil, Victoria E.	4131	P2
Gelhausen, Andy	3669	P2
Gengler, Kathy	2503	P2
Gentry, Gwen	3187	P2
George, Kathryn K.	4362	P2
Gerth, Nancy C.	4327	P2
Gestring, Bonnie	3430	P2
Gibson, Raymond M.	3954	P2
Giffert, Robert C.	3429	P2
Gifford, Marita	2425	P2
Gilbert, J.L.	3958	P2
Gilbert, Janet Lee	2284	P2
Gilbert, Krista	4452	P2
Gildersleeve, Amber	4308	P2
Gildersleeve, Craig I.	2170	C
Gilels, Dori	3453	P2
Gilgoff, Mykl	4438	P2
Gilielhenhaus, Jazz	3365	P2
Gillham, John C.	2347	C
Gillham, Lynda	3114	P2
Gilligan, Michael	3240	P2
Gillingham, Don	1527	2-101, 25-302, 1-308, 17 -401, 15-1101, 3-1601
Gillingham, Maggie	1240	11-302, 20-302
Gillingham, P.K.	1561	P1
Gillming, Don	2728	P2
Gilman, Henry K.	2637	P2
Gilmer, Joe	1949	9-1601
Gilmore, A.	4419	P2
Gilpatrick, Janet	2550	P2
Gilwood, Gary	1490	Thank you for your comment
Ginzton, Linda	3336	P2
Giordano, Robert	3426	P2
Girard, Christopher M.	3298	P2
Girumer, John W.	2035	Thank you for your comment
Glazier, Demarie	4161	P2
Gless, Elmer E.	3436	P2
Gless, Pauline A.	3435	P2
Glickenhaus, Scott	3866	P2
Glnechent, Bev	2112	Thank you for your comment
Gloor, Dana	3075	P2
Gloor, Fred	3128	P2
Gloor, Helen	3843	P2
Glueckert, Beverly B.	1994	13-302, 93-306
Glutting, Stephen	1350	22-300, 1-305, 7-308
Glynn, Gary	4499	Thank you for your comment
Goding, Maria	2424	P2
Goerdt, Alan	2300	C
Goerdt, Alan	3548	P2
Goldblum, Arthur J.	2149	C
Gollin, W.W. & Carol A.	4198	P2
Gonnason, Chris R.	2574	P2
Gooch, Gary	2074	Thank you for your comment
Goodner, Sue M.	2242	Thank you for your comment

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Goodrich, Bibiana	3981	P2
Goodwin, Sid	3637	P2
Gooley, Lina	2130	C
Gordon, Eunise M.	2837	P2
Gospodnetich, Gerald A.	1999	1-305, 5-308
Gough, Charles	2736	P2
Gough, Scott	3974	P2
Goughnour, Albert	4012	P2
Gould, Jo	2309	C
Govorchin, Roko	4325	P2
Grabenstein, Christa	4163	P2
Graef, Ursula	2260	Thank you for your comment
Graesser, A.R.	1655	13-301, 5-303, 1-305
Graff, Judy	4076	P2
Graham, Adrianne	2751	P2
Graham, Judy	3619	P2
Gramyk, Ken	4434	P2
Grant, Alex	2498	P2
Grant, Bob	2505	P2
Grant, Cheryl	3191	P2
Grantham, Angela	1291	4-400, 2-1600
Grass, Lori	3339	P2
Grassroots	1507	56-304
Graugk, Ken	3335	P2
Gravelle, Catlin	1468	Thank you for your comment
Gravelle, Jeff	1277	P2, 1-308
Graves, Richard L.	2141	C
Great Bear Foundation	1662	16-500
Green, Marji	3348	P2
Green Mountain Conservation District	**1429**	**2-102, 9-200, 13-301, 32-301, 4-304, 63-304, 1-305, 2-1604**
Green Mountain Insurance	2012	22-300, 2-305
Green, Ralph & Jeanne	1453	1-305
Green, Thomas L.	2727	P2
Greenough, Steve	3667	P2
Gregg, Tiffany	3265	P2
Gregory, Eldon	3372	P2
Greve, Corey	2792	P2
Grice, Brian	3617	P2
Grice, Teresa Ann	3616	P2
Grigg, Sharon	2985	P2
Griscom, Elizabeth	2642	P2
Grosser, Bridge	3446	P2
Grove, John & Darlene	1616	32-301, 1-305, 1-308, 5-1100, 2-1602
Grover, Jim	3325	P2
Grow, Stephen E.	2687	P2
Grow, Stephen E.	3554	P2
Grunseich, Diane	4428	P2
Gryl, Franny	1346	32-301, 1-305, 1-308, 2-1101, 2-1600
Guardipee, Joseph A.	1274	9-1601
Guderjahn, Burgit	3804	P2
Guenstein, Scott	3297	P2
Guercio, Joe	4011	P2
Guess, Michele D.	2440	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Guiles, Gary	4384	P2
Gunderson, Dale	1904	P1
Gunderson, Kari	1656	P1, 2-1602
Gundy, Dave Van	3879	P2
Gunn, Rise	2155	C
Gunn, Rose	2802	P2
Gunn, Timothy S.	2801	P2
Gunter, Colleen	1370	P2
Gunter, David	3349	P2
Gustason, Michael	2884	P2
Guthrie, Heather	3373	P2
Gutsche, Gail	1798	P1
Gyorfey, Doug	2699	P2
Hadadone, Naomi	1535	Thank you for your comment
Haddad, Marilyn	2094	Thank you for your comment
Hadley, Leo	4008	P2
Hagadone, Jon & Perky	1537	P2
Hagen, Don	2841	P2
Hagenbaugh, Robert L.	3827	P2
Hager, Vivian	1859	P1
Hager, William R.	1483	Thank you for your comment
Hager, William	1858	P1
Haggarty, David & Dolores	3962	P2
Hahn, James L.	3247	P2
Hahn, Janice D.	3246	P2
Hale, Katie	4413	P2
Hales, Marilyn	2824	P2
Hall, B.J.	1413	P2
Hall, Beverly J.	1378	2-102, 20-301, 1-308
Hall, David E. & Elizabeth C.	4311	P2
Hall, Heidi	2853	P2
Hall, Margaret W.	2746	P2
Hallowell, Iva	1555	P1
Halstead, Jeanette	2597	P2
Halstead, Pauline	2657	P2
Hamilton, Elmer C.	2247	Thank you for your comment
Hamilton, Emilie	3015	P2
Hamilton, Michelle	3511	P2
Hamilton, Rita	4446	P2
Hamilton, Robert	3741	P2
Hamilton, Toni	3357	P2
Hamm, Jamie	1400	P2
Hammer, William & Audrey	2051	Thank you for your comment
Hammet, Anna E.	4328	P2
Hammond, Brenda	2596	P2
Hammons, Gary	3606	P2
Hancock, Dave	2877	P2
Hanes, Charlie	2504	P2
Hanlon, Jaisy	3148	P2
Hanna, Paul	2741	P2
Hannah, Susann	1754	Thank you for your comment
Hannigan, Jackie	2995	P2
Hansen, Debbi	3395	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Hansen, Glenn	2930	P2
Hansen, John R.	4150	P2
Hansen, Susan L.	3215	P2
Hanson, Angie	4447	P2
Hanson, Kelly	3017	P2
Hanson, Ranel	1262	P2,1-308
Hanson, Ronald M.	4106	P2
Hanson, Terry	2655	P2
Harbuck, John	1459	2-100, 22-300, 5-303
Harding, Thomas K.	1644	2-1101, 2-1602
Hargreaves, Ruth & Hal	2019	P2
Harlequin Duck Working Group	1937	9 -402, 10 -402
Harlick, David	1786	P1
Harmelin, Michael S.	2552	P2
Harms, G.P.	2537	P2
Harper, David	3086	P2
Harrelson, Carolyn	3869	P2
Harrelson, Ronald G.	3868	P2
Harris, Randy J.	4167	P2
Harris, Robert	2499	P2
Harrison, S.A.	2126	C, P2
Harrod, Brian	1343	P2
Hart, Alan	3263	P2
Hart, Derek	1976	Thank you for your comment
Hart, Judye	4065	P2
Harteis, Leo	1708	Thank you for your comment
Hartley, Jaylene	4282	P2
Harvey, Lex R.	3309	P2
Hasbrauck, Richard D.	2832	P2
Hasbrouck, Deloris	3520	P2
Haskins, William	1789	P1
Hatch, Sharon	4038	P2
Hatfield, Michael	4251	P2
Hathaway, Teena	3615	P2
Hauck, Roland L.	3700	P2
Hawkins, Barry	4283	P2
Hawkins, Brian	3626	P2
Hawkins, Lonny	2080	Thank you for your comment
Hay, Marah	1543	24-1101
Hayden, Eve	2733	P2
Hayden, Jim	4117	P2
Hayes, Ronald W.	3652	P2
Haygreen, Janice	4357	P2
Haynes, Charles	3749	P2
Haynes, Sue	3748	P2
Heath, Brock	3490	P2
Hecht, James C.	3828	P2
Hecht, Mollee L.	2201	P2
Hedrick, Jan	3952	P2
Hefner, Jean	2910	P2
Hegseth, Rebecca R.	4299	P2
Heidel, Bonnie	1864	P1
Heim, Janet	3485	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Hein, Steven R.	2329	C
Heisel, Britt	4115	P2
Helander, Susan	2014	Thank you for your comment
Hellar, Gretchen	3510	P2
Helleberg, Jim	1592	26-500, 27-500, 39-500, 6-1700
Helm, Matt	3593	P2
Hemm, Ila	2529	P2
Hemmy, Suzanne	2045	Thank you for your comment
Hemus, Carol	2136	C
Hemus, Richard L.	2123	C
Henderson, Tim	2986	P2
Henderson, Wayne	4155	P2
Hendren, Robert G.	2835	P2
Hendren, Virginia	2328	C, P2
Hendricks, Margie & Cobert	4492	Thank you for your comment
Hendrikson, Jack	4020	P2
Henry, Daniel	3575	P2
Henry, Randa	3252	P2
Hepker, Wendy	3104	P2
Hermann, Robert C.	1579	P1
Hernandez, Cyndy	4351	P2
Hernandez, Hannah	1558	P1
Herron, Diane L.	4050	P2
Hersrud, Russ	2615	P2
Hery, Kelly	3256	P2
Heryle, Marj J.	3001	P2
Hess, Linda	3385	P2
Heyn, Ron	1648	9-1601
Hickman, Glen	3638	P2
Hidy, Carolyn E.	1637	2-101, 22-201, 48-301, 43-302, 42-303, 47-303, 37-304, 1-305, 31-305, 93-306, 38-309, 20-402, 24-1101, 4-1605
Hidy, Tom	4193	P2
Hidy, Troy	1751	P1, 55-301, 47-302, 21-309, 7-1600, 1-1602
Hieket, Darci	2382	C
Higbee, Herb & Charlotte	1523	24-1101
Hightower, Terry	1700	P1, 1-308, 1-402
Hill, Arnold J.	1782	P1
Hill, Kathryn	1783	P1
Hill, Lawrence A.	2621	P2
Hill, Lawrence C.	4260	P2
Hill, Wayne	1496	27-104, 13-301, 1-305
Hillstrom, Susan	1675	C, P2, 13-301, 95-306, 101-306, 3-1101, 2-1602
Hilt, Jim	1978	Thank you for your comment
Hinds, Colleen	1491	C, P2, 2-102
Hinds, Jennifer	1338	P2
Hinds, Jennifer	4494	Thank you for your comment
Hinnebusch, Margaret M.	1366	1-308, 5-401
Hinnebusch, Mark & White, Cynthia	1401	32-301, 1-305, 3-402, 2-403, 6-500
Hinrichson, Donna	3604	P2
Hinxman, Donald & Kendra B.	2386	C, P2
Hinzpeter, Susan C.	2520	P2
Hiromoto, Tatsunori & Takae	4079	P2
Hively, Robyn	3517	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Hoadley, Barbara	2724	P2
Hoagland, Larry D.	2916	P2
Hoaglund, Grady	4444	P2
Hoaglund, Susan	4372	P2
Hobday, John & Sherry	2255	P2
Hoblitt, Jennifer C.	2965	P2
Hochwender, Dennis	4021	P2
Hodge, Ronald R.	3322	P2
Hodgkins, Pete B.	3224	P2
Hoefer, Michael	1398	Thank you for your comment
Hoese, Elizabeth K.	2573	P2
Hoffman, Julie	3383	P2
Hofmeister, Nancy	2040	Thank you for your comment
Hogerman, Pam	2430	P2
Hoghbanks, George	3574	P2
Hogue, Hudson B.	4310	P2
Hoiland, Dewey	3857	P2
Holcomb, Alan E.	4196	P2
Holcomb, Charles	3363	P2
Holden, Michele	2633	P2
Holland, Don	1601	P2, 9-1601
Holland, Nate	4477	Thank you for your comment
Holland, Rebecca	1684	C, 11-102
Holland, Rebecca	2938	P2
Hollenbeck, Elsie	4326	P2
Hollmer, Ronald M.	2487	P2
Holman, Jay A.	2169	C
Holmes, Steve	4003	P2
Holmstrom, Kimber	2844	P2
Holstrom, Ben L.	1488	P2
Holt, Emily	4300	P2
Holt, Steve	1749	C
Holzapfel, Mark	1968	Thank you for your comment
Holzapfel, Mark S.	2940	P2
Honsinger, Bruce	3320	P2
Honsinger, Dianne	3321	P2
Hood, Ray & Eleanor	1913	P2, 41-302, 10-400, 24 -401, 35 -402, 10 -403, 21-406, 31-500, 24-1101, 9-1602, 10-1700, 11-1700
Hooper, Phillip	2972	P2
Hopkins, Guy	1966	3-1301, 4-1301
Horder, Michele	2052	46-306
Horejsi, Brian	1873	P1
Hornbeck, Janice Hope	3941	P2
Horne, Don & Donna	4451	P2
Horner, Joan L.	1815	P1
Horton, Ronald J.	3570	P2
Hoss, Julie	3940	P2
Hoss, Sandra	3503	P2
Hot Shots Video Production	2176	C
Houghton, Janis	4450	P2
Houpis, Harry L.F.	3428	P2
Hourdequin, Marion	1787	P1
Houston, J.R.	2478	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Hovanski, Lydia	3173	P2
Hovelt, Scott	3609	P2
Howard, Darcie	3848	P2
Howe, Robert	3533	P2
Howell, Dan	1974	Thank you for your comment
Howell, Donna M.	3900	P2
Howk, C.D.	2394	C, P2
Howze, S.S.	1501	P2, 1-104, 4-304, 50-304, 63-304, 2 63-304-1101, 9-1602
Hozophel, Ann	1967	Thank you for your comment
Huff, Sora	3354	P2
Huff-Waters, Rose	4426	P2
Huffman, Suzanne	4143	P2
Hugenia, Gabrielle	2675	P2
Hughes, Heather	4431	P2
Hughes, Norman & Michelle S.	2120	C
Hughes, Sandra	2457	P2
Hui, Courtney	3131	P2
Hull, Austin	4378	P2
Hultberg, Patty	4274	P2
Hum, Jeanne	3451	P2
Huning, Paul	4042	P2
Hunter, Rich	4427	P2
Hurley, George	2119	C
Hurley, Pat	3681	P2
Huss, Linda M.	3093	P2
Hutchins, Judith	1196	P1, P2, 4-100, 1-101, 4-104, 3-200, 4-200, 3-201, 4-201, 41-201, 42-201, 22-300, 25-303, 28-303, 39-303, 13-305, 1-305, 13-306, 81-306, 93-306, 112-306, 126-306, 24-309, 48-309, 15-401, 36-402, 24-500, 11-1101, 12-1101, 13-1101, 9-1200, 8-1600, 4-1700
Hutchinson, Leslie	2549	P2
Hyster, Patti	3764	P2
Icardo, Travis	4408	P2
Idaho Dept of Health & Welfare	**2067**	**25-300, 13-304, 22-304, 68-304, 1-305, 13-305, 13-306, 33-306, 27-306, 39-306, 44-306, 49-306, 50-306, 51-306, 73-306, 74-306, 74-306, 128-306, 130-306, 134-306, 135-306, 137-306**
Idaho Fish & Game	**1445**	**5-102, 2-200, 52-302, 40-302, 1-305, 4-305, 111-306, 120-306, 1-308, 8-308, 8-402**
Idaho Mining Association	1260	9-1601
Idaho Rivers United	1936	29-102, 29-300, 8-301, 29-302, 63-302, 25-303, 1-305, 93-306, 8-308
Independent Mortgage Ltd.	2044	Thank you for your comment
Industrial Tool & Repair	1228	9-1601
Ingram, Eric L.	3607	P2
Inland Empire Public Lands Council	2090	22-300, 63-304, 1-305, 87-306
interested Party	4066	P2
Interested Party	2064	P1
Interested Party	2599	P2
Interested Party	2600	P2
Interested Party	2780	P2
Interested Party	2804	P2
Interested Party	2784	P2
Interested Party	2798	P2
Interested Party	2063	P1
Interested Party	2795	P2
Interested Party	2786	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Interested Party	2981	P2
Interested Party	2932	P2
Interested Party	2873	P2
Interested Party	3056	P2
Interested Party	2830	P2
Interested Party	3072	P2
Interested Party	2828	P2
Interested Party	2872	P2
Interested Party	3058	P2
Interested Party	2945	P2
Interested Party	2820	P2
Interested Party	3212	P2
Interested Party	3371	P2
Interested Party	3531	P2
Interested Party	3251	P2
Interested Party	3204	P2
Interested Party	3342	P2
Interested Party	3308	P2
Interested Party	3259	P2
Interested Party	3929	P2
Interested Party	4217	P2
Interested Party	3834	P2
Interested Party	3859	P2
Interested Party	3925	P2
Interested Party	3893	P2
Interested Party	3957	P2
Interested Party	4344	P2
Interested Party	3743	P2
Interested Party	3709	P2
Interested Party	4287	P2
Interested Party	3961	P2
Interested Party	3742	P2
Interested Party	3714	P2
Interested Party	4280	P2
Interested Party	4146	P2
Interested Party	3885	P2
Interested Party	3722	P2
Interested Party	4046	P2
Interested Party	4279	P2
Interested Party	3971	P2
Interested Party	3736	P2
Interested Party	3713	P2
Interested Party	4016	P2
Interested Party	4315	P2
Interested Party	3737	P2
Interested Party	3765	P2
Italiano, B.I.	2759	P2
Italiano, Gina	2758	P2
Italiano, J.	2760	P2
Ivie, Harold V.	2840	P2
Ivy, Joanna	2530	P2
Jablon, Matt	3162	P2
Jacklin, Wade	3813	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Jackson, Bert	2776	P2
Jackson, Mary	1339	Thank you for your comment
Jacobs, Shawn	2810	P2
Jacobson, Dan	3776	P2
Jacobson, Flora	3389	P2
Jacobson, Lee	1588	Thank you for your comment
Jacobson, Paul	3608	P2
Jaeger, John	3288	P2
Jamar, Robyn	4432	P2
James, Julia A.	2961	P2
Jamieson, K.R.	3419	P2
Jamieson, Sandra S.	2264	Thank you for your comment
Janas, Jennifer	3911	P2
Janes, Frances	1768	Thank you for your comment
Janke, Sherm	1701	Thank you for your comment
Janni, Faye	1254	Thank you for your comment
Jans, Sam	2150	C
Janusz, Barbara/Garner, Tedd	1746	41-302, 10-400, 24-401, 35-402, 10-403, 21-406, 31-500, 24-1101, 9-1602, 10-1700, 11-1700
Janusz, Barbara	3768	P2
Jechins, Michael S.	2308	C
Jeffers, Von L.	2785	P2
Jeffres, Dale & Vicki	2310	C
Jeffries, Jennifer	3138	P2
Jellison, Kevin	1408	Thank you for your comment
Jenkins, David	2337	C
Jenkins, David	2649	P2
Jenkins, Thomas	2811	P2
Jennings, Chuck	1899	P1
Jensen, Darwin	3369	P2
Jenson, Charles E.	3079	P2
Jessup, David	3558	P2
Jester, Kevin	4395	P2
Jevons, Cecil F. & L. Renee	4191	P2
Jobey, Linda	2192	Thank you for your comment
Jochim, Scott	3968	P2
Johnsen, Steve & Teri	1347	P1, 46-301, 63-302
Johnson	2789	P2
Johnson, Bonnie	2921	P2
Johnson, Briel	2946	P2
Johnson, Bruce	3995	P2
Johnson, Clyde	1837	P1
Johnson, Daren	2755	P2
Johnson, Dusty	3028	P2
Johnson, Georgia	3855	P2
Johnson, Helen Kay	4333	P2
Johnson, Kathy	4122	P2
Johnson, Liz	1574	P1
Johnson, Margo	3101	P2
Johnson, Marguenta	4148	P2
Johnson, Nola N.	2446	P2
Johnson, Paul	2456	P2
Johnson, Rae Lynn	4377	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Johnson, S.	4257	P2
Johnson, Susan	2603	P2
Johnson-Lain, Marcia Renie	2447	P2
Johnston, Lois	1419	1-308, 1 -401
Johnston, Paul	4292	P2
Johnston, Susan L.	4329	P2
Jonasen, Dean W.	2122	C
Jones, Andrea	3340	P2
Jones, Cedron	1307	2-110
Jones, Christina G.	1826	P1
Jones, Claire	4018	P2
Jones, Dortha L.	4187	P2
Jones, Douglas E.	3536	P2
Jones, Eddie	3355	P2
Jones, Lizabeth A.	2548	P2
Jones, Mary A.	2248	Thank you for your comment
Jones, Melanja	1636	27-300, 4-304
Jones, Philip L.	3948	P2
Jones, Rich	4101	P2
Jones, Sally	1436	P2, 8-308, 11-401
Jones, Ted	4416	P2
Jones, William	2376	C, P2
Jones-Sadowski, Peggy A.	2817	P2
Jordan, Kathryn	3942	P2
Joseph, Bill	3230	P2
Joseph, Keith N.	2899	P2
Joseph, Mike & Heather	3993	P2
Joslyn, Jim	1509	Thank you for your comment
Josund, Glenn	1374	C, P2
Judge, John C.	3324	P2
Judy, Ed & Marguerite	1998	13-306
Judy, Eddie Sue	1740	37-102, 22-300, 32-301, 11-302, 40-302, 49-304, 1-305, 17-305, 100-306, 16-400
Kaastad, Brandon	2224	P2
Kaemmer, Gary/Lawton, Karen	1743	41-302, 10-400, 24 -401, 35 -402, 10 -403, 21-406, 31-500, 24-1101, 9-1602, 10-1700, 11-1700
Kaestner, David	1714	32-301
Kahn, Mary J.	2056	Thank you for your comment
Kain, Deborah A.	1564	P1
Kair, Marilyn	1620	4-1601
Kair, Mike	1622	9-1601
Kalafatich, Kelley	3557	P2
Kalispell Tribe of Indians	**1990**	**1-308**
Kalmott, Andy C. & Joyce	4140	P2
Kamp, Kristine A.	2684	P2
Kane, Susanne	3973	P2
Kaniksu Bioregional Council	1948	32-301, 1-305, 2-1101
Kantor, Mary R.	3553	P2
Kara, Paul	4410	P2
Kassel, B.	3752	P2
Kassel, Barbara H.	2233	P2
Kasun, Robert J.	3613	P2
Katana, Marta	2947	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Katsaris, Anne K.	1643	P2, 37-304, 63-304
Kay, Jason	3739	P2
Kayser, Bridgett K.	4151	P2
Kayser, Susie	1395	23-1101,
Kearney, Carver	2173	C
Keck, Eleanor	3311	P2
Kee, Beverly	2508	P2
Keehnen, Susan	1310	10 -401
Keeley, Donna M.	4186	P2
Keenan, Barbara	2421	P2
Keenan, Judy	3959	P2
Kehl, Richard	1517	2-403, 7-500
Kehler, Nancy	2663	P2
Keiffer, Steven C.	3171	P2
Keller, Kaylee	2297	C
Kelley, Pam	3136	P2
Kellogg, Rachel	3887	P2
Kelly, Gary	4470	P2
Kelly, Joe	4168	P2
Kelly, Lynn	1906	P1
Kelsen Jr.	2034	Thank you for your comment
Kendall, Chuck	1861	P1
Kendall, Dianne	3405	P2
Kendall, Jerome & Linda	4189	P2
Kendrot, Ann	3938	P2
Kennedy, Scott R.	3744	P2
Kenney, William	3543	P2
Kenny, Jeff	3967	P2
Kenyon, Irene	2191	Thank you for your comment
Kepp, Ted	3632	P2
Kerr, C.M.	3098	P2
Kertis, Nancy	1461	32-301
Kesterson, Wendy Diane	2957	P2
Kienholz, N.R.	3063	P2
Kienholz, Noah	3692	P2
Kiley, Quinn	3433	P2
King, Christopher	3183	P2
King, Deborah	4180	P2
King, Patricia	3647	P2
King, Sally A.	3328	P2
King, Scott M.	2103	P2, 25-300, 121-306
Kingsland, Kristina M.	2332	C
Kingsland, Linda	2164	C
Kingsland, Tom	2123	C
Kingsland, Vicky	2333	C
Kingston, Erik	2404	P2
Kinney, Elizabeth S.	3919	P2
Kinney, Malcolm	3313	P2
Kinucan, Edith S.	2661	P2
Kinyon, W.R.	1-308	Thank you for your comment
Kinzel, Bill	4113	P2
Kirby, Mike	4009	P2
Kirchheimer, Authur E.	3078	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Kirshberg, Kim	3254	P2
Kissam, Barb	2546	P2
Kitchen, Curtis	4045	P2
Kitchens, Leslie	3818	P2
Kittams, Julie A.	2618	P2
Kittleson, Kevin	1242	P2, 7-302, 3-305, 13-305
Kittleson, Leanna	3420	P2
Kitty, Meredith	1550	Thank you for your comment
Kivcera, Julie	3970	P2
Klappenlash, Stephen	1403	Thank you for your comment
Klatt, Eileen	1776	32-301, 7-308
Klatt, Steve	1970	P2, 9-1602
Klatt, Steve	2982	P2
Klein, George	3195	P2
Klein, Lee	3194	P2
Klein, Phyllis	3931	P2
Kleinert, Katrina	3025	P2
Kleir, Richard L.	4083	P2
Kline, Albert J.	1836	P1
Kluge, Sandy	2096	Thank you for your comment
Kneeland, Gary	2434	P2
Knight, Billie	3228	P2
Knoten, Erinn	2312	C
Knott, Danny	2729	P2
Knudsen, Kathy L.	1626	7 -402
Koch, Jaynee	3539	P2
Kocour, Michael	2528	P2
Koeneman, Lena	1549	10-401
Koich, Chris & Debra	4022	P2
Kollath, Jeff	2767	P2
Konopro, Deborah	3303	P2
Kootenai Tribe of Idaho	**2026**	**8-100, 7-103, 22-104, 28-104, 26-201, 13-301, 17-301, 21-301, 32-301, 50-302, 1-305, 3-305, 13-305, 105-306, 20-309, 52-309, 34-402, 35-402, 7-405, 41-500, 43-500, 1-1101, 2-1101, 22-1101, 11-1301, 3-1605, 5-1605, 6-1605**
Kopas, Marleigh A.	3225	P2
Kosse, Raymond B.	3487	P2
Kotnour, Amy	2547	P2
Kotschevar, Don	1955	1-104, 32-301, 1-305
Kotub, Ryan	2797	P2
Kovarik, Kathleen	1931	26-1101
Kovatch, Patricia A.	3484	P2
Kozak, Archie	2515	P2
Kramer, Thomas	2836	P2
Krantz, Lou Anne	3793	P2
Kreidler, Cskla	3499	P2
Kreidler, Jim	3545	P2
Kreisberg, Michael	4474	2-1602
Kremer, Al	3489	P2
Kremer, Paula	3488	P2
Krewatch, William V.	3724	P2
Kristensen, Lynne	3048	P2
Krohn, Irene	3538	P2
Krohn, Stephen B.	2710	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Krueger, George P.	1396	Thank you for your comment
Krukowski, Delores	3414	P2
Krukowski, Neal	3416	P2
Krulz, B.	4094	P2
Kruse, Beverly	3668	P2
Kruse, Jeff	3666	P2
Kruse, Richard	3659	P2
Kruse, Scott	3664	P2
Kuehl, Gina	2973	P2
Kuhar, Kim	3013	P2
Kuhnel, Berta C.	2324	C
Kuhnel, Richard	2390	C
Kuhns, Lore L.	3203	P2
Kujranz, Stacy	2032	P2
Kullenberg, Les	4004	P2
Kurtz, Milt	3261	P2
Kuster, Ruth & Heikki	1765	25-303, 1-308
Kuster, Stephan & Nancy	1766	25-303, 1-308
La Bette, Mary Jo	1805	P1
Labor Contractors	1229	9-1601
Laduca, Charles M.	2237	Thank you for your comment
Laduca, Janet Lynn	1357	C, P2, 1-308, 9-1602
Laduca, Melissa	2325	C
Laflin, Maureen	3820	P2
Lagrace, Joanna	2287	Thank you for your comment
Lake Pend Oreille Idaho Club	1925	28-300, 5-303, 37-304, 1-305, 123-305, 93-306, 1-308, 4-308
Lake, Slyth	2282	Thank you for your comment
Lakes, Greg	3476	P2
Lamb, Justin	3223	P2
Lambert, Richard J.	1432	Thank you for your comment
Lambert, Stephanie D.	2477	P2
Lambros Real Estate	2003	Thank you for your comment
Lammers, Andres	1594	5-101, 6-101, 11-300, 36-301, 14-302 39-302, 7-303, 42-303, 43-303, 48-304, 1-305, 4-305, 19-305, 10-308, 16-309, 44-309, 3-310
Lampertz, Russell Jay	3095	P2
Lampmaun, Linden J.	3903	P2
Landers, John	4469	P2
Landes, Heather	2527	P2
Lane, Charles T.	3193	P2
Lane, Nadean	4128	P2
Lane, Sr., P.J.	4120	P2
Lange, Brian	1300	Thank you for your comment
Lange, Diana	3527	P2
Langley, Gloria	3657	P2
Laning, Jaclyn	3184	P2
Lapham, Joseph & May L.G.	3984	P2
Larkin, Mary & Colin	1630	1-305
Larocca Jenie	3519	P2
Larsen, Alice	4162	P2
Larsen, J.	2536	P2
Larsen, Jens	2894	P2
Larsen, Maureen	2893	P2
Larson, Gordon E.	2048	Thank you for your comment

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Larson, Pat	3189	P2
Larson, T.J.	4421	P2
Larson, Tom	1725	Thank you for your comment
Lassen, Bambi	3008	P2
Lauckner, Goni	1856	P1
Laura	4388	P2
Laverman, Bruce	3450	P2
Lawrence, Jared	1475	39-301, 1-308, 9-308
Lawrence, Marilyn	1553	P1
Lawrence, Robert	1554	P1
Lawton, Karen	3691	P2
Layfelt, C.	4460	P2
Layne, Carleen	1840	P1
Layne, Richard	1841	P1
Lazar, Steven	2941	P2
Leach, Bradley	4303	P2
Leake, Aaron	3493	P2
Leake, Darcy	2212	P2
Leake, Diana R.	1757	C, P2, 1-308
Leake, Heather	3500	P2
Leake, Stephen	3932	P2
Leake, Tyler	3492	P2
Leavitt, Christy	3878	P2
Lecy, Robert G.	3588	P2
Ledford, III, James W.	3564	P2
Ledy, John W.	1243	1-308
Lee, David L.	2109	C, P2
Lee, Dillion	1563	P1
Lee, Geri	1562	P1
Lee, Tina M.	2959	P2
Leech, A. L.	3267	P2
Lefebvre, Darcie	3361	P2
Legat, Linda	1820	P1
Leggett, Ronald J.	3192	P2
Lehman, Edward A.	4017	P2
Lehtonen, Sampsa	4029	P2
Leigh, Mike	1835	P1
Leivestad, Ole & Rusti	1296	P1, 30-102, 21-300, 72-302
Len, Cynthia	3040	P2
Lenches, Christine	2076	1-305, 1-306
Leonard, Phil & Mary	4127	P2
Leonetti, Doug	3544	P2
Lepper, Fred	1706	Thank you for your comment
Lerch, Jason	3113	P2
Lerch, Leslie	4068	P2
Lersbak, Wayne	2118	Thank you for your comment
Lesica, Peter	2043	Thank you for your comment
Lewis, Jacinda K.	2489	P2
Lewis, Jeffrey S.	1694	9-1601
Lewis, Leon	3375	P2
Lewis, William R.	3201	P2
Libby Area Chamber of Commerce	1250	Thank you for your comment
Libby, Ray	3424	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Lieber, Molly	4089	P2
Liennen, B.J.	1235	Thank you for your comment
Lilly, Anne	1557	P1
Lima, Gina	2991	P2
Lin, Henry	1928	32-301, 1-305
Lincoln County Commissioners	**1239**	**1-406, 1-500, 2-500, 28-1101, 9-1601**
Lind, Douglas	3819	P2
Lindsay, Rodney G. & Janice L.	4109	P2
Lindstrom, Sarah	2354	C, P2
Linton, Mark Fletcher	3701	P2
Linvall, Gloria	2544	P2
Lippi, James J.	2177	C
Lippi, Pamela J.	2270	Thank you for your comment
Lish, Adara	4219	P2
List, Mark D.	4213	P2
Litsinger, Jean J.	4097	P2
Lizotte, Bob/Ellen/Amy	2057	P2
Lloer, Phey L.	2739	P2
Lockman, Miriam	1790	P1
Lockwood, Corinna	3266	P2
Loewenstein, Donna	2878	P2
Logan, Carrie	3795	P2
Logan, J. Patrick	3708	P2
Logan, Steve	2806	P2
Lohman, Art	4493	Thank you for your comment
Lojek, Brian	3755	P2
Lojek, Julie	1287	P2, 1-308
Lojun, Don	2567	P2
Long, Annette Z.	2706	P2
Long, Arthur	1433	32-301, 1-305
Long, Brian D. & Traci Post	4124	P2
Long, Karl R.	2608	P2
Long Machinery	1249	Thank you for your comment
Long, Mason	3270	P2
Long, Richard	4478	Thank you for your comment
Long, William E.	3179	P2
Longinotti, Katie	2468	P2
Lonigro, Jerry J.	3672	P2
Loomis, Robert D.	1314	1-201, 1-403, 7-500
Loosemore, Kim	2174	C
Lopez, Sue	3122	P2
Lopshire, Meri Kate	2990	P2
Lord, Chris	3551	P2
Lord, Marsha	3044	P2
Lorenzen, Michael	2473	P2
Lott, Phyllis	3115	P2
Lougheed, Clint	4040	P2
Lougheed, Ryan	3100	P2
Loughlin, Kelsey	3624	P2
Lovenbury, Margaret	3249	P2
Lovick, Linda	4080	P2
Lowden, Dean	3897	P2
Lucas, Jeanette	3947	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Lucey, Sheila C.	2607	P2
Lucht, Laima	4422	P2
Luedecke, Sue	1231	9-1601
Lukezech, Buck	3160	P2
Lund, Kristine P.	2148	C
Lund, Marion I.	3990	P2
Lund, Roger	2220	Thank you for your comment
Lundstrom, Jill M.	2142	C
Lundstrom, Jill M.	2989	P2
Lunnen, Beretha Jo	2208	Thank you for your comment
Lunnen, R.B.	1334	54-301, 2-1600
Lutes, Mary	3949	P2
Lyer, Su	2403	C
Lyman, Dave	1335	1-402
Lyman, Debbie	1359	C, P2, 93-306, 3-402, 2-403, 7-500
Lynch, Elisa L.	1946	9-308
Lynch, Thomas Kelley	3569	P2
Lynn, Sheelagh	4084	P2
Lyon, Sean	3190	P2
Lypter, Gail W.	2001	Thank you for your comment
Lyster, Earl	1269	1-308
Lyster, Earl	4476	Thank you for your comment
Lyster, Gail	2134	C, P2
Lyster, Kate	4073	P2
Lyster, Thomas	3152	P2
Lyster, Tom	2867	P2
Mabrey	3022	P2
Mabrey, Randi	3021	P2
MacDonald, Rowdy	3329	P2
MacDonald, Thelma W.	3082	P2
MacDonald, William	3081	P2
Mack, Michael	3934	P2
Mackey, Peggy M.	4119	P2
Maclachlon, James H.	2097	8-308
Macspadden, Georgia E.	1578	P1
Maddy, Trisha	4254	P2
Magee, Alderson	2358	C
Magee, Mary A.	2362	C
Magnusson, Julia	4429	P2
Mahra, Dawn	1364	Thank you for your comment
Mailman, Beth	2162	C
Main, Deanna	3794	P2
Makela, Jay	4048	P2
Malerich, Pete	3578	P2
Malerich, Suzanne	3577	P2
Mallory, Ollie	1829	P1
Maloney, Nancy	2241	Thank you for your comment
Maloney-Hanna, Rhea	1741	41-302, 10-400, 24 -401, 35 -402, 10 -403, 21-406, 31-500, 24-1101, 9-1602, 10-1700, 11-1700
Malson, Jerry	1497	Thank you for your comment
Mancusa, Janna	2565	P2
Mandolf, Michelle	4341	P2
Manley, Art	3601	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Manning, Roy M.	2775	P2
Mansfield, Don & Evie	2283	Thank you for your comment
Manske, Jurgen	2734	P2
Marangelo, Glenn	1791	P1
Marble, Harriet	1878	P1
Marich, Aaron	1540	2-102, 1-400
Marks, Ance	3054	P2
Marks, Michelle	3262	P2
Marks, Phyllis	2106	Thank you for your comment
Marley, Patrick J.	1427	1-305, 1-308
Maro, D.L.	1569	P1
Marriott, Linda	3801	P2
Marshall, Don & Tami	1252	1-308, 9-1601, 1-1700, 3-1700, 3-1700
Marshall, George	2842	P2
Marshall, Lea	4442	P2
Martin, Chris	3661	P2
Martin, Larry E.	3584	P2
Martin, Marcie	2897	P2
Martin, Michele	2259	P2
Martin, Tim	2253	Thank you for your comment
Martz, Melody S.	4244	P2
Marx, David	2777	P2
Mascho, Lisa	1846	P1
Mason, Alicia	2474	P2
Mason, Cynthia	2113	P2
Mason, Sandra L.	4346	P2
Massey, Donna M.	3137	P2
Matejovsky, Cindy	3689	P2
Materne, Amie	3129	P2
Mathias, Amy	2647	P2
Matier, Karen	1283	50-304, 1-308
Matier, Michael L.	1286	1-308, 10-401
Matlock, Ben	3945	P2
Matthews, Martin	1951	9-301, 1-305, 40-302
Mattingly, Tanna	2592	P2
Mattison, Brenda	4277	P2
Mattsson, Per	2364	C
Maukins, Kent	4440	P2
Maurice, Robert	4313	P2
Maus, Brandon	2514	P2
Maus, Chris	2576	P2
Maus, Ginna	2490	P2
Maushe, Jurgen	3479	P2
Maxwell, Barbara	1827	P1
Maxwell, Jessie	3979	P2
Mayginnes, Ken	3923	P2
McAvoy, Darren	1349	1-1601
McBride, Larry	2256	Thank you for your comment
McCabe, Diane	2988	P2
McCabe, Don	1598	1-308
McCabe, Michael	2987	P2
McCanlies, Lisa	3846	P2
McCanlies, Nancy	3841	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
McCarthy, Brian & Pat	2708	P2
McCartney, Ward	1897	P1
McCaulay, Carley	1855	P1
McChesney, H.L.	3434	P2
McClaine, Carolyn	4172	P2
McClure, Sue	2668	P2
McClure, Trudy	2569	P2
McClurl, B.A.	2420	P2
McComas, Floyd	3618	P2
McCord, Wendy	2934	P2
McCormick, Mark	2400	C
McCoy, Neala	2885	P2
McCrady, Andrea	3614	P2
McCroskey, Floyd	3496	P2
McCrum, Tara	2953	P2
McCullough, Nancy	3432	P2
McCune, Susie	3717	P2
McDivitt, Damien	3546	P2
McDonald, Barb	2523	P2
McDonald, Terri	2226	Thank you for your comment
McDonaugh, James A.	2385	C
McDonell, P.	7374	P2
McDougal, Suzanna	1770	7-308. 7-400, 3-1700
McDwitt, Damien	4405	P2
McEfee, Amy	4305	P2
McGee, Jr., William F.	2383	C
McGeoghegan, Shirley	3877	P2
McGill, Debra	4402	P2
McGovern, Erin	4272	P2
McGowan, Yvette	3006	P2
McGrum, Robbin	4393	P2
McGuire, Katy	2167	C
McGuire, Philip T.	3413	P2
McGuire, Will	3881	P2
McHenry, Julie	3359	P2
McHenry, Pat	3358	P2
McKillop, Scott	2764	P2
McKitrick, Bryan R.	1769	P2
McKitrick, Nancy	1932	P2
McLagan, Denise	3939	P2
McLand, Larry	3534	P2
McLeod, Terry	2203	Thank you for your comment
McLinden, Barney	1560	P1, P2
McLinden, Jo	1559	P1
McMillan, Dennis	3268	P2
McMillan, Harry E.	2908	P2
McMullen, Lyle A.	2595	P2
McNall, Susan	3257	P2
McNeil, Patrick J.	3465	P2
McSherry, Kathy	3402	P2
McSherry, Ragena	3045	P2
McWilliams, Marilyn	1384	2-101, 3-102, 13-301, 32-301, 34-301, 49-304, 63-304, 1-305, 17-305, 1-308, 1-309, 7-401, 8-401, 3-1101, 24-1101, 2-1600, 1-1602

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
McWilliams, Tim	1397	Thank you for your comment
Mead's Northwest	1431	Thank you for your comment
Mehler, Tom	4049	P2
Meigs, Lou	2535	P2
Meinzer, Jennifer K.	2756	P2
Meister, Larry	4261	P2
Meister, Nicole	4262	P2
Meland, Quinten R.	3464	P2
Meland, Shirley	3463	P2
Meldon, Sue	3077	P2
Mell, Graydon D.	1852	P1
Mellem, James S.	2093	Thank you for your comment
Melnrick, Kenneth	1814	P1
Melnrick, Sandra	1810	P1
Mende, Debbie	3735	P2
Meneely, Jim & Jan	2392	C
Menz, Richard	1866	P1
Mercer, Amy	2218	P2
Mercer, Jannine	2216	Thank you for your comment
Mercer, K.M.	2645	P2
Meriphew, Josie	1965	Thank you for your comment
Merithew, Jill	2407	P2
Merithew, Josie	2422	P2
Merrell, Bonnie	4334	P2
Merrell, Jeffrey	3977	P2
Merriman, Pauli	2467	P2
Merry, John B.	1575	P1
Merz, Rick	2365	C
Meschko, John	2087	Thank you for your comment
Messer, Jeanne M.	2160	C
Metz, S.A.	4318	P2
Meurer, Anne L.	3802	P2
Meye, Charles	3989	P2
Meyer, Julie	2587	P2
Meyer, Robert J.	4248	P2
Meyer, Stephen R.	2579	P2
Meyer, Tangi M.	1850	P1
Michaels, C.	1806	P1
Michaels, Jimmy W.	2516	P2
Michaels, S.	1808	P1
Michard, Mark & Jennifer	4368	P2
Michels, Charity	2993	P2
Mico, Courtney	3133	P2
Mico, Peter & Gail	4160	P2
Middleton, George	3380	P2
Middleton, Janet	2258	Thank you for your comment
Midstokke, Alison	3165	P2
Midstokke, Annie	2388	C, P2
Midstokke, Denise	3508	P2
Midstokke, Eric	3509	P2
Midstokke, Kim	3166	P2
Mierra, Eelia	3894	P2
Mikita, David & Sandy	4144	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Miklelson, Rikard J.	2578	P2
Mildenstein, Tammy	1664	2-1101, 7-1101
Millan, James	3273	P2
Millar, Sarah	3012	P2
Millard, Bruce	1917	C, P2, 66-304, 1-308, 8-1101, 4-1200
Mille, N.	2306	C
Miller, Allyn J.	3368	P2
Miller, Barbara	4085	P2
Miller, Catherine	2723	P2
Miller, Diane	2825	P2
Miller, Doug	3483	P2
Miller, Govinda	2015	P2
Miller, Jamie	3924	P2
Miller, Jeff	2079	Thank you for your comment
Miller, Jeff R.	4096	P2
Miller, John & Patricia	1918	32-301, 1-305, 7-308, 10-401
Miller, Judy	2660	P2
Miller, Keff	3274	P2
Miller, Kirk	3852	P2
Miller, Linda	1874	P1
Miller, Lisa	4126	P2
Miller, Lois	3244	P2
Miller, Michael	1615	Thank you for your comment
Miller, Sadae	3902	P2
Miller, Scott	1604	Thank you for your comment
Miller, Tom	4099	P2
Miller, William L.	1379	9-1601
Mills, Regina	2858	P2
Milne, Lois	3289	P2
Mimmack, Pamela	4401	P2
Miner, Stuart	3052	P2
Mineral Policy Center	1638	1-101, 1-104, 9-201, 13-301, 32-301, 8-303, 3-304, 4-304, 1-305, 1-306, 4-306, 13-306, 14-306, 95-306, 101-306, 124-306, 26-401, 16-402, 2-1300
Minick, Ricky	4220	P2
Minnis, Linda	4221	P2
Miro, Vanessa K.	2861	P2
Mitchell, Anne	2331	C
Mitchell, Christen	1552	Thank you for your comment
Mitchell, Dorothy	3018	P2
Mitchell, Jayson	3284	P2
Mitchell, John	1255	32-301, 1-305, 3 -401, 2-406, 4-500, 5-500
Mitchell, Lawrence G.	1288	2-101, 7-101, 11-101, 12-101, 6-103, 11-104, 12-104, 18-104, 21-104, 23-104, 10-200, 14-201, 15-201, 16-201, 17-201, 14-300, 19-300, 20-300, 25-300, 13-301, 22-301, 28-301, 32-301, 37-301, 55-301, 15-302, 22-302, 31-302, 37-302, 61-302, 62-302, 73-302, 5-303, 51-304, 63-304, 70-304, 1-305, 9-305, 18-305, 20-305, 24-305, 27-305, 28-305, 32-305, 35-305, 15-306, 112-306, 129-306, 15-309, 17-309, 39-309, 40-309, 41-309, 51-309, 9-403, 7-405, 4-407, 33-500, 38-500, 7-1101, 17-1101, 18-1101, 19-1101, 20-1101, 3-1200, 7-1200, 8-1200, 8-1601, 3-1605, 7-1605, 8-1700
Mitchell, Mary Crowe	1248	2-101, 2-102, 25-104, 6-300, 15-301, 44-301, 48-301, 38-302, 40-302, 38-304, 40-304, 49-304, 63-304, 1-305, 3-305, 13-305, 35-305, 75-306, 91-306, 95-306, 125-306, 8-308, 19-309
Mitchell, Mary C.	2614	P2
Mitchell, Robert	1761	21-1101
Mitchell, Robert B.	2705	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Mitchell, Sharon	3515	P2
Mitchell, Sherry	4192	P2
Mitchell, Wesley T.	1934	Thank you for your comment
Mitchum, Bill	2156	C
Mitchum, Christopher	2157	C
Moate, Robert	3603	P2
Moe, Millie	3562	P2
Moe, Ryan	3563	P2
Moen, Dan	2763	P2
Moll, Robin	1853	P1
Monaghan, Coleen	1703	Thank you for your comment
Mondal, Kenneth M.	1315	P2, 9-1601
Montana Bolt Inc.	1226	9-1601
Montana Council Trout Unlimited	1526	18-102, 16-300, 22-300, 16-301, 2-302, 39-302, 63-302, 1-305, 78-306
Montana Dept of Commerce	**1992**	**15-1600, 16-1600, 17-1600, 6-1601, 6-1602, 7-1602, 3-1604, 4-1605**
Montana Mining Assn.	1693	9-1601
Montana Native Plant Society	1668	25-309, 2-405, 3-405, 4-405, 8-405, 9-405, 7-406, 3-407, 2-1101
Montana River Action Network	1595	6-101, 13-102, 3-300, 5-300, 22-300, 31-301, 50-301, 6-302, 64-302, 4-303, 7-303, 59-304, 13-309, 14-309, 34 -402, 32-500
Montana Trout Unlimited	1960	2-101, 6-104
Montana Wilderness Association	1220	2-101, 13-101, 35-302, 20-104, 32-301, 34-301, 48-301, 42-303, 63-304, 1-305, 2-305, 70-306, 49-309, 16-1101
Mooers, Matthew	3806	P2
Moon, Brandon	3696	P2
Moore, Brent T.	3906	P2
Moore, Danil	1844	P1
Moore, G. Terri	2246	Thank you for your comment
Moore, G.A.	2676	P2
Moore, Jr., Basil T.	2197	Thank you for your comment
Moore, Kelly & Dennis	3905	P2
Moore, Lynn	3387	P2
Moore, Regina	4181	P2
Moore, Susan C.	2198	Thank you for your comment
Morgan, Allen	3760	P2
Morgan, Cindy	1674	P2, 27-300, 6-302, 37-302, 52-304, 63-304, 2-1605
Morgan, Cyndi	2609	P2
Morre Oil, Inc.	1234	Thank you for your comment
Morris, Connie L.	1737	41-302, 10-400, 24 -401, 35 -402, 1 -403, 10 -403, 21-406, 31-500, 24-1101, 3-1200, 6-1200, 8-1301, 9-1602, 10-1700, 11-1700
Morris, Jerry	1959	Thank you for your comment
Morris, William & Fay	2240	Thank you for your comment
Morrison, Carla J.	4208	P2
Morrison, Janet C.	4207	P2
Morrison, Maria	4081	P2
Morton, Tessie	2971	P2
Morton-Gramyk, Lisa M.	3334	P2
Moseley, J.	2735	P2
Moshin, Mark	3831	P2
Mosley, Diane	1735	1-101, 32-301, 25-303, 9-309, 5-406, 19-500, 2-1101, 7-1101, 4-1200, 1-1602, 2-1602
Mosley, Milton H.	1736	1-101, 32-301, 25-303, 1-305, 19-500, 7-1101, 4-1200, 1-1602, 2-1602
Mouland, Christine	3733	P2
Moulton, Margie	3845	P2
Moy, Debra G.	2330	C

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Mudra, D.E.	3287	P2
Mueller, Jessie	3392	P2
Mueller, Ronald L.	3448	P2
Muir, Susan	3830	P2
Mulhauser, Edward	3969	P2
Mullens, Moon	3033	P2
Mullin, Steve	3458	P2
Mullins, Barbara L.	1390	10-401, 3-403, 3-404
Mulqueen, Mary	3330	P2
Murphy, Alison L.	2199	P2
Murphy, Cherie	2252	Thank you for your comment
Murphy, Dale	2511	P2
Murphy, Kathe	1763	P2
Murphy, Steve	1474	P2, 15-304, 18-304, 8-308
Murphy, Steve	2186	C
Murray, A.D.	4420	P2
Murray, Dianne	3634	P2
Murray, Marilyn	2970	P2
Murray, Nicole	2969	P2
Murrin, Daniel W.	2433	P2
Murt, David	2193	Thank you for your comment
Myers, Don & Rane	1449	1-308
Myren, Ilse	2563	P2
Nagorski, Sonia	1606	1-305
Nance, Lindsay	3888	P2
Nance, Richard & Marjorie	2214	Thank you for your comment
Nance, William J.	3382	P2
Napolitan, S.R.	2172	C, P2
Nash, Jim	1734	3-102, 1-305, 1-308, 2-1600, 6-1600, 2-1602, 2-1700
Nass, Matt	4312	P2
National Audubon Society	1935	25-303, 28-500
Natoni, Catherine	3170	P2
Natschke, Roberta	2387	C, P2
Navarre, Linda L.	3779	P2
Navarre, Steve	2355	C, P2
Neal, Micheal	2234	Thank you for your comment
Neel, Todd	4389	P2
Neff, Richard & Susan	1607	17-102, 13-301, 32-301, 25-303, 2 63-304, 1-305, 4-305, 4-1101, 2-1600, 3-1700, 3-1700
Neff, Susan & Richard A. Sylvester	3955	P2
Neille, Mona	4445	P2
Nelson, Bryn V.	3214	P2
Nelson, Curtis	1306	1-1200
Nelson, Joel A.	1199	Thank you for your comment
Nelson, Jon	1800	P1
Nelson, Kristin	1794	P1
Nelson, Nancy	2070	P2
Nelson, Scott	3146	P2
Neumann, Kathy	3978	P2
Neureuther, Chuck	3697	P2
Newbill, Tom	4397	P2
Newcomer, Diane	1732	41-302, 10-400, 24 -401, 35 -402, 10 -403, 21-406, 31-500, 24-1101, 9-1602, 10-1700, 11-1700

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Newell, Sheri	1830	P1
Nichols, Billy & Catherine Stephenson	4224	P2
Nichols, Linda	2517	P2
Nichols, Lynn	3595	P2
Nichols, Sandi	2021	P2, 30-301,63-304
Nicholson, Scott	2100	Thank you for your comment
Nielsen, Dian	2158	C
Nielsen, Erik	3151	P2
Nielson, Lanny	3312	P2
Niemi, William M.	2343	C
Niggemeyer, Paul	3076	P2
Nigro, Kim	2553	P2
Nilley, Robert	4385	P2
Nilsan, Dean	3051	P2
No Name	2677	P2
No Name	2685	P2
No Name	2356	C
No Name	2101	Thank you for your comment
Noble, Lori L.	2652	P2
Noble, William H.	2651	P2
Noirot	4226	P2
Norco	1233	9-1601
Nordgaarden, Corinna	3552	P2
Nordhagen, Bryce	3788	P2
North, Lonlie	2968	P2
Northern Lights	1988	Thank you for your comment
Northern Rockies Biodiversity Project	1355	1 -402, 32 -402
Novak, Chris	4335	P2
Nowak, Linda	1755	32-301
Noxon School Fifth Grade Class	1538	Thank you for your comment
Noyes, John	1849	P1
Nusbaum, Debb	3513	P2
Nustrum, Debra	3880	P2
Nyberg, R.S.	3582	P2
Nye, Kevin R.	1640	C, P2, 2-1101, 5-1101, 2-1600, 6-1600, 2-1602
Nyland, Jon	2132	C, P2
Nylund, Carrie	2250	P2
O'Brien, Shawn & Jennifer	4288	P2
O'Connor, Michelle	2646	P2
O'Connor, Tricia	1713	C, 2-302
O'Flynn, Alison	4002	P2
O'Hare, Paul	1326	1-305, 1-308
O'Keefe, Gerard	2900	P2
O'Leary, J.	2352	C
O'Leary, Larry	2886	P2
O'Leary, Melissa	2461	P2
O'Neil, Dick	2024	Thank you for your comment
O'Neil, Jacqueline	2022	Thank you for your comment
O'Neill, Malea	3568	P2
Oak, Don A.	2997	P2
Oakley, Melissa	4178	P2
Ober, Michael J.	1244	Thank you for your comment
Offermann, Wendy	3922	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Ogbeide, Kiersten	3379	P2
Ogden, Allen	3516	P2
Ojalt, David	3253	P2
Olander, Mark	2634	P2
Olesen, Susan	1760	P2, 1-308
Olesen, Susan	2625	P2
Oliver, Glen W.	4158	P2
Oliver, Vicki	2629	P2
Olmstead, Angela M.	4354	P2
Olsen, Eric & Erin	3091	P2
Olsen, Rosemarie	1702	Thank you for your comment
Olson, G.N.	3797	P2
Olson, Jane	1304	32-301, 2 -403
Olson, Jem	3243	P2
Olson, John A.	2326	C
Olson, Leila	2223	Thank you for your comment
Olson, Linda	2215	Thank you for your comment
Olson, Robert	3318	P2
Olson, Trish	3798	P2
Ondrey, David A.	3705	P2
Ontko, Elizabeth	3491	P2
Oppenheimer, Jonathan	1513	1-308
Orahood, David W.	2228	Thank you for your comment
Ornelas, Mindy	3886	P2
Orr, Scott J.	1505	Thank you for your comment
Orrielas, Mindy	3762	P2
Orth, Wesley A.	3041	P2
Orton, Kristina	3205	P2
Orzalli, Fred	2712	P2
Orzer, Delimarty Scott	3872	P2
Osborn, Richard	2055	C, P2, 9-100,
Osborn, Sarah	2702	P2
Osborn, Todd D.	3712	P2
Osborn, Vicky	2409	
Osfrom, Michelle	4026	P2
Osier, Connie R.	3633	P2
Ososki, Karen L.	1778	P2, 17-305
Osse, Lisa	3456	P2
Osse, Timothy J.	3454	P2
Ostby, Jami	3142	P2
Oster, Angie	3000	P2
Oster, Cammie	2999	P2
Ottenstein, Karl J.	1926	P2, 31-301, 47-301, 10-309, 47-309, 9-1602
Owens, Delia	3822	P2
Owens, M.J. & Delia	4075	P2
Owens, Mark J.	3821	P2
Owsowitz, Judy	1870	P1
Pachokle, James B.	2630	P2
Padilla, Beatrice G.	4239	P2
Palanich, Tonya	2566	P2
Palmer, Fred	2133	C
Palmer, George A.	4154	P2
Palmer, Linda	3404	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Parametrix, Inc.	1762	Thank you for your comment
Parchean, Noelle	3910	P2
Parchen, Randy & Renee	3909	P2
Parenteau, Niki	4294	P2
Pariest, George	1863	P1
Park, Chris	1745	C, P2
Parker, Douglas	4502	28-201, 29-201, 30-201, 35-201, 42-302, 13-400, 14-400, 15-400, 2 -402, 5-407, 44-500, 45-500, 10-1200, 11-1200, 13-1700
Parker, Gary	4309	P2
Parker, Jessica	4409	P2
Parker, Jim	1795	P1
Parker, John	1678	1-102, 23-102, 65-304, 1-305, 24-1101, 12-1600
Parker, Katie	3583	P2
Parker, Norma L.	1679	3-100, 22-102, 63-304, 64-304, 11-1600
Parks, Robert	3998	P2
Parochetti, Catherine	3686	P2
Parrish, Donna B.	2245	P2
Parryt, Tony	2948	P2
Parsons, Paula	4360	P2
Partoll, Linda	1718	32-301, 2-1602
Parybok, Ben	3694	P2
Parzybok, Ben	2809	P2
Parzybok, Jan	2808	P2
Pass, Diana L.	4222	P2
Patterson, James	4116	P2
Paul, Eric M.	2339	C
Paulsen-Kittleson, Leanna	1405	C, 16-302, 29-302, 1-308, 8-308, 11-308, 1-402
Payne, Deberah	2551	P2
Payne Machinery, Inc.	1230	Thank you for your comment
Pearson, Elza	1825	P1
Peck, Karen D.	1711	4-1101
Pederson, Beth	2821	P2
Pederson, Robert	2011	6-302
Pell, Thomas	2774	P2
Pelland, Kathy	4317	P2
Pelland, Ray	4188	P2
Pelland, Tag	2005	C
Penberthy, Brit	4086	P2
Pence, Dennis	2583	P2
Penland, Richard	3209	P2
Penn, Alexis	2104	Thank you for your comment
Pennington, Holly	3039	P2
Pense, Joann	2848	P2
Pense, S.	2286	Thank you for your comment
Perest, Keith	1862	P1
Perron, Marty	2929	P2
Perron, Mary	1652	Thank you for your comment
Peters, Dale	1809	P1
Petersen, Heather	4135	P2
Petersen, Kris	3089	P2
Petersen, Melanie	4453	P2
Peterson, Lana	2750	P2
Peterson, Sr., Marshall E.	4273	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Petrusky, Stephen & Madge	1721	14 -401, 24-1101
Pettersen, Harry F.	4195	P2
Pettit, Francis	2698	P2
Pettit, Helen	2696	P2
Peyton, Gordon	2427	P2
Pfalzer, Anita	1834	P1
Pfalzer, Erich A.	1753	C, P1, P2, 24-201, 53-302, 8-305, 2-1600, 6-1600, 2-1602
Pfeiffer, Ann L.	2139	C. P2
Phear, Nicolette	3445	P2
Philgar, Greg	4424	P2
Phillips, Anna	3400	P2
Piatchek, Pamela	2983	P2
Pich, Toni	2572	P2
Pick, Bonnie	4367	P2
Pick, Ruthie	4005	P2
Pickering, Michael	2460	P2
Pierce, Kelly	1285	P2
Pierce, Mark	3896	P2
Pierce, Robert	1365	Thank you for your comment
Pierce, Robert N.	2979	P2
Pierrehumbert, R.T.	1481	9-301, 20-301, 32-301, 4-306, 3 -402, 3-1101
Pike, Linda	4456	P2
Piltule, Ben	1888	P1
Piltule, Reta	1886	P1
Piper, Gretchen	3132	P2
Piper, Lynn	2906	P2
Pitterle, Sarah	1890	P1
Pittorlepirt, Marianne	1889	P1
Pitts, Shelly	2373	C
Pitule, Anne	1887	P1
Plant, Vic	1952	20-301, 32-301, 4-304
Pleasants, Clancie	3844	P2
Pleass, C.M.	2171	C, P2
Pleass, Mick	1404	13-301, 20-301, 4-304, 6-304, 10-304, 36-304, 72-306
Pleass, Monica M.	2182	C
Plummer, Truman	3676	P2
Poirier, Roger	3438	P2
Pole, Chris	2485	P2
Polin, Jessie	4032	P2
Ponsness, Pam	3332	P2
Poplawshy, Al & Prorak, Diane	1268	1-305, 1-308, 2-1101, 2-1600
Porath, Amy	2952	P2
Porter, Ann Riffe	4361	P2
Posewitz, Jim	1295	1-100, 1-308, 4-401, 2-1101
Post, Jenni	1964	P2
Poston, Melisa	3917	P2
Poston, Melita	2742	P2
Poten, Constance J.	3441	P2
Pouts, David	3746	P2
Powell, David R.	4253	P2
Powell, Shen	4259	P2
Prach, Edwin	1910	P1
Pray, Nicole	3997	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Presler, Mavis	3260	P2
Prez, Tom	2628	P2
Price, Cathy	2102	Thank you for your comment
Price, Conduce	1518	9-1601
Price, Janine	1954	Thank you for your comment
Price, Karen	1471	C, P2
Price, Lewis	3304	P2
Price, Martin J.	1428	9-1601
Price, Shirley A.	1367	9 -401, 9-1601
Price, Siobhan	4133	P2
Pries, John R. & Myrtle L.	4229	P2
Profitt, Mark	1938	9-1601
Proft, Joanne	2555	P2
Proft, Norm	2554	P2
Prohasiga, Thomas	4041	P2
Propp, Melinda	3790	P2
Pruffler, Steven	2370	C
Pryze, David	2896	P2
Pucci, Adam J.	2803	P2
Pucci, John	2582	P2
Puls, Tyson R.	3891	P2
Pumco, Inc.	1256	Thank you for your comment
Quigley, Saul	3532	P2
Raed, W.F.	2269	Thank you for your comment
Raftery, Jr., James A.	2725	P2
Rain, Richard A.	4255	P2
Rainey, Harold	4390	P2
Rains, Richard A.	2791	P2
Rajala, Sandy	3386	P2
Ralph, Richard P.	3482	P2
Ramey, Daryl	3936	P2
Ramko,Robert	4418	P2
Rammler, Bernard S.	2078	Thank you for your comment
Ramos, L.	3381	P2
Ramsey, Thomas	4095	P2
Randall, Norman	2779	P2
Randall, Patricia J.	2889	P2
Randall, R. Bradley	2888	P2
Randau, Don	3502	P2
Ranemckeon, Paula	1282	P2, 1-308
Ranger, Michael	1246	P1, 6-100, 61-304, 2-401, 2-1100, 2-1601, 2-1602, 1-1605
Rankin, Laura	3789	P2
Rash, Rayleis L.	2617	P2
Rask, Rayleigh	4337	P2
Rasmussen, David	4062	P2
Rasmussen, David J.	3860	P2
Rasmussen, Kurt	3310	P2
Ratcliff, Lisa	3111	P2
Ray, Chad D.	3635	P2
Ray, Gloria	1450	Thank you for your comment
Rayson, Arden	1621	4-1601
Rayson, Georgia	1658	9-1601
Razland, Beverly	2654	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Rebella, Linda	3475	P2
Redding, Julie	2624	P2
Redding, Yvonne	2431	P2
Reece, Cliff	2966	P2
Reed, Amanda	4295	P2
Reed, Anna	2845	P2
Reed, Ritta	1710	Thank you for your comment
Reed, Ron	4014	P2
Reeds, Christine	3899	P2
Reeves, Brian	3168	P2
Regier, Katherine	1609	P1
Regnier, Betty L.	3740	P2
Reichold, Dustin	3547	P2
Reichold, Michele	3239	P2
Reid, Angela	3027	P2
Reid, Scott & Diana	2028	P2
Reina, Betty	4338	P2
Reinbold, Eddie	2998	P2
Reinbold, Julie	3255	P2
Reine, Michelle	4108	P2
Reisenauer, Dave	4061	P2
Reisenauer, Mary	3525	P2
Reishus, Bonnie	1371	P1, 3-100, 2-101, 3-101, 1-102, 3-102, 4-103, 13-301, 32-301, 49-301, 32-302, 35-302, 50-304, 63-304, 5-400, 8-500, 24-1101, 25-1101, 2-1600, 6-1600, 1-1602, 2-1602
Reishus, Tim	1493	Thank you for your comment
Remitz, Janet & Carmen	4352	P2
Ren, Kim	4435	P2
Renfrew, Malcom & Carol	2004	Thank you for your comment
Renfro, Carl	3175	P2
Renk, Nancy F.	1642	P2, 30-300
Renk, Naomi	2855	P2
Renk, Thomas B.	1680	13-301
Reoch, Joyce	4136	P2
Rerdy, Eric	2175	C
Rester-Keaton, Juli	3264	P2
Reuter, Janet K.	4231	P2
Revlock, Joseph	2626	P2
Reynolds, Steve & Sharon	1360	P2, 37-304, 1-308, 2-403, 15-500
Reynolds, Tim	2926	P2
Rhodes, McGregor	1649	1-308
Riall, Beth	3522	P2
Rich, Jeff	1772	C, P2, 23-102
Rich, Linda	1451	P2
Richard, Don	3649	P2
Richards, Joseph M.	2581	P2
Richards, Sandi	3731	P2
Richardson, Scott	2363	C
Richman, Clark	4057	P2
Richmond, Douglas P.	2082	P2, 24-104, 13-301, 27-301, 63-301, 66-304, 33-305
Rickert, Heidi	3024	P2
Riddell/James	4473	P2
Rider, Michael F.	3985	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Ridgery, Patti	2281	Thank you for your comment
Ridgway, Eric	2656	P2
Ridley, Barbara	3394	P2
Rief, Dustin	2863	P2
Ries, Linda	2239	Thank you for your comment
Riewe, H.	2484	P2
Rinck, Diane	2984	P2
Ringland, Kim	3292	P2
Ringland, Kristi	3364	P2
Ripley, Dale	3353	P2
Rirch, Jacqueline A.	2556	P2
Ristenpart, Diana	2338	C, P2
Rister, Richard & Carla	1382	Thank you for your comment
Riter, Jane	4306	P2
River Care	1504	P2, 2-101, 5-102, 7-102, 8-102, 9-102, 2-104, 13-104, 14-104, 26-104, 9-300, 11-300, 18-300, 21-300, 13-301, 38-301, 45-301, 21-302, 23-302, 24-302, 27-302, 33-302, 39-302, 54-302, 55-302, 58-302, 64-302, 65-302, 67-302. 71-302, 5-303, 10-303, 14-303, 15-303, 20-303, 42-303, 46-303, 41-304, 46-304, 47-304, 7-304, 10-305, 13-305, 18-305, 58-306, 61-306, 100-306, 6-402, 2-1700
Rivers, Richard	1443	32-301, 1-305, 2-403
Robbins, Jackie	4103	P2
Robbins, Kathy	1807	P1
Robert, Cheri/Lambrecht, Seth	1632	P1, 2-101, 15-500
Roberts, B.	2304	C
Roberts, Cathy	3862	P2
Roberts, Chrissy	2405	P2
Roberts, Dennis	1586	P1
Roberts, Dexter	3439	P2
Roberts, Katherine C.	1583	P1
Roberts, Lori	2978	P2
Roberts, Randy	1581	P1
Roberts, Sandra	4448	P2
Roberts, Sheila	2013	C, P2
Robertson, Marilyn & Alan	2085	Thank you for your comment
Robey, Linda	3306	P2
Robinson, Carol E.	3207	P2
Robinson, Emily	4184	P2
Robinson, John	2469	P2
Robinson, Mary	2138	C
Rocco, Patricia L.	1945	P1
Rodgers, Kate	3030	P2
Roe, Judy A.	2479	P2
Roe, Larry	2480	P2
Roemhild, George	2449	P2
Rogers, Forbes	2435	P2
Rogers, Joey	3799	P2
Rogers, Kelly	3800	P2
Rogers, Ken	4249	P2
Rogers, Marylin	3829	P2
Rogers, Patricia	4290	P2
Rohan, Nicole	4467	P2
Rollins, Jeanette	3317	P2
Ronan, Sasha	3236	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Rookey, Steven D.	3704	P2
Roop, Patty	3397	P2
Rorke, Marleve	4069	P2
Rose, Ken	3066	P2
Rosenbaum, E. Scott	3130	P2
Rosenberg, Barry	2745	P2
Rosenberg, Catherine J.	2773	P2
Rosenberg, Rhoda	3019	P2
Rosenberger, Jennifer	2450	P2
Rosenberger, Norma	3625	P2
Rosenboom, Kelly	2491	P2
Rosholt, Darrell A.	2682	P2
Rosholt, Linda L.	2681	P2
Roskelley, John	1305	1-305, 2-1101
Ross, Bruce & Barbara	1651	2-1600, 2-1602, 4-1602
Ross, Julie	1311	Thank you for your comment
Ross, Mary Kay	4433	P2
Ross, Penny L.	3858	P2
Ross, Shirley	2091	C
Ross-Thompson, Cherie	3467	P2
Rossi, Jenna	3824	P2
Rosteck, Jamie & Barb	3763	P2
Roubicek, Dennis	2116	Thank you for your comment
Roubicek, Janet	2029	Thank you for your comment
Rounsville, Sandra	3003	P2
Rounsville, Sarah	3474	P2
Rourd, Steve	3390	P2
Routro, Roy & Donna	2018	Thank you for your comment
Rovig, David	1303	9-1601
Rowan, R.W.	3832	P2
Rowland, Edward	1422	2-1101,
Roy, Tom	3449	P2
Rudolph, Ethelyn M.	3258	P2
Run, Betty L.	3319	P2
Runa, Barbara	3933	P2
Runa, Tom	1290	C, 32-301, 113-306, 2-1101, 1-1200, 4-1200, 1-1700
Ruprecht, Nancy L.	3080	P2
Rush, Keith	1271	C, 11-300, 26-303, 1-308, 1-1603
Russell, Jim	2701	P2
Russell, John R.	1441	Thank you for your comment
Russell, Kelly	2683	P2
Russell, Paige	4417	P2
Rust, John C.	2497	P2
Ruster, Jodie	4449	P2
Rutzke, Jess	3344	P2
Ryan, Jon	2541	P2
Ryan, Lynda	2512	P2
Ryan, Melissa	2522	P2
Ryan, Peter Crowley	3679	P2
Ryan, Tonya	2488	P2
Ryberg, Meghan	3889	P2
Ryder, Cal	1650	31-201, 1-308, 1-1602
Sabella, Marilyn	1466	C, P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Sadowski, Stan E.	2818	P2
Safety Master	1264	9-1601
Sage, George	1625	7 -402
Sain, Rebecca S.	2321	C
Sallmon, Helga R.	2606	P2
Sample, Katharyne	2442	P2
Sampson, David	1312	Thank you for your comment
Sand, Laurel	2231	P2
Sanders County Commissioners; Cherie Hooten	**1973**	**Thank you for your comment**
Sanders, Janet L.	1308	1-305, 1-403, 24-1101
Sandpoint Chamber of Commerce	1457	14-302, 29-302
Sandpoint Forest Watch	11	P2, 37-304, 127-306, 17-500, 18-500
Santa, Lee	3875	P2
Sarchis, Jan	1448	Thank you for your comment
Sargent, S.	1909	P1
Sauer, Karen	2395	C
Sauer, Kirk	2380	C
Saunders, Fred R.	1577	P1
Saunders, Kathy	3526	P2
Saunders, Ken	3524	P2
Saunders, Norm & Brenda	2180	C
Saur, Bill	2414	P2
Savage, Lena	2686	P2
Sbieca, Frank	3663	P2
Scanlan, Tracey	4071	P2
Scarioni, Russell	2524	P2
Scatchard, John S.	2129	C
Schafer, Thomas	3014	P2
Schaffer, Matt	1462	P2
Scharb, David	3296	P2
Scharbel, Steve	3442	P2
Scharpf, Lou	1715	C, P2
Schaub, David	4023	P2
Schaudt, Bill	3423	P2
Scheel, Jeff	3651	P2
Scheimeister, Marie E.	2650	P2
Schelley, Jerome H.	3481	P2
Schelling, Ramona	2221	Thank you for your comment
Schellinger, Thomas E.	2334	C
Schenck, Russell	2730	P2
Scherr, Les & Connie	4350	P2
Schiersch, Janet	2521	P2
Schifering, James	2923	P2
Schlegel, Charles	3826	P2
Schman, K. R.	4375	P2
Schmictig, Dominik	761	1-308
Schneider, Amy Am.	2379	C
Schnityler, Kristee & Jason Brown	4240	P2
Schoeffel, Connie	4043	P2
Schofield, Donald & Kathy	3853	P2
Scholtz, Dieter	1689	10-300, 1-1603
Schombel, L.F.	3440	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Schrader, Mac	1478	9 -401
Schrieber, Matt	4033	P2
Schrimsher, Bobby	3127	P2
Schrock , Larry G.	2429	P2
Schuessler, Betty	3295	P2
Schuibert, Roger	2665	P2
Schultz, Ellen	2540	P2
Schultz, Stephen	3156	P2
Schwan, Bryony	1793	P1
Schwartz, Kimberly	2519	P2
Schwilling, Steve	2611	P2
Schyoeder, M.L.	1811	P1
Scofield, Charlotte	1767	Thank you for your comment
Scoles, Wade	3343	P2
Scott, Paul	3654	P2
Scott, Sharon	2303	C
Scutier, Patricia	2939	P2
Seashore, Karen	2009	C, P2
Seeby, Duncan	4027	P2
Seidl, Dick	3727	P2
Seifert, James	1411	1-303, 9-1601
Seiveno, Donald H.	2305	C
Sellars, Tricia	3723	P2
Sentz, Linda	1868	P1
Seratt, Gayle	1821	P1
Seratt, R. Kent	1944	P1
Servais, Bill	2438	P2
Sett, R.C.	3772	P2
Sevenich, Eli	2927	P2
Severson, Mark	4164	P2
Sevyn, David	2641	P2
Shackelford, Wendell & Mary	2189	P2
Shackelford, Wendell	4064	P2
Shaffer, Rod E.	3648	P2
Shaha, Anne G.	4358	P2
Shaha, Annie	1284	1-308
Shamat, Justin	2950	P2
Shari, Arlo	3437	P2
Sharley, Mark	1903	P1
Sharp, Cameo	1551	1-308, 10-401
Shaw, Carol	4463	P2
Shaw, Ruth	2560	P2
Shaw, Steven K.	2713	P2
Shearer, Mark & Misa	3206	P2
Shears, Duane	3293	P2
Sheets, Mark	1485	P1, 6-302, 45-306
Sheffield, Carolyn	4364	P2
Sheilds, Paul	1924	Thank you for your comment
Sheldon, Jim	2501	P2
Sheldon, Robin	2500	P2
Shelly, Harriette	3341	P2
Shelton, Alex	3159	P2
Shelton, Andrew	3158	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Shelton, Debra	3149	P2
Sherman, Mr. & Mrs. Richard	2049	Thank you for your comment
Sherriffs, Mary	2902	P2
Shoemaker, Brian K.	3272	P2
Shook, Pauline	2213	Thank you for your comment
Showers, Kathy	3842	P2
Shropshire, Darcy	3065	P2
Shull, Bette	1278	9-1601
Sidwell, John	2290	C
Sieber, Margaret	2361	C
Sieckmann, Lee	3946	P2
Siedentop, Dorothea	3540	P2
Siedentop, Susie	1245	P2, 11-300, 7-500, 1-1100, 7-1101, 24-1101, 1-1602, 1-1604
Sierra Club Montana Chapter	1696	2-101, 23-500
Silligem, Mike	2771	P2
Silver, Margot & Richard	3092	P2
Silverngle, Michael C.	2360	C
Silverrale, Michael	3376	P2
Simmons, D.C.	2833	P2
Simmons, Robert L.	3425	P2
Simmons, Virginia	2831	P2
Simons, Gerry	4465	P2
Simonson, Ben Sr.	1386	63-304
Simonson, Ben D. Jr.	1383	63-304
Simonson, Judith M.	1389	2-201, 7-300, 41-301, 44-303, 48-303, 63-304, 1-305, 16-400, 24-1101, 2-1600, 3-1600, 6-1600, 2-1602, 2-1604, 3-1700
Simonton, James V.	2919	P2
Simonton, Suzanne J.	2918	P2
Simpson, Dorothy	3112	P2
Simpson, Julie D.	3816	P2
Singleton, Nancy	3521	P2
Sisemore, Amy & Tim Romas	3907	P2
Skjersaa, Terry	3693	P2
Skogstad, Ronald J.	3671	P2
Skyelander, Ken	3677	P2
Skyster, Dave	3937	P2
Sleyster, David	1321	C, 4-304, 7-308
Sleyster, Tina	2227	Thank you for your comment
Sloan, Mary	1872	P1
Slora, Kathryn	1381	3-100, 4-102, 1-302, 11-302, 8-308, 2-1700
Slovais, Mark E.	4052	P2
Slutz, Yvonne	2002	Thank you for your comment
Smith, Barbara	4458	P2
Smith, Bill	3883	P2
Smith, Bonnie	2436	P2
Smith, Carey	3621	P2
Smith, Chuck	3422	P2
Smith, Connie	1818	P1
Smith, Cynthia	4267	P2
Smith, Dani	4211	P2
Smith, Donald L.	1923	47-302, 27-303, 1-305, 7-500, 21-500, 7-1101, 24-1101, 3-1200, 6-1200, 1-1602, 2-1602, 3-1700
Smith, Douglas A.	2307	C

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Smith, Elizabeth I.	1833	P1
Smith, Gayle	3121	P2
Smith, Glenn E.	1495	Thank you for your comment
Smith, Greg	3470	P2
Smith, Horace D. & Valerie	4320	P2
Smith, Jeff	2673	P2
Smith, Julie	2462	P2
Smith, Karen H.	4067	P2
Smith, Karla	1420	2 -403
Smith, Kris	3658	P2
Smith, Luke	1542	24-1101
Smith, Lynn	3636	P2
Smith, Mary	1610	Thank you for your comment
Smith, Natalie	4454	P2
Smith, Nolan	3774	P2
Smith, Norm	4100	P2
Smith, Norman	1774	P2
Smith, Peter	3167	P2
Smith, Randy	2243	Thank you for your comment
Smith, Richard L.	1654	32-301, 1-305
Smith, Riley	4457	P2
Smith, Robyn	3135	P2
Smith, Virginia	3269	P2
Smith, William	3734	P2
Smyth, Keith	3529	P2
Snedeker, Sheila & Brad	1529	P1, 58-302, 62-304, 1-308, 8-400, 2-1600
Snyder, Colleen	1657	4-1601
Snyder, Dan	1659	1-305, 4-1601, 9-1601
Snyder, Elaine	1516	P1, 24-1101
Snyder, Harold	1671	4-1601
Snyder, Shirley	1619	9-1601
Solce, Ed	1568	P1
Solce, Joe C.	4118	P2
Solce, Mathilde	1567	P1
Sommer, Stephan & Lorna	2020	Thank you for your comment
Sonnichsen, Richard C.	1444	Thank you for your comment
Soper, Wayne	3125	P2
Southworth, Arlene	3370	P2
Souza, Ann	4324	P2
Spacapan, Lois/ Gallager, Jack	1996	14-300, 1-1605
Sparks, Jewlia	2623	P2
Speare, Jonathan	1673	P2, 18-102, 12-201, 17-300, 3-301, 16-301, 21-301, 23-301, 39-302, 62-302, 18-303, 51-304
Spears, Mike	4443	P2
Spencer, Bruce M.	4055	P2
Spencer, Melissa	2967	P2
Spencer, Victor	4342	P2
Spinney, Dave/Cassie/Ben/Becky	2041	Thank you for your comment
Spitz, Ray	3307	P2
Spivey, Daniel P.	4264	P2
Spivey, Evelyn	4265	P2
Spohn, Connie	2849	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Spokane County Commissionner; John Roskelley	**1995**	**Thank you for your comment**
Spokane Mountaineers	1683	Thank you for your comment
Spoto, Alan	2714	P2
Spratt, Lisan	3057	P2
Springer, Bob	1340	22-300, 36-303
Springer, Sara Lou	1345	P1, 11 -401, 6-1600
Spurling, Mike	3144	P2
St. John, Loran R.	3238	P2
Stanley, Melvin	4174	P2
Stannard, Holly	4411	P2
Stansell, Betsy	4245	P2
Stanton, Roger & Rona	4037	P2
Stanz, Milt	2211	Thank you for your comment
Stapleton, Larita	3415	P2
Stark, Ronald W.	4204	P2
Starr, Jean	3622	P2
Steen, Donna	2653	P2
Steen, Gretchen	2105	C, P2
Stefano, Steve	1728	4-406, 12-500
Stein, Tim	3596	P2
Steiner, Fredrick B.	2030	Thank you for your comment
Steines, Tim	3053	P2
Steinke, Don	2445	P2
Steinway, Carol	3542	P2
Stenberg, Linda	2557	P2
Stenberg, Steve	2558	P2
Stene, Phyllis	2823	P2
Stene, Raymond	2822	P2
Stephens, Jill	4330	P2
Stephens, Ken	1502	3-406, 2-1200, 9-1601
Stephenson, Harold O.	2147	C
Stern, Bill	1520	2-101, 1-305, 1-308
Stern, Sydnie	1777	P2, 4-1200
Steve's Import Auto Service Inc.	2053	Thank you for your comment
Stevens, Alan	3847	P2
Stevens, Brett	2805	P2
Stevens, Patricia	1406	C, P2
Stevens, Sara	2964	P2
Stevienson, Charles K.	3431	P2
Steward, Carolyn J.	2689	P2
Steward, Joe N.	2691	P2
Stewart, Bonnie R.	3099	P2
Stewart, Michael C.	4316	P2
Stier, Sam	1629	22-500
Stifter, Elissa	2444	P2
Stinton, Joel	4035	P2
Stiritz, Jennifer	1716	Thank you for your comment
Stitsel, Marty	3323	P2
Stockman, Keith	1792	P1
Stockman, Lynne M.	3085	P2
Stockstill, Michelle	3002	P2
Stockwell, Frank	1313	2-110

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Stokes, Shirley	2721	P2
Stone, Jane Arnot	2580	P2
Stone, Landon A.	2448	P2
Stovall, Becky	1342	Thank you for your comment
Stowell, Helen	1309	32-301, 1-403, 24-1101
Stratton, Jim	1439	32-301, 1-305
Strayer, Daniel J.	3150	P2
Street, Kathryn F.	3094	P2
Strenkel, Dan	2925	P2
Streubel, Dan	3699	P2
Stroup, Bill	2856	P2
Stuckey, Jay	1344	P1, 27-300
Stuckey, Tony E.	1580	P1
Sturdevant, Janet	2185	C, P2
Sturm, Nadine	4077	P2
Stutzman, Linda	3237	P2
Suans, Joan	2935	P2
Suhfras, Gail & John	1353	2-1101
Sullivan, Anne	1892	P1
Sullivan, Mark	1781	3-102, 23-102, 37-303,1-305
Sullivan, Mary Ann	1486	P2, 1-308, 10-401, 121-306
Summa, B.	3497	P2
Summer, Fran	2631	P2
Summerhill, Susan	3809	P2
Sundershaw, Michael J.	2782	P2
Sunshine Mining & Refining Company	1257	9-1601
Suppiger, Gerhort	3836	P2
Susnis, Cindy	3874	P2
Sutton, Joan C.	3067	P2
Sutton, Tracey	1473	Thank you for your comment
Sutton, Tracey	2781	P2
Swan, P.J.	2790	P2
Swann, Robert	1425	1-308, 1-1200
Swanson, Cindy	4098	P2
Swanson, Deborah	3884	P2
Swanson, Robert	1423	32-301, 1-305, 1-308, 10 -401
Swanstrom, H.	4215	P2
Sweaney, James	1905	P1
Sweet Grass County Recreation Assoc.	1514	1-305, 9-1601
Sykes, Tom	3688	P2
Syres, Steve	1412	P2
Szybnski, Tracie	3074	P2
T Jr.	2069	Thank you for your comment
Taber, Richard D.	1524	Thank you for your comment
Taft, Jay	2493	P2
Taft, June	3088	P2
Taillon, Leslie	3200	P2
Tajan, Tyler N.	3235	P2
Tallant, Roberta	4464	P2
Tammaro, Vince	1519	Thank you for your comment
Tapp, Helen	3061	P2
Tarlton, Joann & Penny Maynard	4348	P2
Tate, Dennis	2115	Thank you for your comment

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Tauber, Cassie	3785	P2
Tauber, Linda	3784	P2
Taylor, Aujsha	2266	P2
Taylor, Dixie	4398	P2
Taylor, G. Elaine	1388	9-1601
Taylor, Katheryn M.	2839	P2
Taylor, Mark S.	3480	P2
Taylor, Mary	3427	P2
Taylor, Shawn	2481	P2
Taylor, Shreon L.	4343	P2
Tedder, Sonny	2065	27-201, 1-305
Tedexo, William T.	3302	P2
Teed, David	2348	C
Teed, Sandra	2393	C
Tell, Dana	3684	P2
Templeton, Lois	4031	P2
Tennissen, Jayme	2466	P2
Thackor, Laurie	2571	P2
Thayer, June	1289	63-304, 2-1601
Thayer, Susan	1614	Thank you for your comment
Thibault, Dennis & Carolyn	1480	1-308
Thomas, David	2922	P2
Thomas, Don	2866	P2
Thomas, Josh	3282	P2
Thomas, Shane	3347	P2
Thomas, Stanley W.	2062	Thank you for your comment
Thomas, Tim	3374	P2
Thomas, Timothy C.	3585	P2
Thompson, Clarice	3070	P2
Thompson, Cole	1773	Thank you for your comment
Thompson, Elaine	3216	P2
Thompson, Erich S.	2720	P2
Thompson, Gayle	4365	P2
Thompson, Jack	1298	32-301, 1-305
Thompson, Kirk	1628	P1
Thompson, Kristi	4347	P2
Thompson, M.	2761	P2
Thompson, Monte	3920	P2
Thompson, Royal	2800	P2
Thompson, Steve	1896	P1
Thorell, Lennart	3495	P2
Thoreson, Randall & Jody Curran	2317	C, P2
Thornton, Jennifer	3873	P2
Thornton, Wendy	2664	P2
Thorpe, Ben	3501	P2
Thorson, Walter R. & Mary E.	4202	P2
Thunlow, Peggy J.	2095	Thank you for your comment
Thurgood, Lynda L.	3680	P2
Thurpe, Jon	3620	P2
Thurston, Patricia T.	2294	Thank you for your comment
Thurston, Robert D.	2296	C
Ties, Vinny	2190	Thank you for your comment
Tieton, Melisa	3745	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Tiffany, Gregg	3781	P2
Tighe, Anne Marie	2378	C
Tighe, Michelle	4497	Thank you for your comment
Tillberg, Nancy	2121	C
Tillisch, Tom	2280	P2
Tillisil, Tom	2271	Thank you for your comment
Tinder, Amber	4072	P2
Tinder, Jean	4121	P2
Tites, Patricia	1465	P2
Titlisch, Tom	4036	P2
Titus, Ross	1851	P1
Titus, Tria	2336	C
Tobin, Doug	3719	P2
Tobin, Pam	3718	P2
Todt, Kathy	3196	P2
Tolle, Amy L.	2648	P2
Tolle, Roger R.	2753	P2
Tomt, Mike G.	2584	P2
Tonhofer, Dennis	3787	P2
Tonkyn, Carol J.	2694	P2
Toomey, Lorene	2531	P2
Torgerson, Alan	4171	P2
Torigoe, Ann	3629	P2
Touo-Grothe, July L.	3037	P2
Towne, Anthony	2688	P2
Towne, Audrey J.	2690	P2
Townsend, Loren R.	3518	P2
Tozzi, Tom	2871	P2
Trejos, Bruce A.	3469	P2
Tri-State Implementation Council	**1352**	**7-308, 8-308**
Trick, Jill	1470	4 -402
Trigg, Nigel	2912	P2
Trout Unlimited	1263	9-301, 9-302, 4-308
Trout Unlimited, Montana Council	2058	7-100, 11-301, 13-301, 32-301, 1-305
Troy & Troy Rural Vol. Fire Department	**1392**	**Thank you for your comment**
Troy Business & Professional Association	1238	9-1601, 3-1603
Troy Chamber of Commerce	1611	9-1601
Truby, Bill	2144	C
Truby, Rosalie	2604	P2
Tucker, Tim	4322	P2
Tuholske, Jack R.	1323	Thank you for your comment
Tulloss, Bruce	3537	P2
Tuqua, Peggy	2369	C
Turk, Lawrence	1222	Thank you for your comment
Tutt, David M.	3073	P2
Twinbull, Travis	4216	P2
Tyler, Karen A.	2622	P2
Tyson, Ken & Laurie	2276	Thank you for your comment
Tyson, Ken	2843	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
U.S. Environmental Protection Agency	**1214**	**5-100, 10-100, 2-101, 9-101, 19-102, 20-102, 21-102, 28-102, 2-104, 7-104, 8-104, 9-104, 7-200, 7-201, 8-201, 1-300, 2-300, 3-300, 7-300, 8-300, 1-301, 2-301, 4-301, 12-301, 19-301, 26-301, 32-301, 35-301, 42-301, 44-301, 52-301, 19-302, 44-302, 45-302, 63-302, 2-303, 17-303, 19-303, 24-303, 29-303, 32-303, 33-303, 39-303, 42-303, 2-304, 3-304, 4-304, 8-304, 11-304, 13-304, 14-304, 17-304, 19-304, 27-304, 29-304, 33-304, 41-304, 42-304, 43-304, 54-304, 55-304, 57-304, 64-304, 67-304, 1-305, 17-305, 1-306, 23-306, 28-306, 29-306, 38-306, 41-306, 42-306, 48-306, 55-306, 62-306, 64-306, 71-306, 76-306, 83-306, 102-306, 103-306, 114-306, 116-306, 1-307, 3-308, 7-308, 8-308, 27-309, 28-309, 30-309 ~ 37-309, 50-309, 10-1602**
Ul, Ben	2575	P2
Umphress, David	3290	P2
University of Idaho; John Ratti	1989	3-400
Unknown Speaker	1986	Thank you for your comment
Utcraft, Sherry	3770	P2
Vail, Curt & Pamela	2016	Thank you for your comment
Van Dellen, Clarence	2667	P2
Van Dusen, Ruth A.	2525	P2
Van Gundy, Darcy	4281	P2
Van Horne, Steve	3725	P2
Van Lien, Dee	4214	P2
Van Lieu, Dee	4399	P2
Van Ooyen, Jolanda & Randy	1764	P2, 25-303, 1-308
Vandeboncoeur, James P.	2111	Thank you for your comment
Vandersande, Jaques & Elaine	1237	1-102, 45-303, 1-305
Vanek, Buffy	3147	P2
Vanfossen, Roger & Monica	1373	P2, 9-100, 32-301, 6-401, 1-1600
Vanguard Research	2071	13-301
Vankirk, Pamela	2996	P2
Varah, Robert	3049	P2
Velacul, Terry	2944	P2
Veraniam, Barbara	1280	C, 32-301, 1-308
Verbains, Rhea	4356	P2
Verbeck, Mary	2166	C
Vest, Eric	4236	P2
Vicari, Deborah	1681	P2, 39-302, 1-308, 7-308, 8-308, 1-1600
Vincent, Anthony	4289	P2
Vincent, Rachel	1331	32-301, 1-305
Vitale, Frank	1891	P1
Vivian Fran K.	3507	P2
Vivian, Gwen H.	3506	P2
Vlahovich, Jerry	4439	P2
Vogel, Jeff	3512	P2
Vogel, Paul	2251	Thank you for your comment
Voglewede, Mary T.	2353	C, P2
Volberding, James E.	1368	Thank you for your comment
Volkenand, Anastazia	2827	P2
Volz, Paula D.	2892	P2
Von Roemer, Christine	2532	P2
Von Voltinburg, Jennifer	4296	P2
Vonbank, Joan	4190	P2
Voorhees, Ron & Susan	4307	P2
Vriale, Richard	4205	P2
Vrigle, Richard	3367	P2
Vroman, Marc	4243	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Wagers, Laurel	2073	Thank you for your comment
Wagoner, Mike	3987	P2
Wakefield, Linda	4336	P2
Wakeley, Frank	1727	C, P2, 7-1101, 24-1101, 9-1602
Wakeley, Jesse	1941	9-301, 1-305, 7-308
Wakeley, Valerie	2205	P2, 39-302, 47-302
Walden, Chris	3281	P2
Waldenberg, Carol	1418	32-301, 1-305
Waldher, Myra	1302	Thank you for your comment
Waldren, Carrie	4286	P2
Wales, Pam	3814	P2
Walker, Barbara	2335	C
Walker, Harlan	3754	P2
Walker, Harold	3231	P2
Walker, James	1801	P1
Walker, Paul	4285	P2
Wall, David R.	1500	32-301
Wall, Laurelie B.	2671	P2
Wallace, Barbara J.	2314	C, P2
Wallace, Jack	1731	5-303, 25-303, 9-1602
Wallace, Sharon	1566	P1, P2
Walls, Rebecca	4250	P2
Walsh Family	2770	P2
Walsh, Lynn	2870	P2
Walsh, Vicki	3396	P2
Walton, Kate	1402	P2, 7-308, 8-308
Wanamaker, Joan	2704	P2
Ward, Bob	1410	1-308, 2-1600, 6-1600, 2-1602
Ward, Carol	2092	Thank you for your comment
Ward, Dan	1631	P1, P2, 2-1101,
Ward, Jeffrey	3494	P2
Ward, Jeffrey	3895	P2
Ward, Timothy	1515	1-305, 11-500, 2-1101, 24-1101
Waring, Philip	3623	P2
Warman International, Inc.	1275	9-1601
Warner, Kenneth J.	3670	P2
Warnick, Jon	1845	P1
Warren, Wes	3471	P2
Washington Water Power	1779	13-102, 30-102, 31-102, 11-300, 5-301, 34-304, 45-304, 63-304, 1-305, 82-306, 119-306, 10-309, 43-309, 11-402, 35-402
Washington Water Power	1292	Thank you for your comment
Wasserman, Dana	1377	1-308
Wathers, Robert J.	3780	P2
Watkins, Brenda	4412	P2
Watkins, Hiana	2783	P2
Wats, Karen B.	2179	C
Watson, Kevin M.	2238	P2
Watson, Mark	3139	P2
Watson, Troy & Jeron	2340	C
Watson, Vicki	2066	38-201, 1-305, 54-306, 56-306, 113-306, 137-306
Watt, David W.	2230	Thank you for your comment
Watt, Dorothy A.	2229	Thank you for your comment
Watt, Fern	3038	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Weaselhead, Joe	3678	P2
Weatherford, Jason/Schafroth, Don & Nancy	3943	P2
Weathers, Mary	1724	1-305, 24-1101
Weber, Gary	1720	25-303
Weber, Greta	4340	P2
Weber, Julie	3682	P2
Weber, Ryan	4087	P2
Webster, Jack & Nita	1479	Thank you for your comment
Weiner, Ed	3161	P2
Weins, Gary	1981	Thank you for your comment
Weissman, Ellen	1472	P2
Welch, Ed	2482	P2
Welch, Jennifer	4339	P2
Welch, Lois	1605	Thank you for your comment
Welling, Richard & Joann	2033	Thank you for your comment
Wellman, Chris	1232	1-305
Wells, Jenny	3773	P2
Wells, Lynn	2249	Thank you for your comment
Wells, Lynn	2483	P2
Wells, Sara	4149	P2
Weltz, Joe	1437	Thank you for your comment
Wends, Nick	3210	P2
Wentner, Kenette	2920	P2
Wentz, Jevelyn J.	4051	P2
Wern, Linda	2344	C
Werner, Carol	3675	P2
Werner, Craig & Lea	1421	24-1101
Werner, Kirwin	1975	P2
Werry, E.V.	4130	P2
Wescott	2128	C
Wescott, Steven	2261	Thank you for your comment
West, Steve	2368	C
Western Environmental Trade Assn.	1692	9-1601
Westlund, Esther	1487	Thank you for your comment
Wethuer, Vincent	2796	P2
Wetz, David	4304	P2
Wetzel, Shirley	2881	P2
Wheale, Kerstin	2068	P2
Wheeler, Jim	2222	Thank you for your comment
Wheeler, Vaughnette	3983	P2
Wheelwright, Karen	3573	P2
White, Annabel	3185	P2
White Buffalo Woman	2151	C
White, Chris	1417	C, P2, 1-308, 2-308
White, Eric	2463	P2
White, Jake	3975	P2
White, Jim	2890	P2
White, Linda	2464	P2
White, Linda	3653	P2
White, Nancy	3163	P2
White, Patricia	2980	P2
White, Tom	1920	Thank you for your comment
Whitesell, Steve	4252	P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Whitham, Isaiah	4400	P2
Whitney, Linda S.	2847	P2
Whitney, Pamela	3250	P2
Whitney, Rory	4074	P2
Whitson, Bill	2275	Thank you for your comment
Whitson, Nita	2265	Thank you for your comment
Whitten, Karen L.	3221	P2
Wickham, June	3560	P2
Wickman, Jack	3498	P2
Wiek, Melissa A.	1717	Thank you for your comment
Wight, Maralyse	3802	P2
Wilcox, Diane	2807	P2
Wilcox, Gardner	2470	P2
Wilder, Shari	4169	P2
Wilderness Watch	1653	2-101, 1-405, 24-500, 14-1101, 5-1200, 5-1700
Wilharm, Maryann	2410	P2
Wilhins, Hans	2880	P2
Wilkins, Debbie	4223	P2
Willey, Steve & Elizabeth	1534	C
William, Bill	3766	P2
Williams, Andrea	4170	P2
Williams, Clark & Kate	1667	2-1101
Williams, Diane	3418	P2
Williams, James T.	3610	P2
Williams, Joan	2570	P2
Williams, Ken	2924	P2
Williams, Mary C.	1666	32-301
Williams, Matt	2545	P2
Williams, Mr. & Mrs.	1916	1-101, 1-103, 5-103, 20-500, 2-1101, 24-1101, 12-1200, 2-1301
Williams, Roger & Linvall, Gloria	1452	38-102
Williamson, Cobey	3951	P2
Williamson, Jeb	1522	50-304, 2-1101
Williamson, Sue	1387	1-305
Williamson, Tim	1979	9-301, 1-305
Willis, Leah	3711	P2
Willis, Rus	1492	Thank you for your comment
Willows, Sharon L.	1484	P1, 2-101, 3 -402, 2 -403
Willy, Barbara H.	2006	Thank you for your comment
Wilma, Emily	4414	P2
Wilson, Carol	3504	P2
Wilson, Debbie	4114	P2
Wilson, Douglas	2627	P2
Wilson, Jimmy	1983	Thank you for your comment
Wilson, Linda	2299	C, P2
Wilson, Marcy	4227	P2
Wilson, Margaret	3823	P2
Wilson, Matt	3505	P2
Wilson, Nancy	3792	P2
Wilson, Paul	4258	P2
Wilson, Sarah	1544	1-308
Wilson, Thomas & Irene	1393	2 1-308, -400
Wilson, William D.	2288	C
Winebark, Terrie S.	2114	Thank you for your comment

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Wing, Jason S.	3594	P2
Wing, Kira	1972	P2
Winings, Kenneth	3655	P2
Winkler, Carol	2613	P2
Winslow, Denver	4495	Thank you for your comment
Winslow, Roxanne	4496	Thank you for your comment
Winston, Karen	4107	P2
Winter, Pam	1333	58-302, 60-302, 14-1600
Wirth, Crystal	4459	P2
Wise, Jaynee	3398	P2
Witte, Becky	2812	P2
Witte, Bob	2291	C
Witte, Joseph L.	2145	C
Wittig, Byme & Virginia	1756	P2
Wittig, Eugene F.	3673	P2
Wittig, Ray L.	3674	P2
Wolf, Dennis & Quinn, Joanne	1363	25-303, 1-308, 2-406, 3-1101, 2-1600, 6-1600, 2-1602, 2-1700, 12-1700
Wolf, Kyler & Solan	4297	P2
Wolfe, David	3472	P2
Wollenzien, Barry	1847	P1
Wolsfelt, R.D.	3120	P2
Wombacher, Adam C. & R.A.	2465	P2
Wood, Betty Jo	3399	P2
Wood, Connie	1618	9-1601
Wood, Holley & Marlin	1510	32-301, 25-303, 61-304, 63-304
Wood, James	1617	Thank you for your comment
Wood, James	4471	P2
Wood, Jim	3996	P2
Wood, John E.	3384	P2
Wood, Mark E.	1585	P1
Wood, Marlin & Holley	1224	11-300
Wood, Mary E.	1584	P1
Wood, Penny	3169	P2
Wood, Robert A.	2692	P2
Wood, Valorie	2644	P2
Woodby, Hope	2862	P2
Wooder, Craig A.	2289	C
Woodruff, Gina	2083	Thank you for your comment
Woods, Debbie	3117	P2
Woodward, Tom	1993	P2, 38-102
Woolnovey, A.C.	4090	P2
Worcester, Debbie U.	2178	C
Worzala, Ed	3901	P2
Wosley, Lilly	1831	P1
Wright, Cecelia M.	3863	P2
Wunnow, Kevin	2799	P2
Wunrow, Kevin	2039	P2
Wyer, Cathy E.	2371	C
Wyer, Gary D.	2372	C
Yarborough, Bryan	3710	P2
Yates, Dana L.	2163	C
Yeager, Judy	3556	P2
Yeary, Robyn	2320	C, P2

Table DEIS-3. Alphabetical List of Commentors and their Comments (Cont.)

Name	ID #	Comment Code
Young, Dean	1953	Thank you for your comment
Young, Lori	3965	P2
Young, Lorin	3408	P2
Young, Marc	4105	P2
Youngs, Alison	4391	P2
Yuhnke, Robert	4479	Thank you for your comment
Zander, Betty Jane	1784	P1
Zavadil, Robert J.	1871	P1
Zeazeas, John	1729	46-301, 3-303, 51-303, 1-305, 8-308
Zelinski, David	3473	P2
Zentzis, Sharon	4123	P2
Ziemer, Laura S.	1927	Thank you for your comment
Ziesemer, Debbi	2933	P2
Zimmer, Laura	3756	P2
Zimmerman, Kim	2357	C, P2
Zimmerman, Lizabeth	2762	P2
Zimmerman, Robert	1213	6-102, 3 -402, 9-1601, 2-1602
Ziniti, Katherine	3084	P2
Ziniti, Vicky	3083	P2
Zink, Sheila	3180	P2
Ziperman, Lisa	2635	P2
Zurenda, Sara E.	3535	P2

Table DEIS-4. Numeric List of Commentor ID Numbers and Names

ID #	Name
11	Sandpoint Forest Watch
761	Schmictig, Dominik
1170	Economic Development Council, Inc.
1196	Hutchins, Judith
1199	Nelson, Joel A.
1207	Boots, Deborah E.
1210	Anderson, Maury/ Hanson, Pat
1213	Zimmerman, Robert
1214	**U.S. Environmental Protection Agency**
1220	Montana Wilderness Association
1221	Dutro, Barbara
1222	Turk, Lawrence
1223	Clark Fork Pend Oreille Coalition
1224	Wood, Marlin & Holley
1225	City of Sandpoint
1226	Montana Bolt Inc.
1227	Brake Supply
1228	Industrial Tool & Repair
1229	Labor Contractors
1230	Payne Machinery, Inc.
1231	Luedecke, Sue
1232	Wellman, Chris
1233	Norco
1234	Morre Oil, Inc.
1235	Liennen, B.J.
1236	Bass, Rick
1237	Vandersande, Jaques & Elaine
1238	Troy Business & Professional Association
1239	**Lincoln County Commissioners**
1240	Gillingham, Maggie
1241	Farmin, Ted
1242	Kittleson, Kevin
1243	Ledy, John W.
1244	Ober, Michael J.
1245	Siedentop, Susie
1246	Ranger, Michael
1247	Dodge, Stephen
1248	Mitchell, Mary Crowe
1249	Long Machinery
1250	Libby Area Chamber of Commerce
1251	City of Troy
1252	Marshall, Don & Tami
1253	Davis, Jerry
1254	Janni, Faye
1255	Mitchell, John
1256	Pumco, Inc.
1257	Sunshine Mining & Refining Company
1258	F & H Mine Supply Inc.
1260	Idaho Mining Association
1261	Fries, Robert
1262	Hanson, Ranel
1263	Trout Unlimited
1264	Safety Master
1265	Fortunati, Martha & Donald
1266	Erickson, Lawrence A.
1267	Eberly, Mildred
1268	Poplawshy, Al & Prorak, Diane
1269	Lyster, Earl
1270	Coupal, Frank E.
1271	Rush, Keith
1272	Centennial Development Company
1273	Full Spectrum Tours
1274	Guardipee, Joseph A.
1275	Warman International, Inc.
1276	Dunnagan, Robert & Nancy
1277	Gravelle, Jeff
1278	Shull, Bette
1279	Fury, Lawrence
1280	Veraniam, Barbara
1281	First National Bank In Libby
1282	Ranemckeon, Paula
1283	Matier, Karen
1284	Shaha, Annie
1285	Pierce, Kelly
1286	Matier, Michael L.
1287	Lojek, Julie
1288	Mitchell, Lawrence G.
1289	Thayer, June
1290	Runa, Tom
1291	Grantham, Angela
1292	Washington Water Power
1293	Beaton, Thomas
1294	Dukes, Paul
1295	Posewitz, Jim
1296	Leivestad, Ole & Rusti
1297	Amsden, Ron
1298	Thompson, Jack
1299	Anonymous
1300	Lange, Brian
1301	Barrett, Ken
1302	Waldher, Myra
1303	Rovig, David
1304	Olson, Jane
1305	Roskelley, John
1306	Nelson, Curtis
1307	Jones, Cedron
1308	Sanders, Janet L.
1309	Stowell, Helen
1310	Keehnen, Susan
1311	Ross, Julie
1312	Sampson, David
1313	Stockwell, Frank
1314	Loomis, Robert D.
1315	Mondal, Kenneth M.
1316	Faucett, Frank
1317	Crawford, Don
1318	Kinyon, W.R.

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
1319	Blank, Tamara
1320	Currie, Cris
1321	Sleyster, David
1322	Donnelly, John & Sara
1323	Tuholske, Jack R.
1324	Ball, Sue
1325	Ball, Chad
1326	O'Hare, Paul
1327	Barcombe, Julie
1328	Dinsmore, Rusty
1329	Feron, Tom & Carol
1330	Capes, Peggy
1331	Vincent, Rachel
1332	Downey, Patrick J.
1333	Winter, Pam
1334	Lunnen, R.B.
1335	Lyman, Dave
1336	Edwards, John R.
1337	Cawdrey, Nancy
1338	Hinds, Jennifer
1339	Jackson, Mary
1340	Springer, Bob
1341	Douglas, John D.
1342	Stovall, Becky
1343	Harrod, Brian
1344	Stuckey, Jay
1345	Springer, Sara Lou
1346	Gryl, Franny
1347	Johnsen, Steve & Teri
1348	Bull, Tom
1349	McAvoy, Darren
1350	Glutting, Stephen
1351	Cabinet Resource Group; Young, Jill
1352	**Tri-State Implementation Council**
1353	Suhfras, Gail & John
1354	Clark, Janis
1355	Northern Rockies Biodiversity Project
1356	Bloom, Peggy
1357	Laduca, Janet Lynn
1358	Ague, John & Susan
1359	Lyman, Debbie
1360	Reynolds, Steve & Sharon
1361	Dick, Christine
1362	Compton, Mitchell Jr.
1363	Wolf, Dennis & Quinn, Joanne
1364	Mahra, Dawn
1365	Pierce, Robert
1366	Hinnebusch, Margaret M.
1367	Price, Shirley A.
1368	Volberding, James E.
1369	F.H. Stoltze Land & Lumber Company
1370	Gunter, Colleen
1371	Reishus, Bonnie
1372	Doede, Richard
1373	Vanfossen, Roger & Monica
1374	Josund, Glenn
1375	Feeback, KD
1376	Deveny, Christine
1377	Wasserman, Dana
1378	Hall, Beverly J.
1379	Miller, William L.
1380	Clemens, Jack L.
1381	Slora, Kathryn
1382	Rister, Richard & Carla
1383	Simonson, Ben D. Jr.
1384	McWilliams, Marilyn
1385	Benson, Erik
1386	Simonson, Ben Sr.
1387	Williamson, Sue
1388	Taylor, G. Elaine
1389	Simonson, Judith M.
1390	Mullins, Barbara L.
1391	Ballard, W.W.
1392	**Troy & Troy Rural Vol. Fire Department**
1393	Wilson, Thomas & Irene
1394	Andersen, Harold R.
1395	Kayser, Susie
1396	Krueger, George P.
1397	McWilliams, Tim
1398	Hoefer, Michael
1399	Ball, Kathy
1400	Hamm, Jamie
1401	Hinnebusch, Mark & White, Cynthia
1402	Walton, Kate
1403	Klappenlash, Stephen
1404	Pleass, Mick
1405	Paulsen-Kittleson, Leanna
1406	Stevens, Patricia
1407	Braden, Kesava A.
1408	Jellison, Kevin
1409	Eskelson, Jessica
1410	Ward, Bob
1411	Seifert, James
1412	Syres, Steve
1413	Hall, B.J.
1414	Forsythe, Gordon
1415	Carlson, Steve
1416	Elliott, Charlie
1417	White, Chris
1418	Waldenberg, Carol
1419	Johnston, Lois
1420	Smith, Karla
1421	Werner, Craig & Lea
1422	Rowland, Edward

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
1423	Swanson, Robert
1424	Erier, Bill
1425	Swann, Robert
1426	Decoslller, M.
1427	Marley, Patrick J.
1428	Price, Martin J.
1429	**Green Mountain Conservation District**
1430	Evans, Judy
1431	Mead's Northwest
1432	Lambert, Richard J.
1433	Long, Arthur
1434	Czerwinski, Michael H.
1435	Birchwood Kennels
1436	Jones, Sally
1437	Weltz, Joe
1438	Ferrell, Melinda
1439	Stratton, Jim
1440	Ferrell, Doug
1441	Russell, John R.
1442	Breidenthal, Richard
1443	Rivers, Richard
1444	Sonnichsen, Richard C.
1445	**Idaho Fish & Game**
1446	**Bonner County Commissioners**
1447	Cole, Patrick J.
1448	Sarchis, Jan
1449	Myers, Don & Rane
1450	Ray, Gloria
1451	Rich, Linda
1452	Williams, Roger & Linvall, Gloria
1453	Green, Ralph & Jeanne
1454	Flanigan, Chris
1455	Engel, D.W.
1456	Fritz, Jane
1457	Sandpoint Chamber of Commerce
1458	Cooper, Christine
1459	Harbuck, John
1460	Clark Fork Pend Oreille Coalition; Gerth, Jean
1461	Kertis, Nancy
1462	Schaffer, Matt
1463	Anderson, John
1464	Finegan, Kim
1465	Tites, Patricia
1466	Sabella, Marilyn
1467	Brow, Jill
1468	Gravelle, Catlin
1469	Bowers, Ted
1470	Trick, Jill
1471	Price, Karen
1472	Weissman, Ellen
1473	Sutton, Tracey
1474	Murphy, Steve
1475	Lawrence, Jared
1476	Ford, Jim L.
1477	Demarco, Mike
1478	Schrader, Mac
1479	Webster, Jack & Nita
1480	Thibault, Dennis & Carolyn
1481	Pierrehumbert, R.T.
1482	Ennis, John
1483	Hager, William R.
1484	Willows, Sharon L.
1485	Sheets, Mark
1486	Sullivan, Mary Ann
1487	Westlund, Esther
1488	Holstrom, Ben L.
1489	Barrett, Gabriela
1490	Gilwood, Gary
1491	Hinds, Colleen
1492	Willis, Rus
1493	Reishus, Tim
1494	Fisher, Stan
1495	Smith, Glenn E.
1496	Hill, Wayne
1497	Malson, Jerry
1498	Fitchett, Brent
1499	Bankhead, Paul
1500	Wall, David R.
1501	Howze, S.S.
1502	Stephens, Ken
1503	Crismore, William S.
1504	River Care
1505	Orr, Scott J.
1506	Berry, William & Lois
1507	Grassroots
1508	Benson, Robert E.
1509	Joslyn, Jim
1510	Wood, Holley & Marlin
1511	Crowley, Jeanne
1512	Austin, Alice
1513	Oppenheimer, Jonathan
1514	Sweet Grass County Recreation Assoc.
1515	Ward, Timothy
1516	Snyder, Elaine
1517	Kehl, Richard
1518	Price, Conduce
1519	Tammaro, Vince
1520	Stern, Bill
1521	Dobrowski, Pat & David
1522	Williamson, Jeb
1523	Higbee, Herb & Charlotte
1524	Taber, Richard D.
1525	Collopy, Christine
1526	Montana Council Trout Unlimited

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
1527	Gillingham, Don
1528	Ball, Travis S.
1529	Snedeker, Sheila & Brad
1530	Gallaway, Rodd
1531	Flansaas, Robert
1532	Compton, Elinor L.
1533	Borup, Cinde
1534	Willey, Steve & Elizabeth
1535	Hadadone, Naomi
1536	Bottcher, Lucille
1537	Hagadone, Jon & Perky
1538	Noxon School Fifth Grade Class
1539	Fitchett, Marsha
1540	Marich, Aaron
1541	Ball-Vadeboncoeur, John
1542	Smith, Luke
1543	Hay, Marah
1544	Wilson, Sarah
1545	Fifth Grade Girl
1546	Flary, Karrie
1547	Fifth Grader
1548	Fifth Grader
1549	Koeneman, Lena
1550	Kitty, Meredith
1551	Sharp, Cameo
1552	Mitchell, Christen
1553	Lawrence, Marilyn
1554	Lawrence, Robert
1555	Hallowell, Iva
1557	Lilly, Anne
1558	Hernandez, Hannah
1559	McLinden, Jo
1560	McLinden, Barney
1561	Gillingham, P.K.
1562	Lee, Geri
1563	Lee, Dillion
1564	Kain, Deborah A.
1565	Bopp, Allan H.
1566	Wallace, Sharon
1567	Solce, Mathilde
1568	Solce, Ed
1569	Maro, D.L.
1570	Compton, Susan
1571	Compton, Carmen
1572	Compton, Douglas
1573	Benner, Mary
1574	Johnson, Liz
1575	Merry, John B.
1576	Eckelberg, Don
1577	Saunders, Fred R.
1578	Macspadden, Georgia E.
1579	Hermann, Robert C.
1580	Stuckey, Tony E.
1581	Roberts, Randy
1582	Aktepy, Ruth H.
1583	Roberts, Katherine C.
1584	Wood, Mary E.
1585	Wood, Mark E.
1586	Roberts, Dennis
1587	Clark, Ken
1588	Jacobson, Lee
1589	ASARCO
1590	Bismine, Pat
1591	**Confederated Salish & Kootenai Tribe**
1592	Helleberg, Jim
1593	Byler, Davie
1594	Lammers, Andres
1595	Montana River Action Network
1596	Brown, Kathleen
1597	Bessler, Chris
1598	McCabe, Don
1599	Dodson, Kurt
1600	City of Libby
1601	Holland, Don
1602	Bonner County Sportsmen's Assn.
1603	Defenders of Wildlife, Northern Rockies Office
1604	Miller, Scott
1605	Welch, Lois
1606	Nagorski, Sonia
1607	Neff, Richard & Susan
1608	Clark, Paul
1609	Regier, Katherine
1610	Smith, Mary
1611	Troy Chamber of Commerce
1612	Communities for a Great Northwest
1613	De Piozza, Carol Ann
1614	Thayer, Susan
1615	Miller, Michael
1616	Grove, John & Darlene
1617	Wood, James
1618	Wood, Connie
1619	Snyder, Shirley
1620	Kair, Marilyn
1621	Rayson, Arden
1622	Kair, Mike
1623	Cripe, Don
1624	Canyon Coalition
1625	Sage, George
1626	Knudsen, Kathy L.
1627	Clark, Robert
1628	Thompson, Kirk
1629	Stier, Sam
1630	Larkin, Mary & Colin
1631	Ward, Dan

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
1632	Robert, Cheri/Lambrecht, Seth
1633	Friends of the Bitterroot
1634	Elliott, Jim
1635	Burns, Beverly
1636	Jones, Melanja
1637	Hidy, Carolyn E.
1638	Mineral Policy Center
1639	Burge, Chic
1640	Nye, Kevin R.
1641	Bloxom, Julie
1642	Renk, Nancy F.
1643	Katsaris, Anne K.
1644	Harding, Thomas K.
1645	Byrne, Kerrie
1646	Davis, Donald B.
1647	Clark, Bruce
1648	Heyn, Ron
1649	Rhodes, McGregor
1650	Ryder, Cal
1651	Ross, Bruce & Barbara
1652	Perron, Mary
1653	Wilderness Watch
1654	Smith, Richard L.
1655	Graesser, A.R.
1656	Gunderson, Kari
1657	Snyder, Colleen
1658	Rayson, Georgia
1659	Snyder, Dan
1660	Cripe, Marie
1661	Atkins, Philip
1662	Great Bear Foundation
1663	Callan, Arthur D.
1664	Mildenstein, Tammy
1665	Baulieu, Joe
1666	Williams, Mary C.
1667	Williams, Clark & Kate
1668	Montana Native Plant Society
1669	Dwyer, Ed
1670	Ecology Center
1671	Snyder, Harold
1672	Downing, Luke N.
1673	Speare, Jonathan
1674	Morgan, Cindy
1675	Hillstrom, Susan
1676	Anzalone, S.A.
1677	Dettwiler, Alice R.
1678	Parker, John
1679	Parker, Norma L.
1680	Renk, Thomas B.
1681	Vicari, Deborah
1682	Clark, Jim & Judith
1683	Spokane Mountaineers
1684	Holland, Rebecca
1685	Ercoline, Cindy
1686	Ercoline, Wayne
1687	Barrett, Junell
1688	Fields, Edwin
1689	Scholtz, Dieter
1690	Dixon, D.C.
1691	Crowley, Frank
1692	Western Environmental Trade Assn.
1693	Montana Mining Assn.
1694	Lewis, Jeffrey S.
1695	Broberg, Len
1696	Sierra Club Montana Chapter
1697	Beckes, Eugene
1698	Cabinet Resource Group; Bill Martin
1699	Beebe, Teddye
1700	Hightower, Terry
1701	Janke, Sherm
1702	Olsen, Rosemarie
1703	Monaghan, Coleen
1704	Brooks, Jack & Lisa
1705	Cernick, Stewart M.
1706	Lepper, Fred
1707	Benoit, Renee
1708	Harteis, Leo
1709	Brooks, Alex
1710	Reed, Ritta
1711	Peck, Karen D.
1712	Bissonnette, Cris
1713	O'Connor, Tricia
1714	Kaestner, David
1715	Scharpf, Lou
1716	Stiritz, Jennifer
1717	Wiek, Melissa A.
1718	Partoll, Linda
1719	Britton, Mike
1720	Weber, Gary
1721	Petrusky, Stephen & Madge
1722	Conner, J.R.
1723	Dougherty, Michael
1724	Weathers, Mary
1725	Larson, Tom
1726	D'Aoust, Susan Saxton
1727	Wakeley, Frank
1728	Stefano, Steve
1729	Zeazeas, John
1730	Ferrier, Marina/Bromberg, Max
1731	Wallace, Jack
1732	Newcomer, Diane
1733	Frederick, Lolo K.
1734	Nash, Jim

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
1735	Mosley, Diane
1736	Mosley, Milton H.
1737	Morris, Connie L.
1738	Dahlstrom, Konrad
1739	East Hope Marina
1740	Judy, Eddie Sue
1741	Maloney-Hanna, Rhea
1742	Faucett, Allana
1743	Kaemmer, Gary/Lawton, Karen
1744	Dodson, Sherry
1745	Park, Chris
1746	Janusz, Barbara/Garner, Tedd
1747	Billeyse, Betty Jean
1748	Edwards, John
1749	Holt, Steve
1750	Fowle, Michael
1751	Hidy, Troy
1752	Eberle, Curtis
1753	Pfalzer, Erich A.
1754	Hannah, Susann
1755	Nowak, Linda
1756	Wittig, Byme & Virginia
1757	Leake, Diana R.
1758	Common Sensing inc.
1759	Aunan, Pam
1760	Olesen, Susan
1761	Mitchell, Robert
1762	Parametrix, Inc.
1763	Murphy, Kathe
1764	Van Ooyen, Jolanda & Randy
1765	Kuster, Ruth & Heikki
1766	Kuster, Stephan & Nancy
1767	Scofield, Charlotte
1768	Janes, Frances
1769	McKitrick, Bryan R.
1770	McDougal, Suzanna
1771	Buentemeier, Ronald
1772	Rich, Jeff
1773	Thompson, Cole
1774	Smith, Norman
1775	Bledsoe, Kim
1776	Klatt, Eileen
1777	Stern, Sydnie
1778	Ososki, Karen L.
1779	Washington Water Power
1780	Cabinet Resource Group; Cesar Hernandez
1781	Sullivan, Mark
1782	Hill, Arnold J.
1783	Hill, Kathryn
1784	Zander, Betty Jane
1785	Des Marias, Cheryl
1786	Harlick, David
1787	Hourdequin, Marion
1788	Bechtold, Timothy
1789	Haskins, William
1790	Lockman, Miriam
1791	Marangelo, Glenn
1792	Stockman, Keith
1793	Schwan, Bryony
1794	Nelson, Kristin
1795	Parker, Jim
1796	Dayton, Jim
1797	Desilvery, Catlin
1798	Gutsche, Gail
1799	Carroll, Steve
1800	Nelson, Jon
1801	Walker, James
1802	Ferrow, Theresa
1803	Beringer, Elizabeth
1804	Doddem, Bernard
1805	La Bette, Mary Jo
1806	Michaels, C.
1807	Robbins, Kathy
1808	Michaels, S.
1809	Peters, Dale
1810	Melnrick, Sandra
1811	Schyoeder, M.L.
1812	Bolin, Ann
1813	Bolin, Jr., Ted
1814	Melnrick, Kenneth
1815	Horner, Joan L.
1816	Bauge, Keli B.
1817	Bauge, John
1818	Smith, Connie
1819	Brown, Gail
1820	Legat, Linda
1821	Seratt, Gayle
1822	Fields, Marilyn
1823	Czerminski, Michael H.
1824	Czerwinski, Betty J.
1825	Pearson, Elza
1826	Jones, Christina G.
1827	Maxwell, Barbara
1828	Eaton, Lynne
1829	Mallory, Ollie
1830	Newell, Sheri
1831	Wosley, Lilly
1832	Evans, Bob
1833	Smith, Elizabeth I.
1834	Pfalzer, Anita
1835	Leigh, Mike
1836	Kline, Albert J.
1837	Johnson, Clyde
1838	Davis, Pat

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
1839	Cohen, Feme
1840	Layne, Carleen
1841	Layne, Richard
1842	Archie, Anne H.
1843	Archie, Quentin
1844	Moore, Danil
1845	Warnick, Jon
1846	Mascho, Lisa
1847	Wollenzien, Barry
1848	Bennett, Dan
1849	Noyes, John
1850	Meyer, Tangi M.
1851	Titus, Ross
1852	Mell, Graydon D.
1853	Moll, Robin
1854	Edge, Darlene
1855	McCaulay, Carley
1856	Lauckner, Goni
1857	De Lepper, Fred
1858	Hager, William
1859	Hager, Vivian
1860	Barnard, Larry
1861	Kendall, Chuck
1862	Perest, Keith
1863	Pariest, George
1864	Heidel, Bonnie
1865	Geiger, Connie
1866	Menz, Richard
1867	Garland, Joe
1868	Sentz, Linda
1869	Dixon, Lynne
1870	Owsowitz, Judy
1871	Zavadil, Robert J.
1872	Sloan, Mary
1873	Horejsi, Brian
1874	Miller, Linda
1875	Eklwart, Tom
1876	Figlas, Edwin
1877	Coombe, Joyce
1878	Marble, Harriet
1879	Blood, Lex
1880	Conner, Denise
1881	Carlson, Milt
1882	Emerson, Ashley
1883	Cable, Suzanne
1884	Fay, Mary E.
1885	Budrick, Madeleine
1886	Piltule, Reta
1887	Pitule, Anne
1888	Piltule, Ben
1889	Pittorlepirt, Marianne
1890	Pitterle, Sarah
1891	Vitale, Frank
1892	Sullivan, Anne
1893	Boody, Beuke
1894	Davis, Kim
1895	Davis, Janet
1896	Thompson, Steve
1897	McCartney, Ward
1898	Dayton, Jim
1899	Jennings, Chuck
1900	Downey, Janet
1901	Botsford, Bruce
1902	Dudley, Lass
1903	Sharley, Mark
1904	Gunderson, Dale
1905	Sweaney, James
1906	Kelly, Lynn
1907	Darrow, George
1908	Darrow, Elna
1909	Sargent, S.
1910	Prach, Edwin
1911	Dubois, Kristi
1912	**Dept of the Army Corps of Engineers**
1913	Hood, Ray & Eleanor
1914	Cobb, Jr., Fileds
1915	Blomgren, Eunice L.
1916	Williams, Mr. & Mrs.
1917	Millard, Bruce
1918	Miller, John & Patricia
1919	Erickson, Owen R.
1920	White, Tom
1921	Chenault, Cynthia
1922	Duquette, Pam
1923	Smith, Donald L.
1924	Sheilds, Paul
1925	Lake Pend Oreille Idaho Club
1926	Ottenstein, Karl J.
1927	Ziemer, Laura S.
1928	Lin, Henry
1929	Cassidy, Mark
1930	Desmond, Doreen
1931	Kovarik, Kathleen
1932	McKitrick, Nancy
1933	**Dept of the Interior**
1934	Mitchell, Wesley T.
1935	National Audubon Society
1936	Idaho Rivers United
1937	Harlequin Duck Working Group
1938	Profitt, Mark
1939	Combs, Ralph
1940	Demarco, Pat
1941	Wakeley, Jesse
1942	Brown, George A.

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
1943	Beaudin, Ken
1944	Seratt, R. Kent
1945	Rocco, Patricia L.
1946	Lynch, Elisa L.
1947	**Dept of Fish, Wildlife & Parks**
1948	Kaniksu Bioregional Council
1949	Gilmer, Joe
1950	Coby, Gene
1951	Matthews, Martin
1952	Plant, Vic
1953	Young, Dean
1954	Price, Janine
1955	Kotschevar, Don
1957	Clark Fork Pend Oreille Coalition
1958	Burton, Greg
1959	Morris, Jerry
1960	Montana Trout Unlimited
1961	Engstrom, Scotty
1962	Baillie, Jim
1963	Czap, Al
1964	Post, Jenni
1965	Meriphew, Josie
1966	Hopkins, Guy
1967	Hozophel, Ann
1968	Holzapfel, Mark
1969	Darling, Richard
1970	Klatt, Steve
1971	Brown, Erin
1972	Wing, Kira
1973	**Sanders County Commissioners; Cherie Hooten**
1974	Howell, Dan
1975	Werner, Kirwin
1976	Hart, Derek
1977	Corps of Business and Professional
1978	Hilt, Jim
1979	Williamson, Tim
1981	Weins, Gary
1982	Clark Fork Pend Oreille Coalition; Ann Band
1983	Wilson, Jimmy
1984	Daugherty, Jim
1985	Aitken, Jeff
1986	Unknown Speaker
1987	Coupal, Joyce
1988	Northern Lights
1989	University of Idaho; John Ratti
1990	**Kalispell Tribe of Indians**
1991	**Coeur d'Alene Tribe**
1992	**Montana Dept of Commerce**
1993	Woodward, Tom
1994	Glueckert, Beverly B.
1995	**Spokane County Commissionner; John Roskelley**
1996	Spacapan, Lois/ Gallager, Jack
1998	Judy, Ed & Marguerite
1999	Gospodnetich, Gerald A.
2000	Deutchman, Sandra & Phil
2001	Lypter, Gail W.
2002	Slutz, Yvonne
2003	Lambros Real Estate
2004	Renfrew, Malcom & Carol
2005	Pelland, Tag
2006	Willy, Barbara H.
2007	Davis, John & Teri
2008	Crisp, Fred L.
2009	Seashore, Karen
2010	D'Aoust, Brian G.
2011	Pederson, Robert
2012	Green Mountain Insurance
2013	Roberts, Sheila
2014	Helander, Susan
2015	Miller, Govinda
2016	Vail, Curt & Pamela
2017	Emerson, Mark
2018	Routro, Roy & Donna
2019	Hargreaves, Ruth & Hal
2020	Sommer, Stephan & Lorna
2021	Nichols, Sandi
2022	O'Neil, Jacqueline
2023	Berning, Marvin & Annette
2024	O'Neil, Dick
2025	Frank, Hal
2026	**Kootenai Tribe of Idaho**
2027	Clean Lakes Coordinating Council
2028	Reid, Scott & Diana
2029	Roubicek, Janet
2030	Steiner, Fredrick B.
2032	Kujranz, Stacy
2033	Welling, Richard & Joann
2034	Kelsen Jr.
2035	Girumer, John W.
2036	Geide, Robert
2037	Bruno Family
2038	Casler, Ken
2039	Wunrow, Kevin
2040	Hofmeister, Nancy
2041	Spinney, Dave/Cassie/Ben/Becky
2042	Gazzo, Paul
2043	Lesica, Peter
2044	Independent Mortgage Ltd.
2045	Hemmy, Suzanne
2046	Bowman, Judy
2047	Fogarty, Sam
2048	Larson, Gordon E.
2049	Sherman, Mr. & Mrs. Richard
2050	Donotrio, Mac

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
2051	Hammer, William & Audrey
2052	Horder, Michele
2053	Steve's Import Auto Service Inc.
2054	Franck, Stacey
2055	Osborn, Richard
2056	Kahn, Mary J.
2057	Lizotte, Bob/Ellen/Amy
2058	Trout Unlimited, Montana Council
2059	GBL Corporation
2060	Dierker, Arlene & Paul
2061	Bonner County Assn. of Realtors
2062	Thomas, Stanley W.
2063	Interested Party
2064	Interested Party
2065	Tedder, Sonny
2066	Watson, Vicki
2067	Idaho Dept of Health & Welfare
2068	Wheale, Kerstin
2069	T Jr.
2070	Nelson, Nancy
2071	Vanguard Research
2072	Bauer, Martha R.
2073	Wagers, Laurel
2074	Gooch, Gary
2075	Cannon, Twilly
2076	Lenches, Christine
2077	Carr, Dallas
2078	Rammler, Bernard S.
2079	Miller, Jeff
2080	Hawkins, Lonny
2081	Conner, Vance
2082	Richmond, Douglas P.
2083	Woodruff, Gina
2084	Bordenave, Pierre
2085	Robertson, Marilyn & Alan
2086	Boge, Richard & Nancy
2087	Meschko, John
2088	Freyer, John
2089	Carboori, Richard
2090	Inland Empire Public Lands Council
2091	Ross, Shirley
2092	Ward, Carol
2093	Mellem, James S.
2094	Haddad, Marilyn
2095	Thunlow, Peggy J.
2096	Kluge, Sandy
2097	Maclachlon, James H.
2098	Ball, Nancy J.
2099	Ball, Martha J.
2100	Nicholson, Scott
2101	No Name
2102	Price, Cathy
2103	King, Scott M.
2104	Penn, Alexis
2105	Steen, Gretchen
2106	Marks, Phyllis
2107	Blegan, Brad
2108	Five Valley's Audubon Society
2109	Lee, David L.
2110	Cunningham, Sandra R.
2111	Vandeboncoeur, James P.
2112	Glnechent, Bev
2113	Mason, Cynthia
2114	Winebark, Terrie S.
2115	Tate, Dennis
2116	Roubicek, Dennis
2117	David, Jeanne
2118	Lersbak, Wayne
2119	Hurley, George
2120	Hughes, Norman & Michelle S.
2121	Tillberg, Nancy
2122	Jonasen, Dean W.
2123	Kingsland, Tom
2123	Hemus, Richard L.
2125	Fraser, E.
2126	Harrison, S.A.
2127	Fournier, Barbara
2128	Wescott
2129	Scatchard, John S.
2130	Gooley, Lina
2131	Clark, Rosalyn
2132	Nyland, Jon
2133	Palmer, Fred
2134	Lyster, Gail
2135	Bell, Ilene
2136	Hemus, Carol
2137	Deem, Allane
2138	Robinson, Mary
2139	Pfeiffer, Ann L.
2140	Bloxom, Dorothy
2141	Graves, Richard L.
2142	Lundstrom, Jill M.
2143	Dees, Francisca
2144	Truby, Bill
2145	Witte, Joseph L.
2146	Almann, Nan
2147	Stephenson, Harold O.
2148	Lund, Kristine P.
2149	Goldblum, Arthur J.
2150	Jans, Sam
2151	White Buffalo Woman
2152	Clark, Laura
2153	Albright, Loren
2154	Betts, Robert C.

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
2155	Gunn, Rise
2156	Mitchum, Bill
2157	Mitchum, Christopher
2158	Nielsen, Dian
2159	Clark, Michael S.
2160	Messer, Jeanne M.
2161	Diedrich-Calhoun, Carl & Julie
2162	Mailman, Beth
2163	Yates, Dana L.
2164	Kingsland, Linda
2165	Daly, Rochelle N.
2166	Verbeck, Mary
2167	McGuire, Katy
2168	Edwards, Leticia
2169	Holman, Jay A.
2170	Gildersleeve, Craig I.
2171	Pleass, C.M.
2172	Napolitan, S.R.
2173	Kearney, Carver
2174	Loosemore, Kim
2175	Rerdy, Eric
2176	Hot Shots Video Production
2177	Lippi, James J.
2178	Worcester, Debbie U.
2179	Wats, Karen B.
2180	Saunders, Norm & Brenda
2181	Faville, Rush
2182	Pleass, Monica M.
2183	Ellis, Rosemary
2184	Eyer, Kenneth M.
2185	Sturdevant, Janet
2186	Murphy, Steve
2187	Fogarty, Margaret
2188	Evans, Gary & Myrna A.
2189	Shackelford, Wendell & Mary
2190	Ties, Vinny
2191	Kenyon, Irene
2192	Jobey, Linda
2193	Murt, David
2194	Bartlett, Mia
2195	**City of Sandpoint David Sawyer, Mayor**
2196	Evans, Thomas F.
2197	Moore, Jr., Basil T.
2198	Moore, Susan C.
2199	Murphy, Alison L.
2200	Braun, Janeen
2201	Hecht, Mollee L.
2202	Baribault, Lou
2203	McLeod, Terry
2204	Baribault, Roxie
2205	Wakeley, Valerie
2206	De Amorim-Lima, Adriana
2207	Carroll, Robert J.
2208	Lunnen, Beretha Jo
2209	Brunner, Gene
2210	Brewster, Lori
2211	Stanz, Milt
2212	Leake, Darcy
2213	Shook, Pauline
2214	Nance, Richard & Marjorie
2215	Olson, Linda
2216	Mercer, Jannine
2217	Bockus, Norm
2218	Mercer, Amy
2219	Fergusen, Debbie
2220	Lund, Roger
2221	Schelling, Ramona
2222	Wheeler, Jim
2223	Olson, Leila
2224	Kaastad, Brandon
2225	Burwell, Phyllis A.
2226	McDonald, Terri
2227	Sleyster, Tina
2228	Orahood, David W.
2229	Watt, Dorothy A.
2230	Watt, David W.
2231	Sand, Laurel
2232	Daly, Bill
2233	Kassel, Barbara H.
2234	Neal, Micheal
2235	Forsberg, Ronald W.
2236	Gaddum, S.E.
2237	Laduca, Charles M.
2238	Watson, Kevin M.
2239	Ries, Linda
2240	Morris, William & Fay
2241	Maloney, Nancy
2242	Goodner, Sue M.
2243	Smith, Randy
2244	Beamer, Ken
2245	Parrish, Donna B.
2246	Moore, G. Terri
2247	Hamilton, Elmer C.
2248	Jones, Mary A.
2249	Wells, Lynn
2250	Nylund, Carrie
2251	Vogel, Paul
2252	Murphy, Cherie
2253	Martin, Tim
2254	Diehl, J.T.
2255	Hobday, John & Sherry
2256	McBride, Larry
2257	Carlson, Robert
2258	Middleton, Janet

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
2259	Martin, Michele
2260	Graef, Ursula
2261	Wescott, Steven
2262	Cooper, Brenda
2263	Bier, Chris
2264	Jamieson, Sandra S.
2265	Whitson, Nita
2266	Taylor, Aujsha
2267	Evans, Anna Lyn
2268	Evergreen Realty
2269	Raed, W.F.
2270	Lippi, Pamela J.
2271	Tillisil, Tom
2272	Cooper, Terry
2273	Aldape, Dani
2274	Douglas, Don R.
2275	Whitson, Bill
2276	Tyson, Ken & Laurie
2277	Dullea, Catherine L.
2278	Bond, Gary & Jeanne
2279	Collins, Meghan
2280	Tillisch, Tom
2281	Ridgery, Patti
2282	Lake, Slyth
2283	Mansfield, Don & Evie
2284	Gilbert, Janet Lee
2285	5050 Baldy Mtn. Road
2286	Pense, S.
2287	Lagrace, Joanna
2288	Wilson, William D.
2289	Wooder, Craig A.
2290	Sidwell, John
2291	Witte, Bob
2292	Benefield, Helen
2293	Carboni, R.
2294	Thurston, Patricia T.
2295	Delamarter, Claire
2296	Thurston, Robert D.
2297	Keller, Kaylee
2298	Flanigan, Jackie
2299	Wilson, Linda
2300	Goerdt, Alan
2301	Fogarty, Dan
2302	Dole, Sarah
2303	Scott, Sharon
2304	Roberts, B.
2305	Seiveno, Donald H.
2306	Mille, N.
2307	Smith, Douglas A.
2308	Jechins, Michael S.
2309	Gould, Jo
2310	Jeffres, Dale & Vicki
2311	Beeman, Jeffrey T.
2312	Knoten, Erinn
2313	Bezecny, Sharon
2314	Wallace, Barbara J.
2315	Beeman, Sharon D.
2316	Boden, Janet E.
2317	Thoreson, Randall & Jody Curran
2318	Boden, Tim
2319	Flint, Greg
2320	Yeary, Robyn
2321	Sain, Rebecca S.
2322	Dermott, Michael Lee
2323	Bradley, Diann
2324	Kuhnel, Berta C.
2325	Laduca, Melissa
2326	Olson, John A.
2327	Dismuke, Mike A.
2328	Hendren, Virginia
2329	Hein, Steven R.
2330	Moy, Debra G.
2331	Mitchell, Anne
2332	Kingsland, Kristina M.
2333	Kingsland, Vicky
2334	Schellinger, Thomas E.
2335	Walker, Barbara
2336	Titus, Tria
2337	Jenkins, David
2338	Ristenpart, Diana
2339	Paul, Eric M.
2340	Watson, Troy & Jeron
2341	Dohrmann, Deborah A.
2342	Campbell, Gail
2343	Niemi, William M.
2344	Wern, Linda
2345	Fitzharris, Kerry
2346	Ballard, Barney
2347	Gillham, John C.
2348	Braun, David
2348	Teed, David
2350	Carlson, Caleb
2351	Chung, Grace
2352	O'Leary, J.
2353	Voglewede, Mary T.
2354	Lindstrom, Sarah
2355	Navarre, Steve
2356	No Name
2357	Zimmerman, Kim
2358	Magee, Alderson
2359	Boedgale, Cindy
2360	Silverngle, Michael C.
2361	Sieber, Margaret
2362	Magee, Mary A.

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
2363	Richardson, Scott
2364	Mattsson, Per
2365	Merz, Rick
2366	Collins, Art
2367	Collins, Sondra L.
2368	West, Steve
2369	Tuqua, Peggy
2370	Pruffler, Steven
2371	Wyer, Cathy E.
2372	Wyer, Gary D.
2373	Pitts, Shelly
2374	Duma, Sheryl
2375	Foley, Larry
2376	Jones, William
2377	Brent, Elias
2378	Tighe, Anne Marie
2379	Schneider, Amy Am.
2380	Sauer, Kirk
2381	Carter, Andrea
2382	Hieket, Darci
2383	McGee, Jr., William F.
2384	Campbell, Jan
2385	McDonaugh, James A.
2386	Hinxman, Donald & Kendra B.
2387	Natschke, Roberta
2388	Midstokke, Annie
2389	Bowers, Karen
2390	Kuhnel, Richard
2391	**Bonner County Waterways Commissioner, Jan Meneely**
2392	Meneely, Jim & Jan
2393	Teed, Sandra
2394	Howk, C.D.
2395	Sauer, Karen
2396	Brent, Elizabeth & J.B.
2397	American Builders
2398	Ganbrit, Kenneth
2399	Garcia, Kathy
2400	McCormick, Mark
2401	Blodgett, Crystal
2402	Clantinkler, Crystal
2403	Lyer, Su
2404	Kingston, Erik
2405	Roberts, Chrissy
2406	Feeley, Michael
2407	Merithew, Jill
2408	Garman, Ron
2409	Osborn, Vicky
2410	Wilharm, Maryann
2411	Cook, Lyndall L.
2412	Cornwall, Bruce
2413	Cornwall, Laura
2414	Saur, Bill
2415	Adkins, Sharon K.
2416	Adkins, Darrett
2417	Braviz, Ingrid
2418	Brubaker, David A.
2419	Crummer, C.H.
2420	McClurl, B.A.
2421	Keenan, Barbara
2422	Merithew, Josie
2423	Cabler, ruth
2424	Goding, Maria
2425	Gifford, Marita
2426	Bowre, Mary
2427	Peyton, Gordon
2428	Dillon, Paula
2429	Schrock, Larry G.
2430	Hogerman, Pam
2431	Redding, Yvonne
2432	Benson, Barbara
2433	Murrin, Daniel W.
2434	Kneeland, Gary
2435	Rogers, Forbes
2436	Smith, Bonnie
2437	Barr, Mary
2438	Servais, Bill
2439	Campbell, G.T.
2440	Guess, Michele D.
2441	Fredlund, Marie
2442	Sample, Katharyne
2443	Burgess, Val
2444	Stifter, Elissa
2445	Steinke, Don
2446	Johnson, Nola N.
2447	Johnson-Lain, Marcia Renie
2448	Stone, Landon A.
2449	Roemhild, George
2450	Rosenberger, Jennifer
2451	Bryant, Tamara
2452	Badt, Chonnie
2453	Finlay, Marianne
2454	Craig, Joanne
2455	Cooper, Samantha
2456	Johnson, Paul
2457	Hughes, Sandra
2458	Cernolog, Susan
2459	Edwards, Rebecca
2460	Pickering, Michael
2461	O'Leary, Melissa
2462	Smith, Julie
2463	White, Eric
2464	White, Linda
2465	Wombacher, Adam C. & R.A.

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
2466	Tennissen, Jayme
2467	Merriman, Pauli
2468	Longinotti, Katie
2469	Robinson, John
2470	Wilcox, Gardner
2471	Collins, Shyla
2472	Arndt, Emily
2473	Lorenzen, Michael
2474	Mason, Alicia
2475	Baughn, Merritt L.
2476	Burry, Jeff
2477	Lambert, Stephanie D.
2478	Houston, J.R.
2479	Roe, Judy A.
2480	Roe, Larry
2481	Taylor, Shawn
2482	Welch, Ed
2483	Wells, Lynn
2484	Riewe, H.
2485	Pole, Chris
2486	Baune, Darren
2487	Hollmer, Ronald M.
2488	Ryan, Tonya
2489	Lewis, Jacinda K.
2490	Maus, Ginna
2491	Rosenboom, Kelly
2492	Duperault, Theresa
2493	Taft, Jay
2494	Eskelson, Jessica
2495	Duperault, Mike
2496	Bjerke, Laura N.
2497	Rust, John C.
2498	Grant, Alex
2499	Harris, Robert
2500	Sheldon, Robin
2501	Sheldon, Jim
2502	Flanders, Brad
2503	Gengler, Kathy
2504	Hanes, Charlie
2505	Grant, Bob
2506	Cooper, Richard D.
2507	Cooper, Keita A.
2508	Kee, Beverly
2509	Allard, Tamini S.
2510	Franck, Laura
2511	Murphy, Dale
2512	Ryan, Lynda
2513	Frank, Loraine
2514	Maus, Brandon
2515	Kozak, Archie
2516	Michaels, Jimmy W.
2517	Nichols, Linda
2518	Duir, Zauel J.
2519	Schwartz, Kimberly
2520	Hinzpeter, Susan C.
2521	Schiersch, Janet
2522	Ryan, Melissa
2523	McDonald, Barb
2524	Scarioni, Russell
2525	Van Dusen, Ruth A.
2526	Evensen-Lynor, Meredith
2527	Landes, Heather
2528	Kocour, Michael
2529	Hemm, Ila
2530	Ivy, Joanna
2531	Toomey, Lorene
2532	Von Roemer, Christine
2533	Carlson, M.E.
2534	Breisacher, Deborah
2535	Meigs, Lou
2536	Larsen, J.
2537	Harms, G.P.
2538	Barker, J.
2539	Bailey, Sandi
2540	Schultz, Ellen
2541	Ryan, Jon
2542	Faletto, Betty
2543	Everson, Karen
2544	Linvall, Gloria
2545	Williams, Matt
2546	Kissam, Barb
2547	Kotnour, Amy
2548	Jones, Lizabeth A.
2549	Hutchinson, Leslie
2550	Gilpatrick, Janet
2551	Payne, Deberah
2552	Harmelin, Michael S.
2553	Nigro, Kim
2554	Proft, Norm
2555	Proft, Joanne
2556	Rirch, Jacqueline A.
2557	Stenberg, Linda
2558	Stenberg, Steve
2559	Benson, Jean S.
2560	Shaw, Ruth
2561	Allen, Stephanie
2562	Arnold, Jeanne M.
2563	Myren, Ilse
2564	Coleman, Norene
2565	Mancusa, Janna
2566	Palanich, Tonya
2567	Lojun, Don
2568	Chambers, Darcy
2569	McClure, Trudy

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
2570	Williams, Joan
2571	Thackor, Laurie
2572	Pich, Toni
2573	Hoese, Elizabeth K.
2574	Gonnason, Chris R.
2575	Ul, Ben
2576	Maus, Chris
2577	Culp, Sherry
2578	Miklelson, Rikard J.
2579	Meyer, Stephen R.
2580	Stone, Jane Arnot
2581	Richards, Joseph M.
2582	Pucci, John
2583	Pence, Dennis
2584	Arndt, Ralph F.
2584	Tomt, Mike G.
2586	Delavergne, Marc J.
2587	Meyer, Julie
2588	Dougherty, Michael
2589	Allison, Debra
2590	Clarke, Judith
2591	Austin, Sally
2592	Mattingly, Tanna
2593	Boyle, Robert & Francesca
2594	Cassel, Ingri
2595	McMullen, Lyle A.
2596	Hammond, Brenda
2597	Halstead, Jeanette
2598	Casler, Ken
2599	Interested Party
2600	Interested Party
2601	Benner, Vicki
2602	Benner, Shawna
2603	Johnson, Susan
2604	Truby, Rosalie
2605	Brunson, Sherry
2606	Sallmon, Helga R.
2607	Lucey, Sheila C.
2608	Long, Karl R.
2609	Morgan, Cyndi
2610	Bianco, Robin
2611	Schwilling, Steve
2612	Carbonaro, Lara
2613	Winkler, Carol
2614	Mitchell, Mary C.
2615	Hersrud, Russ
2616	Crandall, Mary
2617	Rash, Rayleis L.
2618	Kittams, Julie A.
2619	Dye, Westley
2620	Barberie, Herbert
2621	Hill, Lawrence A.
2622	Tyler, Karen A.
2623	Sparks, Jewlia
2624	Redding, Julie
2625	Olesen, Susan
2626	Revlock, Joseph
2627	Wilson, Douglas
2628	Prez, Tom
2629	Oliver, Vicki
2630	Pachokle, James B.
2631	Summer, Fran
2632	Clarke, Carol M.
2633	Holden, Michele
2634	Olander, Mark
2635	Ziperman, Lisa
2636	Frie, Stephanie
2637	Gilman, Henry K.
2638	Ehly, Pauline
2639	Davis, Teri A.
2640	Davis, Carmen
2641	Sevyn, David
2642	Griscom, Elizabeth
2643	Earhart, Tony
2644	Wood, Valorie
2645	Mercer, K.M.
2646	O'Connor, Michelle
2647	Mathias, Amy
2648	Tolle, Amy L.
2649	Jenkins, David
2650	Scheimeister, Marie E.
2651	Noble, William H.
2652	Noble, Lori L.
2653	Steen, Donna
2654	Razland, Beverly
2655	Hanson, Terry
2656	Ridgway, Eric
2657	Halstead, Pauline
2658	Conklin, Dani
2659	De Lorenza, Barbara
2660	Miller, Judy
2661	Kinucan, Edith S.
2662	Amundson, Sharon
2663	Kehler, Nancy
2664	Thornton, Wendy
2665	Schuibert, Roger
2666	Connolly, Linda
2667	Van Dellen, Clarence
2668	McClure, Sue
2669	Frost, Steve
2670	Bopp, Jody
2671	Wall, Laurelie B.
2672	Demers, David & Cindy Farmin R.
2673	Smith, Jeff

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
2674	Freir, Randy
2675	Hugenia, Gabrielle
2676	Moore, G.A.
2677	No Name
2679	Frederickson, C.
2680	Foster, I.
2681	Rosholt, Linda L.
2682	Rosholt, Darrell A.
2683	Russell, Kelly
2684	Kamp, Kristine A.
2685	No Name
2686	Savage, Lena
2687	Grow, Stephen E.
2688	Towne, Anthony
2689	Steward, Carolyn J.
2690	Towne, Audrey J.
2691	Steward, Joe N.
2692	Wood, Robert A.
2693	Finell, Fred
2694	Tonkyn, Carol J.
2695	Erickson, Eleanor M.
2696	Pettit, Helen
2697	Aldrich, Jean
2698	Pettit, Francis
2699	Gyorfey, Doug
2700	Fallis, Theresa
2701	Russell, Jim
2702	Osborn, Sarah
2703	Del Pino, Zephyr
2704	Wanamaker, Joan
2705	Mitchell, Robert B.
2706	Long, Annette Z.
2707	Erickson
2708	McCarthy, Brian & Pat
2709	Garst, Susan
2710	Krohn, Stephen B.
2711	Blanc, Louis E.
2712	Orzalli, Fred
2713	Shaw, Steven K.
2714	Spoto, Alan
2715	Chapman, Lee
2716	Carlson, John
2717	Emmer, Wendy
2718	Emmett, Margaret
2719	Envik, Erik
2720	Thompson, Erich S.
2721	Stokes, Shirley
2722	Frazier, Steve
2723	Miller, Catherine
2724	Hoadley, Barbara
2725	Raftery, Jr., James A.
2726	Blockoff, Susan
2727	Green, Thomas L.
2728	Gillming, Don
2729	Knott, Danny
2730	Schenck, Russell
2731	Auge, Gene L.
2732	Franck, Christine
2733	Hayden, Eve
2734	Manske, Jurgen
2735	Moseley, J.
2736	Gough, Charles
2737	Armour, Becky
2738	Armshem, Charles H.
2739	Lloer, Phey L.
2740	Auge, Darlene J.
2741	Hanna, Paul
2742	Poston, Melita
2743	Church, Gayle
2744	Aunan, P.
2745	Rosenberg, Barry
2746	Hall, Margaret W.
2747	Fletcher, Charles G.
2748	Fletcher, Lynda
2750	Peterson, Lana
2751	Graham, Adrianne
2752	Crear, Michael
2753	Tolle, Roger R.
2754	Geenson, Jessica
2755	Johnson, Daren
2756	Meinzer, Jennifer K.
2757	Aldrich, Erica
2758	Italiano, Gina
2759	Italiano, B.I.
2760	Italiano, J.
2761	Thompson, M.
2762	Zimmerman, Lizabeth
2763	Moen, Dan
2764	McKillop, Scott
2765	Cauley, Ruder
2766	Bogesvane, Jim
2767	Kollath, Jeff
2768	Fritsch, Richard
2769	Burr, Timber
2770	Walsh Family
2771	Silligem, Mike
2772	Davis, W.R. Michael
2773	Rosenberg, Catherine J.
2774	Pell, Thomas
2775	Manning, Roy M.
2776	Jackson, Bert
2777	Marx, David
2778	Draltos, Chris
2779	Randall, Norman

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
2780	Interested Party
2781	Sutton, Tracey
2782	Sundershaw, Michael J.
2783	Watkins, Hiana
2784	Interested Party
2785	Jeffers, Von L.
2786	Interested Party
2788	Fletcher, Jeanine
2789	Johnson
2790	Swan, P.J.
2791	Rains, Richard A.
2792	Greve, Corey
2793	Crowley, Kamille
2794	Butcher
2795	Interested Party
2796	Wethuer, Vincent
2797	Kotub, Ryan
2798	Interested Party
2799	Wunnow, Kevin
2800	Thompson, Royal
2801	Gunn, Timothy S.
2802	Gunn, Rose
2803	Pucci, Adam J.
2804	Interested Party
2805	Stevens, Brett
2806	Logan, Steve
2807	Wilcox, Diane
2808	Parzybok, Jan
2809	Parzybok, Ben
2810	Jacobs, Shawn
2811	Jenkins, Thomas
2812	Witte, Becky
2813	Akern, James W.
2814	Cook, Dona
2815	Cook, Rank
2816	Davis, Mary J.
2817	Jones-Sadowski, Peggy A.
2818	Sadowski, Stan E.
2819	Davis, Lewis
2820	Interested Party
2821	Pederson, Beth
2822	Stene, Raymond
2823	Stene, Phyllis
2824	Hales, Marilyn
2825	Miller, Diane
2826	Biddle, Billie Jo
2827	Volkenand, Anastazia
2828	Interested Party
2829	Clark, Rebekah
2830	Interested Party
2831	Simmons, Virginia
2832	Hasbrauck, Richard D.
2833	Simmons, D.C.
2834	Ball, Jeanie
2835	Hendren, Robert G.
2836	Kramer, Thomas
2837	Gordon, Eunise M.
2838	Cex, Pam
2839	Taylor, Katheryn M.
2840	Ivie, Harold V.
2841	Hagen, Don
2842	Marshall, George
2843	Tyson, Ken
2844	Holmstrom, Kimber
2845	Reed, Anna
2846	Benson, Lynn
2847	Whitney, Linda S.
2848	Pense, Joann
2849	Spohn, Connie
2850	Eyer, Sally
2852	Elliott, Christine
2853	Hall, Heidi
2854	Anderson, Christen
2855	Renk, Naomi
2856	Stroup, Bill
2857	Fletcher, Gretta
2858	Mills, Regina
2859	Bleecher, M.J.
2860	Bleecher, Darian
2861	Miro, Vanessa K.
2862	Woodby, Hope
2863	Rief, Dustin
2864	Avedow, Melvin
2865	Banning, Don
2866	Thomas, Don
2867	Lyster, Tom
2868	Banning, Holly
2869	Coward, Charles B.
2870	Walsh, Lynn
2871	Tozzi, Tom
2872	Interested Party
2873	Interested Party
2874	Davis, Gary L.
2875	Fallat, Margaret
2876	Fallat, Jim
2877	Hancock, Dave
2878	Loewenstein, Donna
2879	Babber, Doug
2880	Wilhins, Hans
2881	Wetzel, Shirley
2882	Dewitt
2883	Bologna, Maria
2884	Gustason, Michael
2885	McCoy, Neala

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
2886	O'Leary, Larry
2887	Bevans, Alice I.
2888	Randall, R. Bradley
2889	Randall, Patricia J.
2890	White, Jim
2891	Dickensheets, Shawn
2892	Volz, Paula D.
2893	Larsen, Maureen
2894	Larsen, Jens
2895	Cartwright, Adam S.
2896	Pryze, David
2897	Martin, Marcie
2898	Daisley, Pamela
2899	Joseph, Keith N.
2900	O'Keefe, Gerard
2901	Beatty, Kevin
2902	Sherriffs, Mary
2903	Asit, Bill
2904	Asit, Sally
2905	Crowe, Carole
2906	Piper, Lynn
2907	Dunstan, Sally S.
2908	McMillan, Harry E.
2909	Crowe, Randy G.
2910	Hefner, Jean
2911	Burda, Carey
2912	Trigg, Nigel
2913	Dagley, Virginia
2914	Alton, Craig R.
2915	Alton, Lois J.
2916	Hoagland, Larry D.
2917	Chappell, Grant & Lois
2918	Simonton, Suzanne J.
2919	Simonton, James V.
2920	Wentner, Kenette
2921	Johnson, Bonnie
2922	Thomas, David
2923	Schifering, James
2924	Williams, Ken
2925	Strenkel, Dan
2926	Reynolds, Tim
2927	Sevenich, Eli
2928	Clifton, Richard
2929	Perron, Marty
2930	Hansen, Glenn
2931	Arndt, Margaret
2932	Interested Party
2933	Ziesemer, Debbi
2934	McCord, Wendy
2935	Suans, Joan
2936	Evans, Jenny
2937	Anderson, Jennifer
2938	Holland, Rebecca
2939	Scutier, Patricia
2940	Holzapfel, Mark S.
2941	Lazar, Steven
2942	Bullock, Sam
2943	Francis, Julia
2944	Velacul, Terry
2945	Interested Party
2946	Johnson, Briel
2947	Katana, Marta
2948	Parryt, Tony
2949	Dupree, Dawn
2950	Shamat, Justin
2951	Francis, Michael
2952	Porath, Amy
2953	McCrum, Tara
2954	Barth, David
2955	Dixon, Deianlra S.
2956	Daugherty, Katherine
2957	Kesterson, Wendy Diane
2958	Cyr, Cathryn
2959	Lee, Tina M.
2960	Beckstrand, Daniel
2961	James, Julia A.
2962	Agnello, Virginia
2963	Carboni, Mareille
2964	Stevens, Sara
2965	Hoblitt, Jennifer C.
2966	Reece, Cliff
2967	Spencer, Melissa
2968	North, Lonlie
2969	Murray, Nicole
2970	Murray, Marilyn
2971	Morton, Tessie
2972	Hooper, Phillip
2973	Kuehl, Gina
2974	Cafferky, Rachel
2975	Cafferky, Bonnie
2976	Damereson, Kari
2977	Dameron, Sue
2978	Roberts, Lori
2979	Pierce, Robert N.
2980	White, Patricia
2981	Interested Party
2982	Klatt, Steve
2983	Piatchek, Pamela
2984	Rinck, Diane
2985	Grigg, Sharon
2986	Henderson, Tim
2987	McCabe, Michael
2988	McCabe, Diane
2989	Lundstrom, Jill M.

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
2990	Lopshire, Meri Kate
2991	Lima, Gina
2992	Anderson, Shanli
2993	Michels, Charity
2994	Apfel, Norman
2995	Hannigan, Jackie
2996	Vankirk, Pamela
2997	Oak, Don A.
2998	Reinbold, Eddie
2999	Oster, Cammie
3000	Oster, Angie
3001	Heryle, Marj J.
3002	Stockstill, Michelle
3003	Rounsville, Sandra
3004	Bradshaw, Conduce
3005	Burnach, Shasta
3006	McGowan, Yvette
3007	Berning, Seanna
3008	Lassen, Bambi
3009	Ennis, Nikki
3010	Chapman, Anna
3011	Coldwell, Douglas
3012	Millar, Sarah
3013	Kuhar, Kim
3014	Schafer, Thomas
3015	Hamilton, Emilie
3016	Collett, Katherine A.
3017	Hanson, Kelly
3018	Mitchell, Dorothy
3019	Rosenberg, Rhoda
3020	Ealee, Timothy J.
3021	Mabrey, Randi
3022	Mabrey
3023	Ensner, Jamie
3024	Rickert, Heidi
3025	Kleinert, Katrina
3026	Fielding, D.
3027	Reid, Angela
3028	Johnson, Dusty
3029	Bennett, Laurie
3030	Rodgers, Kate
3031	Dobay, Mike
3032	Besler, Sandy
3033	Mullens, Moon
3034	Bjorn, Dustin
3035	Bruce, Cicely K.
3036	Bell, Dan
3037	Touo-Grothe, July L.
3038	Watt, Fern
3039	Pennington, Holly
3040	Len, Cynthia
3041	Orth, Wesley A.
3042	David, Michael C.
3043	Cuberos, Tracie
3044	Lord, Marsha
3045	McSherry, Ragena
3046	Dallmann, Liana
3047	Brewster, Leslie
3048	Kristensen, Lynne
3049	Varah, Robert
3050	Brown, Steve
3051	Nilsan, Dean
3052	Miner, Stuart
3053	Steines, Tim
3054	Marks, Ance
3055	Farmer, Jon
3056	Interested Party
3057	Spratt, Lisan
3058	Interested Party
3059	Armstrong, Martin P.
3060	Baxter, Maureen
3061	Tapp, Helen
3062	Edwards, Bob
3063	Kienholz, N.R.
3064	Brown, F.
3065	Shropshire, Darcy
3066	Rose, Ken
3067	Sutton, Joan C.
3068	Faulkner, Marle
3069	Forbes, Carolyn H.
3070	Thompson, Clarice
3071	Emery, Virgil
3072	Interested Party
3073	Tutt, David M.
3074	Szybnski, Tracie
3075	Gloor, Dana
3076	Niggemeyer, Paul
3077	Meldon, Sue
3078	Kirchheimer, Authur E.
3079	Jenson, Charles E.
3080	Ruprecht, Nancy L.
3081	MacDonald, William
3082	MacDonald, Thelma W.
3083	Ziniti, Vicky
3084	Ziniti, Katherine
3085	Stockman, Lynne M.
3086	Harper, David
3087	Baker, Kim
3088	Taft, June
3089	Petersen, Kris
3090	Bell, Virgle
3091	Olsen, Eric & Erin
3092	Silver, Margot & Richard
3093	Huss, Linda M.

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
3094	Street, Kathryn F.
3095	Lampertz, Russell Jay
3096	Faulks, Sheri
3097	Faulks, Dennis
3098	Kerr, C.M.
3099	Stewart, Bonnie R.
3100	Lougheed, Ryan
3101	Johnson, Margo
3102	Dishman, Dianne
3103	Bigham, Julie
3104	Hepker, Wendy
3105	Casey, Jo
3106	Brockway, W.B.
3107	Brockway, Jeanne M.
3108	Esculanto, Rose
3109	Fisher, Traci
3110	Fisher, Joyce
3111	Ratcliff, Lisa
3112	Simpson, Dorothy
3113	Lerch, Jason
3114	Gillham, Lynda
3115	Lott, Phyllis
3116	Brosh, Donna
3117	Woods, Debbie
3118	Ahern, Jim
3119	Cameron, Bonnie
3120	Wolsfelt, R.D.
3121	Smith, Gayle
3122	Lopez, Sue
3123	Fister, Barb
3124	Dickson, Gail
3125	Soper, Wayne
3126	Cornett, Marilyn
3127	Schrimsher, Bobby
3128	Gloor, Fred
3129	Materne, Amie
3130	Rosenbaum, E. Scott
3131	Hui, Courtney
3132	Piper, Gretchen
3133	Mico, Courtney
3134	Elan, Beck
3135	Smith, Robyn
3136	Kelley, Pam
3137	Massey, Donna M.
3138	Jeffries, Jennifer
3139	Watson, Mark
3140	Dececchisty, Joseph B.
3141	Dececchisty, Hillary
3142	Ostby, Jami
3143	Beshvnsky, David
3144	Spurling, Mike
3145	Feierabend, Rachel
3146	Nelson, Scott
3147	Vanek, Buffy
3148	Hanlon, Jaisy
3149	Shelton, Debra
3150	Strayer, Daniel J.
3151	Nielsen, Erik
3152	Lyster, Thomas
3153	Dietz, James
3154	Brady, Erin
3155	Clark, Lisa
3156	Schultz, Stephen
3157	Akers, Katherine
3158	Shelton, Andrew
3159	Shelton, Alex
3160	Lukezech, Buck
3161	Weiner, Ed
3162	Jablon, Matt
3163	White, Nancy
3164	Amato, Diane
3165	Midstokke, Alison
3166	Midstokke, Kim
3167	Smith, Peter
3168	Reeves, Brian
3169	Wood, Penny
3170	Natoni, Catherine
3171	Keiffer, Steven C.
3172	Arndt, Sara
3173	Hovanski, Lydia
3174	Blaese, Lisa
3175	Renfro, Carl
3176	Darley, Nancy
3177	Clark, Colleen J.
3178	Brecken, Rose
3179	Long, William E.
3180	Zink, Sheila
3181	Ferrante, Mariott
3182	Ferrante, Judith K.
3183	King, Christopher
3184	Laning, Jaclyn
3185	White, Annabel
3186	Dudby, Steve
3187	Gentry, Gwen
3188	Garat, Pam
3189	Larson, Pat
3190	Lyon, Sean
3191	Grant, Cheryl
3192	Leggett, Ronald J.
3193	Lane, Charles T.
3194	Klein, Lee
3195	Klein, George
3196	Todt, Kathy
3197	Ganssle, Karen

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
3198	Fasanello, Emily D.
3199	Bianco, Meyla C.
3200	Taillon, Leslie
3201	Lewis, William R.
3203	Kuhns, Lore L.
3203	Barnett, William J.
3204	Interested Party
3205	Orton, Kristina
3206	Shearer, Mark & Misa
3207	Robinson, Carol E.
3208	Davidson, Matthew E.
3209	Penland, Richard
3210	Wends, Nick
3211	Bishop, Mike & Lois
3212	Interested Party
3213	Dean, Dick
3214	Nelson, Bryn V.
3215	Hansen, Susan L.
3216	Thompson, Elaine
3217	Bodner, Meeche
3218	Bishop, India
3219	Broughton, David
3220	Davis, Mary J.
3221	Whitten, Karen L.
3222	Garcia, Dan
3223	Lamb, Justin
3224	Hodgkins, Pete B.
3225	Kopas, Marleigh A.
3226	Braumiller, Christine
3227	Countryman, Charles
3228	Knight, Billie
3229	Dally, Stephen
3230	Joseph, Bill
3231	Walker, Harold
3232	Diedrich, Becky R.
3233	Diedrich, Steve
3234	Corcoran, Mary
3235	Tajan, Tyler N.
3236	Ronan, Sasha
3237	Stutzman, Linda
3238	St. John, Loran R.
3239	Reichold, Michele
3240	Gilligan, Michael
3241	Alarid, Kerrie
3242	Brannigan, Harvey
3243	Olson, Jem
3244	Miller, Lois
3245	Argites, James B.
3246	Hahn, Janice D.
3247	Hahn, James L.
3248	butler, Barbara
3249	Lovenbury, Margaret
3250	Whitney, Pamela
3251	Interested Party
3252	Henry, Randa
3253	Ojalt, David
3254	Kirshberg, Kim
3255	Reinbold, Julie
3256	Hery, Kelly
3257	McNall, Susan
3258	Rudolph, Ethelyn M.
3259	Interested Party
3260	Presler, Mavis
3261	Kurtz, Milt
3262	Marks, Michelle
3263	Hart, Alan
3264	Rester-Keaton, Juli
3265	Gregg, Tiffany
3266	Lockwood, Corinna
3267	Leech, A.L.
3268	McMillan, Dennis
3269	Smith, Virginia
3270	Long, Mason
3271	Daugharty, D.M.
3272	Shoemaker, Brian K.
3273	Millan, James
3274	Miller, Keff
3275	Burt, Jan
3276	Forsythe, Karen
3277	Caufield, Tim
3279	Downard, Gayl
3280	Barnes, Carla
3281	Walden, Chris
3282	Thomas, Josh
3283	Aleda, Margaret
3284	Mitchell, Jayson
3285	Chapple, Jessica
3286	Bistten, Pat
3287	Mudra, D.E.
3288	Jaeger, John
3289	Milne, Lois
3290	Umphress, David
3291	Best, Kenneth R.
3292	Ringland, Kim
3293	Shears, Duane
3294	Collinson, Donna
3295	Schuessler, Betty
3296	Scharb, David
3297	Guenstein, Scott
3298	Girard, Christopher M.
3299	Frost, I.E.
3300	Cushmerr, Leslie
3301	Dullea, Sean
3302	Tedexo, William T.

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
3303	Konopro, Deborah
3304	Price, Lewis
3305	Delvcchi, Josh
3306	Robey, Linda
3307	Spitz, Ray
3308	Interested Party
3309	Harvey, Lex R.
3310	Rasmussen, Kurt
3311	Keck, Eleanor
3312	Nielson, Lanny
3313	Kinney, Malcolm
3314	Baune, Dale
3315	Christensen, Bob
3316	Gardner, Betty
3317	Rollins, Jeanette
3318	Olson, Robert
3319	Run, Betty L.
3320	Honsinger, Bruce
3321	Honsinger, Dianne
3322	Hodge, Ronald R.
3323	Stitsel, Marty
3324	Judge, John C.
3325	Grover, Jim
3326	Briggs, Kevin
3327	Baker, Sharon M.
3328	King, Sally A.
3329	MacDonald, Rowdy
3330	Mulqueen, Mary
3331	Fogarty, Shana
3332	Ponsness, Pam
3333	Carboneau-Kincaid, S.
3334	Morton-Gramyk, Lisa M.
3335	Graugk, Ken
3336	Ginzton, Linda
3337	Clark, Caley
3339	Grass, Lori
3340	Jones, Andrea
3341	Shelly, Harriette
3342	Interested Party
3343	Scoles, Wade
3344	Rutzke, Jess
3346	Dishong, Diana
3347	Thomas, Shane
3348	Green, Marji
3349	Gunter, David
3350	Curtis, Rich
3351	Bird, Maureen
3352	Bird, Daniel
3353	Ripley, Dale
3354	Huff, Sora
3355	Jones, Eddie
3356	Donaldson, Barry
3357	Hamilton, Toni
3358	McHenry, Pat
3359	McHenry, Julie
3360	Akevs, James E.
3361	Lefebvre, Darcie
3362	Fiedler, Mary
3363	Holcomb, Charles
3364	Ringland, Kristi
3365	Gilielhenhaus, Jazz
3366	Ashbrook, Velta
3367	Vrigle, Richard
3368	Miller, Allyn J.
3369	Jensen, Darwin
3370	Southworth, Arlene
3371	Interested Party
3372	Gregory, Eldon
3373	Guthrie, Heather
3374	Thomas, Tim
3375	Lewis, Leon
3376	Silverrale, Michael
3377	Bezecny, Sharon
3379	Ogbeide, Kiersten
3380	Middleton, George
3381	Ramos, L.
3382	Nance, William J.
3383	Hoffman, Julie
3384	Wood, John E.
3385	Hess, Linda
3386	Rajala, Sandy
3387	Moore, Lynn
3388	Bistodeau, Sharon
3389	Jacobson, Flora
3390	Rourd, Steve
3391	Carboni, Denise
3392	Mueller, Jessie
3393	Banks, Mary Lou
3394	Ridley, Barbara
3395	Hansen, Debbi
3396	Walsh, Vicki
3397	Roop, Patty
3398	Wise, Jaynee
3399	Wood, Betty Jo
3400	Phillips, Anna
3401	Coestafford, M.
3402	McSherry, Kathy
3403	Dunn, Scott
3404	Palmer, Linda
3405	Kendall, Dianne
3406	Barnett, Tina
3407	Beauchene, Phyllis
3408	Young, Lorin
3409	Anderson, Laurie K.

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
3410	Anderson, Steven E.
3411	Chambers, Chris
3412	Chambers, Kathy
3413	McGuire, Philip T.
3414	Krukowski, Delores
3415	Stapleton, Larita
3416	Krukowski, Neal
3417	Dasher, Diane
3418	Williams, Diane
3419	Jamieson, K.R.
3420	Kittleson, Leanna
3421	Bieter, David H.
3422	Smith, Chuck
3423	Schaudt, Bill
3424	Libby, Ray
3425	Simmons, Robert L.
3426	Giordano, Robert
3427	Taylor, Mary
3428	Houpis, Harry L.F.
3429	Giffert, Robert C.
3430	Gestring, Bonnie
3431	Stevienson, Charles K.
3432	McCullough, Nancy
3433	Kiley, Quinn
3434	McChesney, H.L.
3435	Gless, Pauline A.
3436	Gless, Elmer E.
3437	Shari, Arlo
3438	Poirier, Roger
3439	Roberts, Dexter
3440	Schombel, L.F.
3441	Poten, Constance J.
3442	Scharbel, Steve
3443	Berry, Jamie
3444	Carey, Bill
3445	Phear, Nicolette
3446	Grosser, Bridge
3447	Daugherty, Brian
3448	Mueller, Ronald L.
3449	Roy, Tom
3450	Laverman, Bruce
3451	Hum, Jeanne
3452	Fassnacht, Debbie B.
3453	Gilels, Dori
3454	Osse, Timothy J.
3455	Eriksen, David N.
3456	Osse, Lisa
3457	Bilich, Dan
3458	Mullin, Steve
3459	Bittner, Joy
3460	Coats, Carol
3461	Coats, Dennis
3462	Ezrael
3463	Meland, Shirley
3464	Meland, Quinten R.
3465	McNeil, Patrick J.
3466	Corsaro, Sheri
3467	Ross-Thompson, Cherie
3468	Collins, Diane
3469	Trejos, Bruce A.
3470	Smith, Greg
3471	Warren, Wes
3472	Wolfe, David
3473	Zelinski, David
3474	Rounsville, Sarah
3475	Rebella, Linda
3476	Lakes, Greg
3477	Emmer, James
3478	Clark, Thomas E.
3479	Maushe, Jurgen
3480	Taylor, Mark S.
3481	Schelley, Jerome H.
3482	Ralph, Richard P.
3483	Miller, Doug
3484	Kovatch, Patricia A.
3485	Heim, Janet
3486	Dilley, Robert
3487	Kosse, Raymond B.
3488	Kremer, Paula
3489	Kremer, Al
3490	Heath, Brock
3491	Ontko, Elizabeth
3492	Leake, Tyler
3493	Leake, Aaron
3494	Ward, Jeffrey
3495	Thorell, Lennart
3496	McCroskey, Floyd
3497	Summa, B.
3498	Wickman, Jack
3499	Kreidler, Cskla
3500	Leake, Heather
3501	Thorpe, Ben
3502	Randau, Don
3503	Hoss, Sandra
3504	Wilson, Carol
3505	Wilson, Matt
3506	Vivian, Gwen H.
3507	Vivian Fran K.
3508	Midstokke, Denise
3509	Midstokke, Eric
3510	Hellar, Gretchen
3511	Hamilton, Michelle
3512	Vogel, Jeff
3513	Nusbaum, Debb

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
3514	Fairbrother, Jennifer
3515	Mitchell, Sharon
3516	Ogden, Allen
3517	Hively, Robyn
3518	Townsend, Loren R.
3519	Larocca Jenie
3520	Hasbrouck, Deloris
3521	Singleton, Nancy
3522	Riall, Beth
3523	Dahl, Harvey
3524	Saunders, Ken
3525	Reisenauer, Mary
3526	Saunders, Kathy
3527	Lange, Diana
3528	Blockoff, Stuart
3529	Smyth, Keith
3530	Carter, Mardee
3531	Interested Party
3532	Quigley, Saul
3533	Howe, Robert
3534	McLand, Larry
3535	Zurenda, Sara E.
3536	Jones, Douglas E.
3537	Tulloss, Bruce
3538	Krohn, Irene
3539	Koch, Jaynee
3540	Siedentop, Dorothea
3541	Frazer, Judith
3542	Steinway, Carol
3543	Kenney, William
3544	Leonetti, Doug
3545	Kreidler, Jim
3546	McDivitt, Damien
3547	Reichold, Dustin
3548	Goerdt, Alan
3549	Coulter, Emily J.
3550	Bushway, Bruce
3551	Lord, Chris
3552	Nordgaarden, Corinna
3553	Kantor, Mary R.
3554	Grow, Stephen E.
3555	Dornbusch, Joseph E.
3556	Yeager, Judy
3557	Kalafatich, Kelley
3558	Jessup, David
3559	Bowker, Annie
3560	Wickham, June
3561	Fallis, Shayne F.
3562	Moe, Millie
3563	Moe, Ryan
3564	Ledford, III, James W.
3565	Brown, Chris C.
3566	Erickson, Todd M.
3567	Buchanan, Melissa
3568	O'Neill, Malea
3569	Lynch, Thomas Kelley
3570	Horton, Ronald J.
3571	Cox, Brian
3572	Cox, Sarah
3573	Wheelwright, Karen
3574	Hoghbanks, George
3575	Henry, Daniel
3576	Allen, Michael A.
3577	Malerich, Suzanne
3578	Malerich, Pete
3579	Clark, Bob
3580	Dehner, Chloe
3581	Crabb, Tom
3582	Nyberg, R.S.
3583	Parker, Katie
3584	Martin, Larry E.
3585	Thomas, Timothy C.
3586	Etter, Stephanie S.
3587	Busch, Edward R.
3588	Lecy, Robert G.
3589	Beth, Jill
3590	Dolphin, Tony
3591	Ciccone, Rosalie
3592	Abbott, Bob
3593	Helm, Matt
3594	Wing, Jason S.
3595	Nichols, Lynn
3596	Stein, Tim
3597	Davenport, Tom
3598	Albertson, Doug
3599	Christie, Tim
3600	Coulter, Jeffery
3601	Manley, Art
3602	Erickson, Jennifer
3603	Moate, Robert
3604	Hinrichson, Donna
3605	Babcock, Ben
3606	Hammons, Gary
3607	Ingram, Eric L.
3608	Jacobson, Paul
3609	Hovelt, Scott
3610	Williams, James T.
3611	Brown, Harvey L.
3612	Brown, Brian
3613	Kasun, Robert J.
3614	McCrady, Andrea
3615	Hathaway, Teena
3616	Grice, Teresa Ann
3617	Grice, Brian

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
3618	McComas, Floyd
3619	Graham, Judy
3620	Thurpe, Jon
3621	Smith, Carey
3622	Starr, Jean
3623	Waring, Philip
3624	Loughlin, Kelsey
3625	Rosenberger, Norma
3626	Hawkins, Brian
3627	Edwards, Jep
3628	Blegen, Brad W.
3629	Torigoe, Ann
3630	Cowley, Ann
3631	Cowley, Dennis
3632	Kepp, Ted
3633	Osier, Connie R.
3634	Murray, Dianne
3635	Ray, Chad D.
3636	Smith, Lynn
3637	Goodwin, Sid
3638	Hickman, Glen
3639	Dayharsh, John E.
3640	Fix, William C.
3641	Dent, George L.
3642	Dent, Pauline
3643	Brown, Doug A.
3644	Anderson, Susan
3645	Evans, Vera
3646	Amicarella, Joet
3647	King, Patricia
3648	Shaffer, Rod E.
3649	Richard, Don
3650	Ailard, Tod
3651	Scheel, Jeff
3652	Hayes, Ronald W.
3653	White, Linda
3654	Scott, Paul
3655	Winings, Kenneth
3656	Frechette, Robert J.
3657	Langley, Gloria
3658	Smith, Kris
3659	Kruse, Richard
3660	Czyson, Edward D.
3661	Martin, Chris
3662	Babcock, Leroy
3663	Sbieca, Frank
3664	Kruse, Scott
3665	Burnett, Lyle W.
3666	Kruse, Jeff
3667	Greenough, Steve
3668	Kruse, Beverly
3669	Gelhausen, Andy
3670	Warner, Kenneth J.
3671	Skogstad, Ronald J.
3672	Lonigro, Jerry J.
3673	Wittig, Eugene F.
3674	Wittig, Ray L.
3675	Werner, Carol
3676	Plummer, Truman
3677	Skyelander, Ken
3678	Weaselhead, Joe
3679	Ryan, Peter Crowley
3680	Thurgood, Lynda L.
3681	Hurley, Pat
3682	Weber, Julie
3683	Chambers, Linda
3684	Tell, Dana
3685	Collins, Cari A.
3686	Parochetti, Catherine
3687	Ball, Alan
3688	Sykes, Tom
3689	Matejovsky, Cindy
3690	Crowley, Don
3691	Lawton, Karen
3692	Kienholz, Noah
3693	Skjersaa, Terry
3694	Parybok, Ben
3695	Brosgall, Adam
3696	Moon, Brandon
3697	Neureuther, Chuck
3698	Ambrose, Tim
3699	Streubel, Dan
3700	Hauck, Roland L.
3701	Linton, Mark Fletcher
3702	Campbell, Alma
3703	Asher, Ron
3704	Rookey, Steven D.
3705	Ondrey, David A.
3706	Delucchi, Judy
3707	Arndt, Catherine S.
3708	Logan, J. Patrick
3709	Interested Party
3710	Yarborough, Bryan
3711	Willis, Leah
3712	Osborn, Todd D.
3713	Interested Party
3714	Interested Party
3715	Benning, Marvin
3716	Connolly, W.F.
3717	McCune, Susie
3718	Tobin, Pam
3719	Tobin, Doug
3720	Contorelli, Cole
3721	Clark, Rose A.

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
3722	Interested Party
3723	Sellars, Tricia
3724	Krewatch, William V.
3725	Van Horne, Steve
3726	Donerfeld, Mel
3727	Seidl, Dick
3728	Drinkard, Stephen
3729	Drinkard, Susan
3730	Garcia, George
3731	Richards, Sandi
3732	Ganbell, Christen
3733	Mouland, Christine
3734	Smith, William
3735	Mende, Debbie
3736	Interested Party
3737	Interested Party
3738	Ball, Sandra A.
3739	Kay, Jason
3740	Regnier, Betty L.
3741	Hamilton, Robert
3742	Interested Party
3743	Interested Party
3744	Kennedy, Scott R.
3745	Tieton, Melisa
3746	Pouts, David
3747	Donohue, Melissa
3748	Haynes, Sue
3749	Haynes, Charles
3750	Boge, Mona
3751	Boge, Michael
3752	Kassel, B.
3753	Aunan, Terri
3754	Walker, Harlan
3755	Lojek, Brian
3756	Zimmer, Laura
3757	Bengford, Bob
3758	Bellony, David
3759	Bellony, Susan
3760	Morgan, Allen
3761	Collins, Kevin
3762	Orrielas, Mindy
3763	Rosteck, Jamie & Barb
3764	Hyster, Patti
3765	Interested Party
3766	William, Bill
3767	Blood, Barbara
3768	Janusz, Barbara
3769	Garner, Teddi
3770	Utcraft, Sherry
3771	Coe, Jonathan
3772	Sett, R.C.
3773	Wells, Jenny
3774	Smith, Nolan
3775	Brannigan, Erin
3776	Jacobson, Dan
3777	Darling, Richard
3778	Darling, Noreen
3779	Navarre, Linda L.
3780	Wathers, Robert J.
3781	Tiffany, Gregg
3782	Clark, A.J.
3783	Carlton, Amber
3784	Tauber, Linda
3785	Tauber, Cassie
3786	Dannenbrink, Tom
3787	Tonhofer, Dennis
3788	Nordhagen, Bryce
3789	Rankin, Laura
3790	Propp, Melinda
3791	Black, Anne
3792	Wilson, Nancy
3793	Krantz, Lou Anne
3794	Main, Deanna
3795	Logan, Carrie
3796	Clark, Cherry
3797	Olson, G.N.
3798	Olson, Trish
3799	Rogers, Joey
3800	Rogers, Kelly
3801	Marriott, Linda
3802	Meurer, Anne L.
3802	Wight, Maralyse
3804	Guderjahn, Burgit
3805	Bennett, William & Candyce
3806	Mooers, Matthew
3807	Brooks, Molly
3809	Summerhill, Susan
3810	Batrach, Kelly
3811	Bry, W.K.
3812	Bry, Frank
3813	Jacklin, Wade
3814	Wales, Pam
3815	Garber, Willa A.
3816	Simpson, Julie D.
3817	Fenling, Andrew J.
3818	Kitchens, Leslie
3819	Lind, Douglas
3820	Laflin, Maureen
3821	Owens, Mark J.
3822	Owens, Delia
3823	Wilson, Margaret
3824	Rossi, Jenna
3825	Delfino, Pat
3826	Schlegel, Charles

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
3827	Hagenbaugh, Robert L.
3828	Hecht, James C.
3829	Rogers, Marylin
3830	Muir, Susan
3831	Moshin, Mark
3832	Rowan, R.W.
3833	Cernohouz, Tom
3834	Interested Party
3835	Bankson, Jeff & Kate
3836	Suppiger, Gerhort
3837	Derigo, Vance J.
3838	Coit, Julie
3839	Chase, Don
3840	Bradley, Susan C.
3841	McCanlies, Nancy
3842	Showers, Kathy
3843	Gloor, Helen
3844	Pleasants, Clancie
3845	Moulton, Margie
3846	McCanlies, Lisa
3847	Stevens, Alan
3848	Howard, Darcie
3849	Arnold, David & Jennifer
3850	Doyle, Sharon
3851	Berenzwerg, Karen
3852	Miller, Kirk
3853	Schofield, Donald & Kathy
3854	Cernohouz, Amos J.
3855	Johnson, Georgia
3856	Benson, Wendy
3857	Hoiland, Dewey
3858	Ross, Penny L.
3859	Interested Party
3860	Rasmussen, David J.
3861	Chaplin, John
3862	Roberts, Cathy
3863	Wright, Cecelia M.
3864	Dunn, Lorri
3865	Elzey, Melissa
3866	Glickenhaus, Scott
3867	Furtney, David J.
3868	Harrelson, Ronald G.
3869	Harrelson, Carolyn
3870	D'Orazi, Thomas
3871	Berg, Flossie M.
3872	Orzer, Delimarty Scott
3873	Thornton, Jennifer
3874	Susnis, Cindy
3875	Santa, Lee
3876	D'Aoust, Susan
3877	McGeoghegan, Shirley
3878	Leavitt, Christy
3879	Gundy, Dave Van
3880	Nustrum, Debra
3881	McGuire, Will
3882	Dorrington, Thomas L.
3883	Smith, Bill
3884	Swanson, Deborah
3885	Interested Party
3886	Ornelas, Mindy
3887	Kellogg, Rachel
3888	Nance, Lindsay
3889	Ryberg, Meghan
3890	Clark, Eva
3891	Puls, Tyson R.
3892	Burke, Howard
3893	Interested Party
3894	Mierra, Eelia
3895	Ward, Jeffrey
3896	Pierce, Mark
3897	Lowden, Dean
3898	Freeland, Heather
3899	Reeds, Christine
3900	Howell, Donna M.
3901	Worzala, Ed
3902	Miller, Sadae
3903	Lampmaun, Linden J.
3904	Fedak, Lora
3905	Moore, Kelly & Dennis
3906	Moore, Brent T.
3907	Sisemore, Amy & Tim Romas
3909	Parchen, Randy & Renee
3910	Parchean, Noelle
3911	Janas, Jennifer
3912	Fries, E. Stephanie
3913	Copeland, Dianna
3914	Bruck, Robert
3915	Bodner, David W.
3916	David, Kelly S.
3917	Poston, Melisa
3918	Campbell, Paula M.
3919	Kinney, Elizabeth S.
3920	Thompson, Monte
3921	Fulford, Joan
3922	Offermann, Wendy
3923	Mayginnes, Ken
3924	Miller, Jamie
3925	Interested Party
3926	Bricker, Ted
3927	Gasper, Anne M.
3928	Bratley, Ernest
3929	Interested Party
3930	Cunningham, Linda S.
3931	Klein, Phyllis

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
3932	Leake, Stephen
3933	Runa, Barbara
3934	Mack, Michael
3935	Gavzza, Barbara
3936	Ramey, Daryl
3937	Skyster, Dave
3938	Kendrot, Ann
3939	McLagan, Denise
3940	Hoss, Julie
3941	Hornbeck, Janice Hope
3942	Jordan, Kathryn
3943	Weatherford, Jason/Schafroth, Don & Nancy
3944	Ferguson, Evelyn
3945	Matlock, Ben
3946	Sieckmann, Lee
3947	Lucas, Jeanette
3948	Jones, Philip L.
3949	Lutes, Mary
3950	Eschleman, Judy
3951	Williamson, Cobey
3952	Hedrick, Jan
3953	Carter, Sol/Selwyn
3954	Gibson, Raymond M.
3955	Neff, Susan & Richard A. Sylvester
3956	Coalson, Janet W.
3957	Interested Party
3958	Gilbert, J.L.
3959	Keenan, Judy
3960	Anderson, John A.
3961	Interested Party
3962	Haggarty, David & Dolores
3963	Anderson, David & Susan
3964	Blanchard, Marshall
3965	Young, Lori
3966	Burt, Jan
3967	Kenny, Jeff
3968	Jochim, Scott
3969	Mulhauser, Edward
3970	Kivcera, Julie
3971	Interested Party
3972	Bonzo, Wesley H.
3973	Kane, Susanne
3974	Gough, Scott
3975	White, Jake
3976	Davis, Jayne
3977	Merrell, Jeffrey
3978	Neumann, Kathy
3979	Maxwell, Jessie
3980	Fincher, Pat
3981	Goodrich, Bibiana
3982	David, Billye
3983	Wheeler, Vaughnette
3984	Lapham, Joseph & May L.G.
3985	Rider, Michael F.
3986	Garcia, Paril
3987	Wagoner, Mike
3988	Braumiller, Tanya & Charles Meyer
3989	Meye, Charles
3990	Lund, Marion I.
3991	Berning, Juline A.
3992	Bartlett, Chris
3993	Joseph, Mike & Heather
3994	Adler, Kenneth P. & Irene
3995	Johnson, Bruce
3996	Wood, Jim
3997	Pray, Nicole
3998	Parks, Robert
3999	Bitton, Joanna
4000	Cobb, Octavia
4001	Bitton, Jocelyn
4002	O'Flynn, Alison
4003	Holmes, Steve
4004	Kullenberg, Les
4005	Pick, Ruthie
4006	Elsule, C.
4007	Bakken, Doug
4008	Hadley, Leo
4009	Kirby, Mike
4010	Best, Ken
4011	Guercio, Joe
4012	Goughnour, Albert
4013	Brown, Kathryn
4014	Reed, Ron
4015	Brown, J.
4016	Interested Party
4017	Lehman, Edward A.
4018	Jones, Claire
4019	Berghan, Jessica
4020	Hendrikson, Jack
4021	Hochwender, Dennis
4022	Koich, Chris & Debra
4023	Schaub, David
4024	David, Kevin
4025	Di Cicco, Lisa
4026	Osfrom, Michelle
4027	Seeby, Duncan
4028	Benson, C. Ivan & Nancy B.
4029	Lehtonen, Sampsa
4030	Bombino, Victoria
4031	Templeton, Lois
4032	Polin, Jessie
4033	Schrieber, Matt
4034	Fredborg, Malene
4035	Stinton, Joel

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
4036	Titlisch, Tom
4037	Stanton, Roger & Rona
4038	Hatch, Sharon
4039	Flynn, Michael J. & Pamela R.
4040	Lougheed, Clint
4041	Prohasiga, Thomas
4042	Huning, Paul
4043	Schoeffel, Connie
4044	Brek, John M.
4045	Kitchen, Curtis
4046	Interested Party
4047	Bochner, David W.
4048	Makela, Jay
4049	Mehler, Tom
4050	Herron, Diane L.
4051	Wentz, Jevelyn J.
4052	Slovais, Mark E.
4053	Fitzpatrick, Quinn
4054	Delong, Peter A. & Allison L.
4055	Spencer, Bruce M.
4056	Crumb, Barbara
4057	Richman, Clark
4058	Black, Leonard
4059	Geide, Susan
4060	Gauzza, George
4061	Reisenauer, Dave
4062	Rasmussen, David
4063	Bend, Jeffrey S.
4064	Shackelford, Wendell
4065	Hart, Judye
4066	interested Party
4067	Smith, Karen H.
4068	Lerch, Leslie
4069	Rorke, Marleve
4070	Cichosz, John
4071	Scanlan, Tracey
4072	Tinder, Amber
4073	Lyster, Kate
4074	Whitney, Rory
4075	Owens, M.J. & Delia
4076	Graff, Judy
4077	Sturm, Nadine
4078	Dubyk, Dean
4079	Hiromoto, Tatsunori & Takae
4080	Lovick, Linda
4081	Morrison, Maria
4082	Dean, Judy
4083	Kleir, Richard L.
4084	Lynn, Sheelagh
4085	Miller, Barbara
4086	Penberthy, Brit
4087	Weber, Ryan
4088	Frank, Alex & Becca
4089	Lieber, Molly
4090	Woolnovey, A.C.
4091	Dellagnese, Devin
4092	Dellagnese, John
4093	Forsyth, John
4094	Krulz, B.
4095	Ramsey, Thomas
4096	Miller, Jeff R.
4097	Litsinger, Jean J.
4098	Swanson, Cindy
4099	Miller, Tom
4100	Smith, Norm
4101	Jones, Rich
4102	Carol, Stephanie
4103	Robbins, Jackie
4104	Durnin, Michael
4105	Young, Marc
4106	Hanson, Ronald M.
4107	Winston, Karen
4108	Reine, Michelle
4109	Lindsay, Rodney G. & Janice L.
4110	Bough, Gary & Jennifer
4111	Ferrel, Jr., Charles M.
4112	Avery, Benjamin D. & Amy C.
4113	Kinzel, Bill
4114	Wilson, Debbie
4115	Heisel, Britt
4116	Patterson, James
4117	Hayden, Jim
4118	Solce, Joe C.
4119	Mackey, Peggy M.
4120	Lane, Sr., P.J.
4121	Tinder, Jean
4122	Johnson, Kathy
4123	Zentzis, Sharon
4124	Long, Brian D. & Traci Post
4125	Conley, Kellie
4126	Miller, Lisa
4127	Leonard, Phil & Mary
4128	Lane, Nadean
4129	Fischer, Lana
4130	Werry, E.V.
4131	Geil, Victoria E.
4132	Bentser, Terry
4133	Price, Siobhan
4134	Connelly, Connie
4135	Petersen, Heather
4136	Reoch, Joyce
4137	Dar, Kauser S.
4138	Bean, Debbie & Brandy Pytle
4139	Beyer, Gilbert E.

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
4140	Kalmott, Andy C. & Joyce
4141	Coble, Lee
4142	Aldrich, Jenny & Ben McCord
4143	Huffman, Suzanne
4144	Mikita, David & Sandy
4145	Fisher, Forrest
4146	Interested Party
4147	Devereaux, Linda
4148	Johnson, Marguenta
4149	Wells, Sara
4150	Hansen, John R.
4151	Kayser, Bridgett K.
4152	Fraser, Elizabeth
4153	Coffelt, Dale
4154	Palmer, George A.
4155	Henderson, Wayne
4156	Gehlin, Dale
4157	Clarke, Clay
4158	Oliver, Glen W.
4159	Crettol, Joyce
4160	Mico, Peter & Gail
4161	Glazier, Demarie
4162	Larsen, Alice
4163	Grabenstein, Christa
4164	Severson, Mark
4165	Bailey, Jeff
4166	Butler, Dan
4167	Harris, Randy J.
4168	Kelly, Joe
4169	Wilder, Shari
4170	Williams, Andrea
4171	Torgerson, Alan
4172	McClaine, Carolyn
4173	Christiansen, Lani
4174	Stanley, Melvin
4175	Anderson, Rhett
4176	Allamandola, L.J.
4177	Attaway, Ric
4178	Oakley, Melissa
4179	Bailey, S.
4180	King, Deborah
4181	Moore, Regina
4182	Arcieri, Henry
4183	Charzempa, David
4184	Robinson, Emily
4185	Davisen, J.C.
4186	Keeley, Donna M.
4187	Jones, Dortha L.
4188	Pelland, Ray
4189	Kendall, Jerome & Linda
4190	Vonbank, Joan
4191	Jevons, Cecil F. & L. Renee
4192	Mitchell, Sherry
4193	Hidy, Tom
4194	Felts, Keith
4195	Pettersen, Harry F.
4196	Holcomb, Alan E.
4197	Evans, Jane
4198	Gollin, W.W. & Carol A.
4199	Dulbarger, Paula
4200	Ballett, Dave
4201	Eberle, Lois
4202	Thorson, Walter R. & Mary E.
4203	Bergman, Kristin
4204	Stark, Ronald W.
4205	Vriale, Richard
4206	Bartron, Glen E.
4207	Morrison, Janet C.
4208	Morrison, Carla J.
4209	Foord
4210	Decker, Larry
4211	Smith, Dani
4212	Bartlett, Amy R.
4213	List, Mark D.
4214	Van Lien, Dee
4215	Swanstrom, H.
4216	Twinbull, Travis
4217	Interested Party
4218	Frank, Rodney & Justin
4219	Lish, Adara
4220	Minick, Ricky
4221	Minnis, Linda
4222	Pass, Diana L.
4223	Wilkins, Debbie
4224	Nichols, Billy & Catherine Stephenson
4225	Arnold, G.
4226	Noirot
4227	Wilson, Marcy
4228	Chaney, Linda
4229	Pries, John R. & Myrtle L.
4230	Flert, Claire
4231	Reuter, Janet K.
4232	Bond, Jeffrey S.
4233	Cady, Taylor
4234	Dammarell, Marlin
4235	Bankord, Brandy
4236	Vest, Eric
4237	Darling, Zanthi
4238	Cousins, Anne
4239	Padilla, Beatrice G.
4240	Schnityler, Kristee & Jason Brown
4241	Adamson, Jim
4242	Bane, Gary
4243	Vroman, Marc

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
4244	Martz, Melody S.
4245	Stansell, Betsy
4246	Candee Jennifer
4247	Benuenuto, Mike
4248	Meyer, Robert J.
4249	Rogers, Ken
4250	Walls, Rebecca
4251	Hatfield, Michael
4252	Whitesell, Steve
4253	Powell, David R.
4254	Maddy, Trisha
4255	Rain, Richard A.
4256	Brown, Rick
4257	Johnson, S.
4258	Wilson, Paul
4259	Powell, Shen
4260	Hill, Lawrence C.
4261	Meister, Larry
4262	Meister, Nicole
4263	Beasley, Mike
4264	Spivey, Daniel P.
4265	Spivey, Evelyn
4266	Andrews, Scott
4267	Smith, Cynthia
4268	Anderson, Jack D.
4269	Berliner, Dave
4270	Bosley, Dorothy
4271	Bauer, Gary
4272	McGovern, Erin
4273	Peterson, Sr., Marshall E.
4274	Hultberg, Patty
4275	Bearden, Jimmy W.
4276	Dooley, Nancy
4277	Mattison, Brenda
4278	Dear, Debbie
4279	Interested Party
4280	Interested Party
4281	Van Gundy, Darcy
4282	Hartley, Jaylene
4283	Hawkins, Barry
4284	Farmin, Tammy
4285	Walker, Paul
4286	Waldren, Carrie
4287	Interested Party
4288	O'Brien, Shawn & Jennifer
4289	Vincent, Anthony
4290	Rogers, Patricia
4291	Cipriond, Andy
4292	Johnston, Paul
4293	Barough, Shasta
4294	Parenteau, Niki
4295	Reed, Amanda
4296	Von Voltinburg, Jennifer
4297	Wolf, Kyler & Solan
4298	Clark, E.
4299	Hegseth, Rebecca R.
4300	Holt, Emily
4301	Eygleston, Larne
4302	Garner, Jeff
4303	Leach, Bradley
4304	Wetz, David
4305	McEfee, Amy
4306	Riter, Jane
4307	Voorhees, Ron & Susan
4308	Gildersleeve, Amber
4309	Parker, Gary
4310	Hogue, Hudson B.
4311	Hall, David E. & Elizabeth C.
4312	Nass, Matt
4313	Maurice, Robert
4314	Curtis, Chris
4315	Interested Party
4316	Stewart, Michael C.
4317	Pelland, Kathy
4318	Metz, S.A.
4319	Fousel, Delbert
4320	Smith, Horace D. & Valerie
4321	Eikens, David N.
4322	Tucker, Tim
4323	Batey, Harry
4324	Souza, Ann
4325	Govorchin, Roko
4326	Hollenbeck, Elsie
4327	Gerth, Nancy C.
4328	Hammet, Anna E.
4329	Johnston, Susan L.
4330	Stephens, Jill
4331	Cope, Donna
4332	Belzman, Steven
4333	Johnson, Helen Kay
4334	Merrell, Bonnie
4335	Novak, Chris
4336	Wakefield, Linda
4337	Rask, Rayleigh
4338	Reina, Betty
4339	Welch, Jennifer
4340	Weber, Greta
4341	Mandolf, Michelle
4342	Spencer, Victor
4343	Taylor, Shreon L.
4344	Interested Party
4345	Galand, Gwen
4346	Mason, Sandra L.
4347	Thompson, Kristi

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
4348	Tarlton, Joann & Penny Maynard
4349	Deeter, Linda
4350	Scherr, Les & Connie
4351	Hernandez, Cyndy
4352	Remitz, Janet & Carmen
4353	France, Carol
4354	Olmstead, Angela M.
4355	Emory, Gina A.
4356	Verbains, Rhea
4357	Haygreen, Janice
4358	Shaha, Anne G.
4359	Cranston, Nancy J.
4360	Parsons, Paula
4361	Porter, Ann Riffe
4362	George, Kathryn K.
4363	Creasey, Kay
4364	Sheffield, Carolyn
4365	Thompson, Gayle
4366	Bowlin, Wendy J.
4367	Pick, Bonnie
4368	Michard, Mark & Jennifer
4369	Caudill, Monica
4370	Dilday, Amy
4371	Beehler, Victor
4372	Hoaglund, Susan
4373	Brook, Larry
7374	McDonell, P.
4375	Schman, K. R.
4376	DeHerrera, Carlos
4377	Johnson, Rae Lynn
4378	Hull, Austin
4379	Cunen, Nat
4380	Garrett, Tali
4381	Conces, Claudia
4382	Buck, Sharon
4383	Calvert, Richard
4384	Guiles, Gary
4385	Nilley, Robert
4386	Cadwalader, Kim
4387	Crocker, Jessica
4388	Laura
4389	Neel, Todd
4390	Rainey, Harold
4391	Youngs, Alison
4392	Brynteson, Janet
4393	McGrum, Robbin
4394	Bradetich, Rhonda
4395	Jester, Kevin
4396	Freid, Joel
4397	Newbill, Tom
4398	Taylor, Dixie
4399	Van Lieu, Dee
4400	Whitham, Isaiah
4401	Mimmack, Pamela
4402	McGill, Debra
4403	Brown, Laurie
4404	Barcus, Julia
4405	McDwitt, Damien
4406	Dillard, Don
4407	Berning, Cindy
4408	Icardo, Travis
4409	Parker, Jessica
4410	Kara, Paul
4411	Stannard, Holly
4412	Watkins, Brenda
4413	Hale, Katie
4414	Wilma, Emily
4415	Chasteen, Brooke
4416	Jones, Ted
4417	Russell, Paige
4418	Ramko,Robert
4419	Gilmore, A.
4420	Murray, A.D.
4421	Larson, T.J.
4422	Lucht, Laima
4423	Bartello, Dell
4424	Philgar, Greg
4425	Douglas, Don & Debra
4426	Huff-Waters, Rose
4427	Hunter, Rich
4428	Grunseich, Diane
4429	Magnusson, Julia
4431	Hughes, Heather
4432	Jamar, Robyn
4433	Ross, Mary Kay
4434	Gramyk, Ken
4435	Ren, Kim
4436	Garcia, Peggy
4437	Cleveland, Bradley
4438	Gilgoff, Mykl
4439	Vlahovich, Jerry
4440	Maukins, Kent
4441	Dongill, Angela
4442	Marshall, Lea
4443	Spears, Mike
4444	Hoaglund, Grady
4445	Neille, Mona
4446	Hamilton, Rita
4447	Hanson, Angie
4448	Roberts, Sandra
4449	Ruster, Jodie
4450	Houghton, Janis
4451	Horne, Don & Donna
4452	Gilbert, Krista

Table DEIS-4. Numeric List of Commentor ID Numbers and Names (Cont.)

ID#	Name
4453	Petersen, Melanie
4454	Smith, Natalie
4456	Pike, Linda
4457	Smith, Riley
4458	Smith, Barbara
4459	Wirth, Crystal
4460	Layfelt, C.
4461	Chong, George
4462	Anderson, Kyle
4463	Shaw, Carol
4464	Tallant, Roberta
4465	Simons, Gerry
4466	Clement, Teresa
4467	Rohan, Nicole
4468	Fisher, Jacqueline
4469	Landers, John
4470	Kelly, Gary
4471	Wood, James
4473	Riddell/James
4474	Kreisberg, Michael
4475	Five Valleys Audubon Society/Bill Ballard
4476	Lyster, Earl
4477	Holland, Nate
4478	Long, Richard
4479	Yuhnke, Robert
4490	Crawford, Iva
4491	Berrett, Junell
4492	Hendricks, Margie & Cobert
4493	Lohman, Art
4494	Hinds, Jennifer
4495	Winslow, Denver
4496	Winslow, Roxanne
4497	Tighe, Michelle
4498	Cawdrey, Steve
4499	Glynn, Gary
4500	Bissonnette, Michele
4501	Cawdrey, Nancy
4502	Parker, Douglas

DRAFT EIS
RESPONSES TO COMMENTS

GEOLOGY

Geology GEO-100
Subsidence GEO-101
Tailings Facility Stability GEO-102
Mineral Rights GEO-103
Rock Characterization and Geochemistry GEO-104

GEO-100 Geology

1. Please review the International Joint Commission's assessment of the Cabin Creek Coal Mine proposed by the Canadians in Southeastern British Columbia. This international assessment concluded and documented the perils of siting mines in mountainous terrain. Its findings and conclusions are relevant to this proposal. (1295)

Response: The agencies believe they have adequately analyzed land forms within the permit boundary of the Rock Creek Project, and the surrounding area. That analysis is documented in Chapter 3 of the Final EIS. The Cabin Creek Coal Mine assessment was not used in the Rock Creek analysis because it is not specific to conditions found at Rock Creek.

2. What is the recovery rate (%) of the milling process. Conversely, what amount of Cu, Ag is ending up in the tailings impoundment? (1459)

Response: The floatation concentration process proposed for the project is a physical separation process whereby ore is ground to a predetermined size and copper sulfide minerals (primarily bornite and calcocite) and native silver are separated from the rest of the rock, which is mostly quartzite. No chemical reaction takes place. The average mill recovery rate for copper and silver, as stated in Chapter 2 of the EIS, is expected to be 85 percent. That is, 85 percent of the copper, in the form of the minerals bornite and calcocite, and 85 percent of the silver, as native silver, would be concentrated for shipment to a smelter. Small amounts of galena (a lead sulfide) and other sulfides are also present. These metallic minerals also float and therefore reports to the concentrate. The floatation process, described in the Chapter 2 description of the Rock Creek project, consists of adding chemical reagents (see Appendix I) that, because of their chemical properties, cause the target minerals to attach themselves to air bubbles in a water base. Those mineral particles that are small enough and sufficiently free of quartzite cling to the bubbles and float to the top of the floatation cells where they are separated from the tailings. Very nearly all of the reagents also report to the concentrate. The remaining 15 percent of the copper sulfide minerals and silver is not removed from the tailings primarily because the metallic particles remain encased by too much rock. The average grade of the Rock Creek deposit is 0.68 percent copper and 1.65 ounces of silver per ton of rock. Assuming that 100 million tons of tailings is eventually stored within the tailings facility, it would contain about 0.1 percent copper (or about 100,000 tons of copper) in the form of the minerals bornite and calcocite, and about 0.25 ounces of native silver per ton (or about 1,250 tons of silver). The Agencies' analysis concludes that the copper and silver that report to the tailings would remain immobile as long as the pH remains neutral and will not be toxic to plants in the root zone below the two-foot soil cover.

3. Montana is the fourth most geologically active state in our country. The 1983 Challis earthquake, a rolling, wave type of earthquake, was felt in this area. What data has been collected that could affect the Rock Creek Project? (1371)(1381)(1679)

Response: The applicant submitted as part of the mine permit application an analysis of regional and site seismicity. That report is available for review. The analysis included earthquakes within 200 miles of the Rock Creek Project. The Challis earthquake was approximately 250 miles from the project area and therefore was not included in the analysis. Chapter 3, Geology, contains a review of the area seismicity.

4. A more accurate and honest seismic geologic report is needed. An earthquake-induced tailings impoundment failure could destroy Rock Creek and cause a serious liability and mess for WWP's Cabinet Gorge Reservoir. (1196)

Response: The agencies have reviewed the Rock Creek project tailings impoundment designs in

detail. As part of these reviews, which included third-party contractors, there have been extensive seismic evaluations. The agencies share concern for earthquake induced failures. This is one of the issues that was addressed in the draft EIS and carried forward in the final EIS. The agency's preferred alternative tailings handling design as a paste in Alternative V includes methods which minimize this concern.

5. What is meant by the statement on page 3-12 that "the forces that formed these faults do not appear to be active?" Please provide additional explanation. Is there any evidence that the faults have been active within the last 100,000 years. (1214)

Response: Faults referred to in the draft EIS paragraph that includes the commentor's quote are those within the project permit area. They include the West Fork, Orr Creek, and several other possible faults in the vicinity of and north of the proposed mill site, and the Copper Lake and Moran faults which bisect the ore deposit. Evidence of movement of a recent nature (within the last 100,000 years) would include overlying glacial deposits or soil that has been displaced due to fault movement. This evidence has not been seen along these faults. There is no other evidence that these faults have been active within the last 100,000 years.

6. There is no guarantee that the tailings impoundment, pipelines, H2O treatment facilities, and underground workings will withstand a catastrophic earthquake without adding unnecessary destruction to the area. (1246)

Response: The Rock Creek project seismic designs are based on a Maximum Credible Earthquake of 7.0, occurring on the Bull River Fault. The agencies have conducted extensive reviews of Sterling's seismic design considerations. Seismically induced tailings facility failure potential is one of the driving elements of the agency's alternative tailings designs. Potential seismic impacts to the underground workings is one of the elements that the agencies consider when reviewing underground designs. See also Chapter 4.

7. Relying on data from the Troy project isn't adequate. Though rock types are similar, geological faulting (and thus ground water discharge rates) will not be the same. Moreover, there appear to be differences in wasterock volumes and possibly chemical composition. In the least, it appears DEQ still has inadequate data to project potential acid mine drainage. (2058)

Response: The Agencies acknowledge that there would be differences between the two projects. This is primarily because the Troy deposit is less than half the size of the Rock Creek deposit. The area geology, rock types, and geochemistry are remarkably similar. The agencies have completed additional geochemical comparisons between the geologic conditions at the Troy Mine and the Rock Creek Project. The new information supports information presented in the draft EIS. The chemical composition of the rock types are very similar, as would be their susceptibility to weathering and leaching. Again, we acknowledge that there are differences. Nonetheless, Sterling would be required to submit for the agencies' approval a geochemical characterization and monitoring plan under Alternative III through V.

8. What are the protective measures for adit exploration? The review that was conducted by the Tribe did not identify such a plan or an outline. (2026)

Response: We are uncertain what is meant by "protective measures for adit exploration." Mitigation measures that would apply to adit exploration are identified in Chapter 2 under each of the alternatives. Alternatives III and IV would require subsidence control and monitoring plans; rock mechanics and hydrogeologic sampling, testing and monitoring; and visual and sound mitigations.

9. ASARCO's Troy mine should not be used as an example to Rock Creek, or let us examine ASARCO's other three mines that are not operating at this time. The point is these mines need to be assessed by individual merit and history taken into consideration to educate us on the issues at hand. (1373) (2055)

Response: There are a number of tools available to predict project impacts. Because of the similarities between the two sites the agencies have chosen to use the Troy Mine as a model for potential impacts that might occur from operation of the Rock Creek Project. To a large extent, this reduces the uncertainty in the analysis. Nonetheless, the agencies also use a number of other predictive tools to estimate project impacts of the Rock Creek Project. To be useful for predicting impacts from the Rock Creek Project, existing mines must be very similar to the Rock Creek Project. The agencies are unaware of other mines which might be sufficiently similar in terms of ore body mineralogy, geology, structure, water quality, overall mine design, etc.

10. ASARCO should be required to properly plug/abandon the holes proposed to be drilled into the fault at the end of the exploration adit (page 4-41). (1214)

Response: Evaluation holes that penetrate into the Copper Lake fault, but are not charged with explosives, would be sealed with grout.

11. The description of the geology and hydrology of the ore zone and overlying strata is too brief (pages 3-9 to 3-11 and 3-40). Virtually no data are presented to aid in the evaluation of the conclusions drawn in the DEIS concerning post-mining water quantity and quality. No cross-sections are provided to show geologic and hydrogeologic features. (1933)

Response: The Chapter 3 geology section of the final EIS contains an expanded description of ore body and vicinity mineralogy. The Chapter 4 geology section contains expanded analysis. The hydrology section includes a discussion of expected post-mine water quality and quantity. Additional detail is on file at DEQ and KNF offices and may be viewed by any interested party.

12. RWMP (ASARCO 1995) Apndx D. # 2.1.1 Where is the geology to support the bedrock ridges identified on pg. 7 (exhibit 1) ? Or are these inferred?

RWMP (ASARCO 1995) Apndx D. In reference to the above bedrock ridge. Borings # 88?6 and 88?7 located at the south eastern extent of the tailings pond encountered bedrock at @ 22 ft., boring # 88?8 located @ 1000 upstream / NE direction encounters bedrock at 15 ft., which would tend to confirm a rising bedrock ridge. However, Boring 5 / MW 84?5 midway between 88?6,7, and 8 is drilled and completed to 33 ft. and does not end in bedrock, which tends to undercut the assumptive bedrock ridge? There is too much unknown here!

RWMP (ASARCO 1995) Apndx D. MW 86?27 strikes bedrock at 103 ft., nearby adjacent MW?85?21 strikes bedrock at 48 ft. whats going on here?? On what geologic knowledge are the bedrock ridges separating the tailings impoundment into sub-basins determined by? Inferred? Speculative? Assumptive? Wishful thinking? (1780)

Response: The supposition that the proposed tailings impoundment footprint, as proposed, is divided into three sub-basins is based on extensive drilling (in excess of 50 drill holes) and geophysical profiles across the site. Appendix D of the RWMP contains drill logs from the holes. The borders of these sub-basins are inferred, however the inference is based drill hole data and geophysical profiles.

According to the drill log for Boring 5 (MW- 84-5), it appears that this hole does terminate in bedrock, a weakly metamorphosed gray siltstone, at approximately 31 feet.

Upon closer inspection of the drill log for hole MW-86-27, it appears bedrock, a gray quartzite, was encountered at approximately 35 feet (the hole terminated at 103 feet), roughly 13 feet shallower than neighboring well MW-85-21.

The drilling campaign and the geophysical profiles suggest that the bedrock surface in the vicinity of the impoundment is highly irregular, having numerous dips, pot holes and rises. This undulating surface may be explained by past glaciation. The bedrock ridges referred to in the RWMP are based on a review of the subsurface drilling and geophysical data, and are confirmed in some places, and at other locations inferred from the information.

13. There's supposed to be a site specific for the Environmental Impact Statement, but all the information in here is based on the Troy Mine. What's wrong with this? The Troy Mine is on a different geological setting. It is one third the size of this project. There is no discharge of surface water from the Troy Mine. (1957)

Response: The Troy ore deposit is geologically virtually identical to Rock Creek (see Chapter 3, Geology). The impoundment sites are similar. The Troy mine discharges about half of the water predicted to discharge from the Rock Creek mine; this water is piped to the tailings impoundment from which it seeps into the ground. The Troy mine is in a similar climatic and regional setting and is a valuable source for comparative data.

GEO-101 Subsidence

1. Potential subsidence of two wilderness lakes is unacceptable. Further impacts to the wilderness area include the potential for drying springs, lakes, and wetlands due to a reduced ground water level associated with long-term water flow from the mine. Up to 2,500 gallons per minute could be drained from the area, and the flow would never end. According to an official at the Sandpoint open house, there is a risk of reduced surface flows and wetland occurrence. We would like to know exactly how "remote" that possibility is? We would like to know exactly what the environmental effects would be to wetlands and the wilderness if the lakes subside and exactly how ASARCO would "mitigate" those effects. (1196)(1207)(1638)(1735)(1736)(1916)(1447)

Response: There would be no need for mitigative measures specifically targeting the potential risk of subsidence of the wilderness lakes. The surface and underground monitoring program, along with the review and authorization of a detailed mine plan by the agencies prior to entering an area provide sufficient mechanisms for monitoring mining related effects on surface and ground water resources. Subsidence of the wilderness lakes is an extremely remote possibility. However, a mitigation requiring a 1,000-foot horizontal buffer around Cliff Lake and the north and south ore outcrop zones and a 450-foot vertical buffer between the mine workings and the surface would be required to minimize risk to the lakes from impacts to ground water that feeds the lakes and prevent hydrofracturing that would lead to post-mine development of springs and seeps.

2. Potential of subsidence should be examined in EIS. Toward the end of mine life, the ground could cave in causing wilderness lakes to drain. A contingency plan should be developed to mitigate effects to wilderness lakes. The DEIS should clearly state what, if anything, could and would be done to stop the drainage. Furthermore, the lakes are not the only surface water features that could be affected. Water flows in small creeks in the area could also be at risk. Loss of these wilderness features would also be unacceptable. (1288)(1484)(1504)(1520)(1624)(1633)(1637)(1696)(1780)(1960)

Possible subsidence of Cliff and Copper Lakes is of concern. Can the mining be stopped far enough below the lakes to INSURE prevention of subsidence? Or, can mining below the lakes be eliminated altogether? (1384)(1632)

Are our mountain lakes safe? With the mine occurring below ground water level, there has to be a possibility of sinking ground, draining lakes, and even ground water levels decreasing. What would the long term effect be on the vegetation, the wildlife and the whole ecosystem if these events occurred? (1288)(1371)

The potential for subsidence in the Copper Lake area exists and should be more thoroughly addressed in the FEIS. An area of potential subsidence shown in Figure 4-1 (page 4-15) is about 350 feet from the Lake. The statement on page 4-14 (paragraph 4) that the top of the subsidence zone would be 700 feet below Copper Lake is incorrect because the analysis assumed that the thickness of the mined ore body would be only 30 feet. However, the thickness of the ore body is 100-150 feet (paragraph 3, page 4-14). Therefore, subsidence and fracturing could extend higher and closer to the Lake. Although ASARCO proposed to leave horizontal pillars while mining this area to increase post-mining stability, the potential for subsidence using this mining method is not discussed. The FEIS should address this issue. (1351)(1933)

Based on cited statement that "upwards of 200 feet of rock overburden could be affected by mining," we find it completely unacceptable that Asarco would propose a minimum of 100 feet of overburden between any working area and the ground surface. It must certainly be greater than the 100-foot minimum proposed by ASARCO. There must be provision for continuous monitoring of known springs and seeps to alert mine operators and supervising agencies of any possibility that the ground water regime is being altered.

We contend that it is completely unacceptable for mining activity to cause serious and unnecessary risk to the ground water regime in the wilderness, the continued existence of wilderness lakes, and the natural contour of the ground surface in the wilderness. We therefore maintain that ASARCO must be required to perform the analysis of rock strength, rock fracturing, and other appropriate ground characteristics in the Rock Creek site that will provide

adequate data for developing a mining plan that would assure that any possibility of subsidence is, indeed, remote. The minimum overburden between any mine working area and the ground surface above must provide a safe margin from subsidence. (1527)(1653)

What will be done to mitigate the loss of the Lakes should they drain into the underground mine? What will be done to manage/treat/mitigate the impacts of water hydrologically connected to the Lakes as it discharges/seeps from the mine? (1214)

Asarco should be required to prove beyond a reasonable doubt that subsidence will not occur. A thorough characterization of the ore body below the lakes, demonstrating the absence of joints and faults should be the basis of any such claim. The risk of subsidence associated with the room and pillar method of mining should be compared with other methods of mining. Are there other mining techniques that could reduce the risk of subsidence? (1248)

The agencies have acknowledged too many unknowns to credibly state that the risk of subsidence, drainage of wilderness lakes and other adverse impacts to wilderness waters is remote." We are particularly concerned about the location of an area of potential subsidence so close to Copper Lake. Subsidence risks must be better analyzed with full consideration given to the likely effects of a high-magnitude earthquake. We further dispute the DEIS's contention at page 3-40 that Cliff and Copper lakes are not hydrologically connected to the underlying ground water system. ASARCO appears to be unwilling to properly investigate this issue, but other evidence provided in the DEIS suggests that the ground water system is relatively permeable and that there is an extensive fracture system now. Future blasting during mining activities is likely to exacerbate fracturing and thus increase hydrologic connectivity. (1220)

Response: The analysis in the EIS has determined that it is highly unlikely that there will be any impact to the wilderness lakes from mining-induced subsidence. While quantifying the probability of impact would be difficult and would itself rely on assumptions based on a certain lack of information regarding rock discontinuity (jointing and fracturing), ground water movement, and rock response to mining, what the EIS has done is to assess the potential for impact using a number of empirical techniques such as the Q-system, and one developed by T.Q. Liu (1981). In summary, using commonly accepted empirical techniques, it has been determined that the likelihood of impact to the wilderness lake would be negligible. This is because of the amount of rock located between the lakes and the location of mining below. The intervening rock should be able to absorb the increased stress of hollowing out an underground opening without there being extensive new cracking and fracturing which could possibly open a channel between the surface lakes and the underground opening. This is based in part on the elastic nature of the local rock: the rock is able to absorb increased stresses (due to mining) without breaking. These empirical techniques estimate the zone of potential fracturing above a mined cavity based on rock type, geologic structures, discontinuities, size of underground opening, and amount of overburden (intact rock above opening). The empirical assessments suggest that at most, one can expect a zone of fracturing under the worst possible conditions of 200 feet above the mining zone. The amount of overburden between the mine openings and the wilderness lake is a minimum of 900 feet. While Sterling is proposing to mine within 100 feet of the surface in some areas under Alternative II. These areas are not in the vicinity of the lakes. Sterling would be required to leave a 450-foot vertical buffer between the ground surface and the mine workings as well as a 1,000-foot horizontal buffer along the ore outcrop zones (MT DEQ 2001). These buffers would minimize the risk of intercepting the vertical fractures that control the ground water recharging wilderness lakes. Sterling will not be permitted to mine in any fashion which could have an impact on surface waters or cause subsidence. The room-and-pillar mining method would create the least amount of impact (fracturing) to the overlying rock, short of complete backfilling.

Should Sterling be granted a mining permit, Sterling would be required to submit updated mine plan modifications based on monitoring data collected during construction of the evaluation adit and

during construction and operation of the mine. In addition to this requirement, Sterling would initiate a surface and underground monitoring program to monitor any changes in the stress fields in the vicinity of their mining activity. This information would be used in assessing whether or not there could be a deleterious effect on the surrounding rock. If there is any indication that extensive fracturing and cracking could occur around an underground opening, the agencies could require Sterling to abandon the area thereby leaving additional rock "buffer" zone to protect the area around the lakes or in near-surface ore body zones.

Mining could be eliminated below the lakes if it became apparent that extensive fracturing and cracking were occurring in advance of the mine opening. This is why the agencies are requiring Sterling to implement a comprehensive underground rock monitoring program under all agency alternatives should they be granted a mine permit. This monitoring program will determine if mining is opening fractures in the rock which could provide a direct conduit to surface bodies of water. If it appears that this unlikely development may occur, the agencies could order Sterling to avoid mining near or under the wilderness lakes. In the hypothetical case where there were fractures affecting the wilderness lakes, possible mitigations include: grouting below the lakes to seal any fractures induced by mining, lining the bottom of the lakes with a clay type liner, and backfilling the underground openings below the lakes to minimize any additional impacts.

The wilderness lakes in question, Copper and Cliff lakes, are apparently fed by snow melt and shallow ground water systems. The ore zone under the lakes is a minimum of 1,000 feet below the lakes. Empirical analysis indicates that the zone of influence from the mining below would not intercept the shallow ground water system. If the wilderness lake were to drain and be unable to sustain a surface reservoir, viability of the flora and fauna in this micro-environment would be severely impaired if not destroyed. Please note that Copper Lake is primarily, if not solely, sustained by snowmelt. It has been known to go almost completely dry during the summer.

3. No mention is made of earthquake potential to induce subsidence or the draining of wilderness lakes. Or if basic mine design may have to be re-engineered to preclude this possibility. What liabilities does ASARCO assume towards the destruction of govt. property, in this case a wilderness area if adequate mine safety features are not built in? Would this constitute a taking? (1371)(1780)

Response: Making a prediction on whether or not seismic activity would induce fracturing around underground openings and/or whether there would be any impact to the wilderness lakes would be highly speculative. While mine design customarily looks at mining-induced stresses, stresses introduced from seismic activity are difficult to predict and model. There are safety factors associated with estimating the forces due to mining and their effect on the surrounding rock. These safety factors could be viewed as accommodating seismically induced stresses.

Regarding the liability assumed by Sterling should mining activity disturb government property, Sterling must post a reclamation bond sufficient enough to reclaim the disturbance in addition to providing for any unforseen contingencies which could be reasonably expected. Please see Responses to Comments in section GEN-1501 dealing with reclamation bonding.

4. Does agency review and approval of the mine plans constitute a waiver of responsibility to Asarco for any subsidence, dewatering of wilderness lakes and or destruction of wilderness properties and values? (1780)

Response: No. Sterling would be responsible for the reclamation of its mining related disturbances and any related indirect impacts.

5. Page 4-16 states that ASARCO intends to remove select pillars towards the end of mining which may cause rock fracturing and subsidence in areas not previously identified. Instead of the agencies proposed mitigation plan, the Agencies should forbid pillar robbing, and be sure that it is not included in any revised mine plans. (1223)(1594)

Response: Sterling would have to submit detailed mine plans, supported by in-situ rock mechanics data prior to developing any section of the mine under all agency alternatives. Secondary ore recovery (pillar robbing) would not be allowed under the agency alternatives and the applicant has stated it does not plan to do so in any case.

6. The DEIS does not address the adverse environmental impacts which would result should subsidence to the surface occur either during or after closure of the mine. The DEIS should discuss faulting and rock fracture patterns in the mining foot and hanging walls, the ore body, and in the Rock Creek fault.

The CEQ regulations (40 CFR 1502.22) require the lead agency to document the impacts of such catastrophic occurrence, even if the probability of subsidence is low. It is obvious there is credible scientific evidence (i.e., previous examples of subsidence) on which to base the impact analysis if subsidence within the wilderness area should occur. At a minimum, adverse visual impacts and environmental impacts of alteration of existing drainage patterns which would result from subsidence needs to be evaluated.

It is significant to note that the assessment of impacts are predictive in nature and involve assumptions which may or may not prove to be accurate. It is therefore important to place a strong emphasis on accurate, precise and sufficient baseline data. This would enable a thorough understanding of the system characteristics and provide reliable predictive ability. It would also require a monitoring program that is sufficient to determine the reliability of predictions (including their precision and accuracy) and provide a basis for changes in possible project design or operation. (1595)(1594)

Response: The current mine plan proposes to leave a buffer zone of unmined rock adjacent to the Rock Creek fault. The applicant is using their experience at the near-by Troy Mine as the basis for the proposed mine design at the Rock Creek site, so indeed they are designing from actual experience in similar rock. Much of the detailed design work is dependent on data gathered in situ, hence the need to get underground to establish monitoring stations to assess how the surrounding rock is behaving in response to mining. Under Alternative V, a 1,000-foot horizontal buffer is proposed along the ore outcrop zones and around Cliff Lake as well as a 450-foot vertical buffer between the mine workings and the ground surface. While these were purposed to reduce hydrological impacts to the wilderness and minimize the risk of hydrofracture. They also would help minimize subsidence. Information on hydrofracturing has been added to Appendix G.

It is difficult to determine what impacts to existing surface water drainage patterns, if any, would occur were there to be subsidence at the Rock Creek site. Many of the areas identified as potential subsidence areas are located near the heads of drainages (Figure 4-2). Subsidence in these areas could impact the surface water contribution in the immediate head of the drainage basin in question, however it is unlikely that the contribution of surface and ground water farther down the drainage (i.e., downgradient of the impacted area) would be affected. In some instances even in areas of subsidence, the impacted area can achieve a state of hydrologic equilibrium whereby the surface and ground water components may be effected temporarily, but after time reestablish themselves as the hydrologic surface and subterranean profiles re-equilibrate. Fundamentally though, to model impacts would require some highly speculative assumptions especially regarding ground water flow in the area. This issue is best addressed through a rigorous monitoring and revised modeling campaign once development starts. A disposition towards subsidence would be detected well in advance of reaching any of the susceptible areas, and hence the necessary precautions and modifications could be employed to prevent such an occurrence.

7. Monitoring of Cliff and Copper lakes: Under Alternative III, Mine Plan p. 2-76, Statements in paragraph 5 are inconsistent with the statement on p. 2-68 that "Approval of the mine plan would be contingent on demonstrating that Copper and Cliff Lakes would be unaffected by mining." p. 2-76 states that monitoring would be necessary because mining could cause fractures...affecting lake levels. What is Alternative III in this regard? If CMW lake drainage is part of its assumptions, it is not a valid alternative to alternative II. (1288)

Response: The agencies do not maintain that CMW lake drainage is an underlying assumption of Alternative III. Additional subsidence monitoring is included as part of Alternative III as well as Alternatives IV and V to detect any changes in the surrounding rock mass which may lead to unexpected fracturing if mining continues in that particular area. Please refer to Chapter 4 and Appendix E.

8. Page 4-16 states the potential for subsidence under Alternative II is moderate. Page 4-17 states that the potential for subsidence would be reduced from Alternative II under Alternatives III and IV. To what level is the potential reduced? What is actually meant by a "moderate potential?" If the level the potential is reduced to is "low," what is meant by a low potential? (1912)

Response: References to 'low' and 'moderate' in the draft EIS addressed the incremental change in ability to detect changes in the rock mass brought about by mining which result from additional monitoring requirements. While probabilities have been applied to these descriptors for the Failure Modes Effects Analysis (FMEA) analysis of the paste facility in Alternative V, there are too many variables in subsidence prediction to attempt to apply a numerical probability to the terms 'low' and 'moderate' for subsidence potential. These terms provide a relative understanding of potential impacts.

9. In regard to data gathering in the beginning-early phases of mining, pre-high column mining, it should be stated in the DEIS that ASARCO will dedicate a resource to acquire rock mechanics-geotechnical information on rock behavior in low risk areas for later use in the design of openings in rock in high risk areas. (1214)

Response: Sterling would be required to submit a detailed rock mechanics data collection and monitoring program for agency approval prior to start of mining. Additional data would be required and an updated detailed mine development plan would need to be submitted for Agency review prior to Sterling being authorized to enter high risk areas.

10. Page 2-68: states under Alternative III, that ASARCO would be required to provide for Agency review and approval an updated preliminary mine design prior to exploration and mine start-up. The Agencies would conduct a second review of the mine design to determine the suitability for actual conditions during mine adit construction. Specifics of this review would focus on general design approach, design criteria and methodology, rock mechanics test data from the Rock Creek deposit, proposed room-and-pillar sizing and layout, identification of zones of rock instability and potential subsidence, and mitigation for these areas. Page 4-16: states that under alternatives III and IV, ASARCO would be required to provide the Agencies with an updated underground mine design within 2 years of operation. The Agencies would conduct a design review and identify any potential problems that could lead to subsidence. The Agencies must require ASARCO to collect, analyze, and present this data now, so that the public, agencies and decision-makers can in fact make informed decisions. (1223)

Response: The preliminary design work is based on previous experience at the Troy Mine. This experience, the data they have submitted to date, and the analyses conducted for the Montanore Project indicate that subsidence would not be an issue at the Rock Creek site. Until the Rock Creek Mine is underground in the preliminary stages of development, more detailed information cannot be accurately gathered. At this point, the agencies commit Sterling to a rigorous data collection and analysis regime to confirm the assumptions used in the preliminary design. Much of this data would be collected during construction of the evaluation adit. See also Chapter 4 of the final EIS.

The agencies and Sterling will determine the program to be followed in the monitoring assessment of underground stability. The agencies have the prerogative to enlist the help of third party contractors experienced in rock mechanics to assist in this process.

11. Page 2-76: Rock Mechanics Monitoring: ASARCO cannot be entrusted to monitor their own work. This constitutes conflict of interest. The agencies must establish monitoring schedules and key items to be monitored and then retain independent professionals to do the monitoring. Given the conflict of interest, how is this process legal otherwise? What measures will be imposed to ensure that ASARCO complies with established standards?(1288)

Response: The agencies could not require a third-party contractor to oversee the monitoring work but mining companies typically do so anyway. Indeed Sterling personnel may actually record the data in the field under the supervision of a third-party, but it would be the responsibility of the third party to interpret the data and file the report. The third party contractor would certainly identify irregular data should there be any discrepancies during the data collection phase. The agencies are not prepared to insist that no company personnel be involved in any of the monitoring. It is customary in many heavy construction industries, and not just mining, to have company representatives involved in data collection. The agencies provide oversight as funded by their respective legislative bodies.

12. Where does the DEIS analyze the very real potential for earthquakes and after shocks in the mine area? Where in the DEIS are data or detailed discussion by experts of the tectonics of the area? I believe recently published data and models predict that the Juan de Fuca plate subducts under the Pacific Northwest portion of the North American plate at a shallow angle, making it capable of generating quakes greater than Richter 8. What are the potential consequences of earthquakes of varying magnitudes to faults in the CMW? To the human population in the area? How frequently are significant tectonic events predicted to affect the mining area? How do these predictions fit with the 30 yr proposed mine lifetime? (1288)

Response: Please refer to the following supplemental reports for a thorough review of the seismic design of the Rock Creek area: Application for a Hard Rock Operating Permit, Rock Creek Project, Sanders County, Montana, and ASARCO Rock Creek Project Technical Evaluation of Preliminary Tailings Impoundment Design by Klohn-Leonoff, 1991. The documents are available for public review at DEQ offices in Helena, Montana and the Kootenai National Forest Supervisor's office in Libby, Montana. A summary of earthquake potential is presented in Chapter 3 of the EIS.

13. In addition, ASARCO's apparent unwillingness to commit to a full rock analysis and study of subsidence risk in wilderness (4?13) is not acceptable. (1220)

Response: The agencies added additional mitigations to Alternatives III-V that require additional geochemical analysis and rock mechanics studies. The requirements were expanded under Alternative V and are described in Appendix K.

GEO-102 Tailings Facility Stability

1. ASARCO must be held responsible to prevent the Clark Fork River from being further contaminated by this project. The tailings pond must be secure for its purpose, and ASARCO must be responsible for the security during and after its operation in perpetuity. That would include responsibility even in the event of a 100-year storm or major earthquakes. ASARCO must be bonded for all contingencies, in perpetuity. The bond must be unencumbered and available for use by the agencies. (1237)(1371)(1678)

Response: The design review of the Rock Creek project proposed tailings impoundment has gone through numerous levels of scrutiny by qualified professional engineers. There is an additional level of review and oversight built in to Alternatives III through V: the technical review panel. The technical review panel would review every aspect of the final design phase to ensure design assumptions were being met and to identify any potential design problems. Whichever design is chosen, provided the mine is permitted, would be required to meet all applicable design and site criteria (e.g., flood, earthquake). A design would not be permitted would be which is not suitable for the site conditions. The project would not proceed until all design elements had been reviewed.

The company posts a reclamation bond sufficient to cover the costs of mine closure including reclaiming the mining disturbances as prescribed in the plan of operations and reclamation plan. These bond monies are dedicated solely to the reclamation and closure of the mine site. Sterling can ask for bond release on reclaimed areas of the mine, however the agencies, with public input, have the final authorization on whether to release the bond or continue to hold it. The agencies have the authority to include contingency charges to cover the costs of possible but unexpected developments. The agencies do not have the authority to bond for the "worst-case disaster" however. As an outcome of the completeness process and the EIS preparation, alternatives were developed which addressed the issues surrounding the trigger mechanisms for the "worst-case" event. For example, the seismicity of the Rock Creek site will be assessed once again for accuracy by a technical panel during final design review. If there are any questions regarding the choice of seismic design criteria by the applicant, changes can be made to the design to further minimize the potential for the "worst-case disaster." Alternative V has been developed wherein the risks associated with a "worst-case disaster," like complete collapse of the tailings pond, are avoided by going to a non-aqueous tailings deposition process using paste technology. The public is welcome to scrutinize the bond calculations for this project that would be on file at Agency offices should the project be permitted.

2. Where are the 100-year and 500-year flood plains in relation to the maximum extent of the tailings. 500yr? Please analyze the impoundment's response to the 100-year event, and the 500-year event. What effect would torrential rains have on the tailings impoundment? (1460)(1491)(1248)

Response: The proposed tailings disposal facility footprint is outside of the 100-year flood plain of both Rock Creek and the Clark Fork River. The 500-year flood plain of Rock Creek has not been delineated. The tailings disposal facility lies outside of the 100-year, 500-year and probable maximum flood (PMF) floodplain for the Clark Fork River. A probable maximum precipitation (PMP) diversion is proposed around the tailings disposal facility to divert any run-on water. There is enough storage designed into the paste facility to accommodate the direct rainfall onto the tailings disposal facility from the PMP event. There would be minimal effect from such an event.

3. Stability of an earthen tailings pond structure is questionable if there is earthquake damage in the Noxon area. There are identified faults within just a few feet of the tailings pond site. Earthen dam structures tend to liquify in

an earthquake. What studies have been done to insure its stability? What other designs have been considered? (1371)(1378)(1384)(1385)(1429)(1540)(1541)(1734)(1781)

Response: The design of the proposed tailings storage facility for all alternatives has included a seismic analysis component. The analytical methodology follows current industry standards, and has been reviewed by an independent third party engineering contractor. The analysis and reviews are all available for public review at DEQ and Forest Service offices. While there may be faults within feet of the tailings disposal facility, currently acceptable seismic analysis bases its analysis on faults that show physical displacement within the last 10,000 years, and that are deemed large enough to generate significant ground forces. Faults older than this are not considered active. The nearest fault on which the seismic analysis for the Rock Creek project is based is the Bull Fault located 17 miles from the site. An additional tailings storage facility design using paste technology was analyzed in the supplemental EIS and is included in the final EIS as Alternative V. See Appendix G in the final EIS for a review of alternative sites and designs which were evaluated.

4. The proposed tailings pond at Rock Creek will most certainly be an unstable area. Have any studies been done on the effects of a rolling type earthquake on the tailings pond and environment in the vicinity of the tailings pond? I suspect that "computer-generated" predictions of affects of a rolling type earthquake at this location would be far less than what would actually occur. (1270)(1381)

Response: The reviewer is not familiar with the terminology "rolling type earthquake." Using a data and seismic studies, a seismic assessment of the site has been performed, as well as a seismic response of the proposed facilities and is included in Chapters 3 and 4. The seismic analyses are available for public review. Modeling of the seismic effects on the tailings facilities, especially the paste facility, suggest earthquakes would have no effect on the performance of the facility.

5. The DEIS discusses the geotechnical aspects of, and the risks associated with, constructing and maintaining the tailings impoundment. The DEIS goes on to state that final design will be subject to approval by the agencies, implying that mine development will be allowed to begin without an approved design. As indicated in the DEIS, problems (e.g. soft clay soils) with the preferred tailings impoundment site have been identified and a tentative plan for dealing with these problems are discussed. There remains some question, however, as to whether additional geotechnical problems are discussed. We believe full disclosure should include all plans displayed for public and agency review prior to a decision on a final alternative being made by the responsible agencies. The DEIS states that the risk of a tailings impoundment failure is extremely low and therefore acceptable, without stating what criteria were used in determining acceptability. Clearly, the consequences of a tailings impoundment failure are enormous, and we believe are deserving of a more thorough analysis in the Final EIS. (1445)(1504)(1634)

Response: During final design for the tailings facility, additional on-the-ground investigation will take place. As a result, the limits of any undesirable foundation material, like soft clay, will be more precisely identified. A technical panel of agency specialists, as well as staff from interested state, federal, and tribal agencies, and third-party professional engineers, if necessary ,will review the data and design details during this phase. Additional stability analyses will be performed using the more detailed information. If any part of the analyses or any assumptions used in the analyses are deemed deficient by the agencies or the review panel, revisions in design will be made. This process ensures a high level of scrutiny by a number of professionals in the field of geotechnical engineering, thereby allowing for a prudent and safe design which conforms to the standards of engineering practice. All of the information generated from these reviews would be part of the public record. The soft clay materials removed from the tailings disposal facility footprint would be stockpiled in the tailings disposal facility footprint or redistributed in an engineered fill to line more permeable portions of the tailings storage area.

6. Minimization of tailings is one of the most important aspects of proposal. (1213)

Response: The EIS analyzed an alternative which involves dewatering the tailings prior to disposal. This would greatly reduce one of the more problematic aspects of tailings disposal: water. The EIS has considered but dismissed underground placement of the tailings. The space savings on the surface would be minimal as discussed in the EIS and backfilling would not eliminate the need for a surface tailings disposal facility as no more than 50 percent could go back into the mine.

7. Page p2-31 - tailings: there is no mention of potential disturbance of old dump materials in the city dump. What potential is there for release of pollutants to ground water leaving impoundment site. Detailed evaluation of dump conditions should be described. (1504)

Response: If a mining permit is granted and mine development proceeds, extensive foundation preparation for the tailings facility would be required to ensure no undesirable foundation materials are left in place prior to facility construction. A certified professional engineer would be on site during this time to inspect the foundation conditions. The current dump site (old Noxon landfill) has a cap over the top. The dump would not be disturbed; rather additional capping material including a geotextile cover would be placed over the dump site to isolate the area. If the technical review panel concludes that the city dump jeopardizes tailings storage area stability, then it would have to be removed and disposed of consistent with the requirements of the Solid Waste Management Act.

8. Page 3-12 - Geology of Tailings area: minor bedrock outcrops along the starter dike area are a concern. The agencies have not thoroughly explored the impoundment area. If they had they would have seen a sizable number of bedrock outcroppings in the NE area of the impoundment site. Bedrock outcroppings within the tailings impoundment can serve as a conduit for seepage water to descend into ground water. Bedrock contacted in the perimeter trench drain system would also act as a conduit for tailings water. (1504)

Response: The tailings facility foundation would be graded and compacted prior to tailings discharge. Areas of potential seepage would receive a layer of low permeability material such as clay taken from the embankment footprints. Trench drains would be lined through bedrock to minimize seepage. Most of the bedrock material would be removed and used for constructing starter dams of the impoundment or paste facility and some of the rocky material would be mixed with soils for use when reclaiming steeper slopes under Alternative V. For those bedrock outcrops the technical review panel deem as potential conduits for tailings water, the agencies could require Sterling to blast, grade and cover with a low permeable material like clay to minimize tailings effluent infiltration.

9. Page 4-17 App. E indicates use of a design value of 90% for earthquake stability. This means 1 times out of 10 there will be an impoundment failure. This is considered an "exceedingly low level"?? Would the agencies folks feel the same if they lived below the impoundment? (1504)

Response: The 90% refers to the probability that a particular ground acceleration generated from an earthquake event will not be exceeded in a designated number of years. It does not refer to the probability of an tailings facility failure. In fact, it would take a larger acceleration than the one used in the analysis of the Rock Creek facility to initiate failure according to the model used in the analysis. The text has been modified to clarify this difference.

10. Is there a plan for the effects of an earthquake on the tailings impoundment & the pipeline? How long is the water supposed to stay in the tailings pond? Why isn't Asarco planning to line it if that would significantly reduce pollution risks? (1525)

Response: The evaluation in Chapter 4 of the EIS addresses the stability of the facility when subjected to the largest expected seismic event possible in the area. Effects to ground water quality

from tailings facility seepage are analyzed in the Hydrology section in Chapter 4 of the EIS. The Rock Creek project MPDES permit and Statement of Basis provide the analysis and basis for meeting water quality standards (see Appendix D). If Sterling can meet standards without a liner, the agencies cannot require them to install one. Potential effects to the pipeline from a seismic event are not expected to impact the pipelines. The slurry lines are steel encased urethane pipelines. The urethane lining is flexible due to its inherent physical properties, so the flexible nature of the pipeline would bend without breaking when subjected to any ground movement associated with a seismic event. Pipe joints also have flexibility and are able to withstand movement without rupturing. Should pipes break due to a seismic event, the impacts would be similar to those described in the Surface Water Quality section of Chapter 4. Surface water in the impoundment would slowly infiltrate into the tailings as well as evaporate. The time for completely removing water from the surface is dependent on the direct precipitation falling on the impoundment, the rate of evaporation, the rate of infiltration, and how fast the water-free surfaces can be capped with reclamation materials. This is certainly on the order of less than 3-5 years.

11. Regarding the tailing impoundment, please compare the TI design as proposed to the cost of a lined, geosynthetic impoundment. (1684)

Response: A cost comparison was made by Dames & Moore (1996). The cost of a synthetic liner would be approximately $28 million more than what is currently proposed.

12. The downstream side of the tailings dam will have a slope of 2:1 (Figure 2-13, page 2-32) or 3:1 (page 2-49). In either circumstance, the slope will be relatively steep, long, and potentially susceptible to erosion. The vertical rise will be 325 feet (page 2-33); the maximum slope length, therefore, will be 650 or 975 feet. The potential for overland runoff from snowmelt or heavy rain to create rills and gullies on this long, steep slope is not addressed in the DEIS. The concern is particularly important for the time after mining and reclamation are complete because mine personnel may not be available to take maintenance actions. In some circumstances, slopes with this grade and length have been considered too steep to provide long-term stability, and regulations require grades to be less steep. The FEIS should address this issue. (1933)

Response: The proposed tailings embankment starter dam would be made of borrow materials and mine waste rock and would have a relatively short 2:1 slope as shown in the figure titled "Proposed Tailings Impoundment." The main embankment as shown in this figure would be 3:1 and would rise a total of 255 feet. At 3:1 this slope would be 765 feet long.

Sediment yield from a disturbed site is strongly influenced by the change in landform created by the disturbance. It is logical to assume that soils which developed on a particular slope following the last period of glaciation or other major disturbance should be returned to slopes which are essentially the same grade in the reclaimed environment. Soil stockpiling and replacement programs should take s-oils from similar slopes and replace them on similar slopes in the reclaimed landscape if possible to limit erosion potentials. The agencies have added a mitigation to the impoundment dam face to limit slope length because soils would be taken from slopes less than 8% and replaced on slopes up to 3:1 (33%).

The potential erosion on this long 3:1 slope has been mitigated in several ways by the agencies in Alternatives III and IV.

First, in the final design the agencies have asked for an undulating surface in the final lift of materials placed on the surface. This material would be local borrow material, mine waste rock, and/or rocky

subsoils from the impoundment footprint which may or may be not suitable for growth medium but would make very suitable, stable and non-erodible foundation materials. These materials would be used to produce the shape of the final reclaimed face of the impoundment dam face. After final grades are achieved, the salvaged soil materials would be replaced. The design would also incorporate some benches for tree planting and erosion control. (See Alternative III, Reclamation, Postmining Topography section in Chapter 2).

Second, the agencies would require incremental reclamation as the impoundment was completed over the 30+ year mine life. This would effectively reduce the area of slope that was being revegetated and stabilized at any one time. (See Alternative III, Reclamation, Revegetation section in Chapter 2). These two mitigations would reduce the risk of erosion on the embankment face to acceptable levels. Reclamation bond would not be released until revegetation had established and erosion was under control.

Finally, the soils in the impoundment area should be stockpiled based on erodibility. The least erodible soils would be placed in a pile for use on the dam face. This mitigation has been added to Alternatives III and IV in the Soil Salvage and Handling Plan section in Chapter 2.

In Alternative V, placement would ultimately depend upon a soils rock content as well as its potential erodibility. The more easily erodible lacustrine soils would only be used on slopes less than 8 percent. Colluvial or alluvial soils with rock contents up to 50 percent by volume would be used on the embankment face and in drainage ways. A final soil survey would verify that enough soil exists for each landform. Lacustrine soils could be mixed with rocky subsoils to produce sufficient suitable soil volumes.

In summary, the agencies have included mitigations in Alternatives III through V addressing this exact issue (see Chapter 2, Alternatives Descriptions for each alternative). Measures such as varying the final ground cover, incorporating changes in slope, benches, and undulating topography to more closely mimic the surrounding natural landscape would not only provide an erosional break in slope, but soften the visual impact of the tailings disposal facility. The final reclamation profile would be developed by Sterling with Agency oversight.

13. The tailings impoundment design is preliminary and is inadequate for decision making. The faulted and fractured bedrock, lack of impoundment lining, potential impoundment dam failure, and the potential for contamination of ground water or surface water flow into the Clark Fork River are issues we would like to see more fully addressed in the Final EIS. The presence of clay layer within lacustrine deposits of the impoundment site suggests the potential for instability and sliding associated with weighted, lubricated slickens. Also, while the clay layer is continuous in many areas, we have discovered deep deposition erosion channels that allow waters to pass through the clay in the highly permeable underlying alluvium. Given the seismic history of the site and the proximity of the Rainy Creek Fault, the potential for mass movement and/or impoundment failure should be addressed in the Final EIS.

Design details for the perimeter trench drain system will not be developed, according to the DEIS, until geologic and geotechnical investigations are conducted. The feasibility of such a system is not assured and there may be difficulty associated with constructing such a perimeter monitoring system. Page 2-34 indicates depth to bedrock is unknown, and it may not be possible to extend the trench drain. This would allow seepage to bypass the drains and migrate unrestricted toward the Clark Fork River. It seems reasonable that geotechnical and geologic

investigations be completed, and a perimeter trench drain system be designed and circulated for evaluation prior to finalizing the EIS. (1779)

Failure of the tailings impoundment may have substantial adverse effects on water quality, public safety, aesthetic quality, downstream facilities, aquatic life, and long-term reclamation success among other factors. A comprehensive Quality Control/Quality Assurance program should be part of any proposed design. (1595)

Response: The Agencies view the information submitted by the applicant to be adequate for making a decision as to whether or not to proceed with the EIS process. This review of submitted materials is known as the completeness phase. Some may view the quality the information regarding the tailings disposal facility as inadequate, however the level of detail is entirely consistent with that which is included during the conceptual phase of the design process. The design as presented by the applicant and mitigated through the EIS process will be in substantial conformance with what is eventually built provided the permit application is approved. The design can change during final design if the assumptions and preliminary data used during the preliminary design phase are different than assumed. This would result from more extensive data collection and analysis which accompanies the final design. As part of conceptual design, materials are tested for design properties, seismic design criteria are identified and agreed upon, and seismic analyses are preformed. During the final design phase, the strength characteristics of the local materials and an underground profile are confirmed through more extensive sub-surface drilling and laboratory testing, and with this data more rigorous seismic modeling is performed. The Agencies have included as a mitigation a review of the final design by technical review panel. If the data indicated a substantial change in design from the parameters discussed in this EIS were necessary, then the agencies would publish another environmental review for public comment.

14. Explain please the different earthquake acceleration values used between the Alt. II MPE of 0.12g for the upstream design (pg. E-13) and the Alt. III/IV MPE of 0.16g (pg. E-17)??? A maximum probable earthquake acceleration for an upstream design facility as well as a modified centerline design?? If not, then please so explain because the inconsistent use of formula for similar situations but differing designs lends more to confusion than the clarity the documentation is supposed to support. The same goes for the soft clays that are purported to underly the proposed facility. For Alt. II, they appear to be located primarily in the northwest portion of the impoundment, for Alt. II & IV they appear to be located primarily in the northwest portion of the impoundment and suspected to exist at other locations. (1780)

Response: Alternative II is Sterling's proposal, in which they used an earthquake acceleration design value of 0.12g. Their use of this value is entirely their prerogative as a mine permit applicant can propose an operating plan of their own design. Alternatives III and IV are alternatives developed by the Agencies in response to public scoping and comment. These alternatives reflect changes to the applicant's plan which the Agencies deem appropriate. The Agencies thought that a larger design acceleration should be used, hence the use of 0.16g. The design acceleration is independent of the type of facility; it is a constant value dependent solely on the regional seismicity and geology. The fact that different design values were used for different types of facilities is merely a coincidence as the Agencies also changed the type of facility (from upstream to modified centerline — see Appendix G for more detail on the types of tailings disposal facility construction) in addition to changing the design acceleration. Please refer to Chapter 3, Geology for further clarification of subsurface conditions.

15. The associated twin issues of borrow material from the tailings impoundment imprint and the artesian springs that are known to underlie the area are concerns that needed more attention in detail. Specifically as stated on (pg. 2-31) "Initial starter dams would be constructed with nearby borrow materials and waste rock." The

accompanying plate (on page 2-32) indicates that the borrow area inside the tails impoundment is located in the NW portion. The same area that (page E-13) indicates as containing soft clays that would constitute stability problems in an earthquake situation.

1. *Will these soft clays be utilized as part of the initial starter dams material?*
2. *Is it possible that in removing this layer of clays as borrow material, Asarco will be opening a conduit into the underlying aquifer that would exasperate the problem of ground water mixing and subsequent pollution?*
3. *Perhaps this is the intent so as accelerate the dewatering of the tails facility?*
4. *Where are the locations of the artisan springs in relation to other portions of the tailings impoundment? (1780)*

Response: Under the company's proposed alternative, Alternative II, the clays under the impoundment will be left in place. Under Alternatives III-V, the soft clays under the starter dams for the impoundment embankment or the paste facility would be removed and replaced with more granular material. These excavated clays would be used to blanket areas not under the starter dam footprint, but under the interior portion of the tailings storage facility to inhibit seepage. Under Alternative III-IV, the clays could be used in constructing the stabilizing berm for the North Saddle dam. The removal of these clays would not create new problems relating to increased seepage. Underdrain below this embankment of high permeable material will direct tailing effluent to a collection point. A variety of design elements specific to each alternative would be used to facilitate dewatering of the tailings. See the alternatives descriptions in Chapter 2 for more detail. While there are upwards of a dozen identified springs in the general vicinity of the tailings disposal facility, only two appear to fall within the footprint of the tailings disposal facility itself: one on the east side: and one on the west side. The springs appear to be flowing in surficial alluvial gravels, being perched on deeper lacustrine clays. The water rights to these two springs belong to Sterling.

16. The perimeter collection system. It appears every attempt possible has been made to make this facility as cheap as possible to construct, operate and maintain. This includes the number of proposed capture wells in light of the agencies' admission (pg. 4-63) that reducing seepage would be more protective than capture. 11 capture wells is totally insufficient, especially when some of the wells appear to be over 1000 feet apart, specifically in some of the zones in proximity to Rock Creek. (1780)

Response: Sterling would be required to conform to the prevailing water quality laws. The actual number and spacing of capture wells under Alternatives III or IV would be determined during final design with additional field data providing more site specific details. The seepage capture system would be modified to ensure any tailings impoundment effluent met MPDES limits and water quality standards.

17. Our greatest concern is just how stable the proposed impoundment walls will be. Anybody who has spent any time in the area is familiar with the long lasting downpours that occur quite frequently. The heavy rains in the area will definitely weaken the earthen walls. The question is not if the impoundment will fail, but when? And it will fail. Erosion is a big problem in this area. Our concern is that the heavy metals and the millions of tons of tailings will end up in the Clark Fork River. (1607)

The possibility always exists for a larger flood/rainstorm event than was predicted. Furthermore, the likelihood of several moderately sized events occurring in a row is greater than that of one massive event, and could potentially generate as much or more water. Heavy spring rain on an extremely deep snowpack could potentially generate more runoff than the catchment basin and tailings impoundment could hold. ASARCO should demonstrate understanding of potential worst case scenarios such as this, and demonstrate that the impoundment can easily hold that amount of water, with a generous safety margin added. Overtopping of the impoundment would have drastic effects on the aquatic communities in Miller Gulch. (1223)

Response: The impoundment is designed to hold tailings. Water levels within the tailings would be monitored by Sterling to evaluate the phreatic (water) level in the impoundment to ensure there is not a large buildup which could lead to embankment instability. The impoundment, under Alternatives III and IV, has been designed to accommodate the precipitation which would be expected under the Probable Maximum Precipitation (PMP) event. Surface run-on from the PMP event is addressed by a series of surface water diversions sized to handle run-off from the PMP event, ringing the perimeter of the impoundment conveying any surface drainage away from the impoundment before runoff could get to it. During operations, continual monitoring and maintenance would be required, thereby intercepting potential erosion problems. Post-closure, when the impoundment was dewatered, problems from excessive rain would likely be limited to rilling and gullying of impoundment slopes.

18. We believe the DEIS failed to address the concerns associated with the structural integrity of the tailings dam and that the Agencies should consider an alternative including the downstream design for the Rock Creek impoundment. (1223)

The proposed system will not prevent pollution of Rock Creek and the Clark Fork. The DEIS should admit this and it should project the water quality changes over time that will occur in the receiving waters. It is our position that there should be no detectable or calculable degradation of Rock Creek or the Clark Fork. The DEIS should have evaluated a tailings impoundment design that included lining and collection of all discharge for treatment. The DEIS should have evaluated an option with a downstream design, even if it meant a reduced project size. Or, it should have looked at a combination of downstream design with underground disposal at Rock Creek or Troy. (1526)

Is it really not feasible to use the downstream method of construction. From what I gather the reasons for not using it are money-related. The engineering technology available today should be able to overcome any topographical problems. Why can't the same fleet of trucks that would remove the millions of tons of ore concentrate be used to move the relatively small amount of borrow material from sources outside the permit area required to build the starter dam? The cost of such a project would be minimal when compared with the total profit of the mine itself and would provide much greater stability for the impoundment itself. (1673)

Response: The downstream method is feasible, however, it would require a large borrow material area creating a further environmental disturbance and a downstream construction design would require a larger impoundment as a portion of the tailings could no longer be used for the embankment but would have to go in the impoundment. The Agencies have included a fifth alternative which further addresses the tailings disposal facility stability. The tailing storage facility design under Alternative V involves the use of a dewatered tailings paste. Stability is improved over the other design alternatives. The EIS discusses downstream construction in Chapter 2, Alternatives Considered but Dismissed and in Appendix G.

19. We recommend that ASARCO be required to submit data on the permeability value associated with the clay and the estimated volume of clay that is proposed to be excavated at the location of the tailings impoundment embankment for the purpose of sealing the colluvium at the north end of the impoundment and other areas of the impoundment footprint underlain by materials of higher permeability (page 2-70). (1214)

Response: Permeability estimates for the foundation clays are included in the permit application. The exact volume of clay to be excavated from within the embankment footprints under Alternatives II, III, IV, and V is yet unknown, and would not be determined until final design.

20. What is the basis for the statement on page 2-34 that it is estimated that the tailings impoundment would drain for several decades before reaching a steady state condition? Does this apply to quantity or quality or both? (1214)

Response: This estimate is based on observations from other tailings impoundments, coupled with the volume of water entrained in the tailings, the grain size distribution of the tailings, and the number of drainage pathways. It applies to both the quantity and quality of the seepage.

21. We recommend that an experienced and professional geotechnical engineering consultant such as that involved in the review of ASARCO's design (Klohn Leonoff) be consulted by the technical panel involved in reviewing the final design. We also note that from our general engineering understandings and experience, the preliminary final design and field modifications/execution to the final design and field modifications/execution to the final design by ASARCO, the Joint Agencies, consultants, and construction personnel will dictate the foundational, structural and seismic stability of this impoundment. (1214)

Page. 2-3: says a comprehensive QA/QC program should be part of any proposed design for the tailings impoundment. We agree. This QA/QC program must be included for public review in the revised DEIS. (1223)

Response: Alternatives III through V include a technical panel review provision for the final design phase of the tailings disposal facility. The applicant has committed to a quality assurance/quality control (QA/QC) program during tailings disposal facility construction. The details of this program are in the application and summary in Chapter 2 of the EIS. The Agencies typically stipulate that an independent third-party professional engineering firm conduct the QA/QC inspections, perform all testing, and prepare all reports for the Agencies.

22. The McKay Creek impoundment alternative was developed as a conceptual design for an alternative site for the tailings impoundment. Although the location of the creek itself presents problems in design there seem to be many benefits associated with this alternate site. This area would be the most resistant to earthquake liquefaction without additional construction constraints. There are no private surface water users in the area to be affected. The settling pond downstream of the spillway would reduce the total suspended sediment load to McKay Creek and to the Clark Fork River. It was stated that the pond and spillway in the embankment would need long-term maintenance to ensure proper functioning, but I would expect no less of any design. A major benefit would be the aesthetic improvement along Highway 200 and the Clark Fork Valley. Would it be feasible to require a more specific engineering analysis to be submitted before discounting this area as an alternate site for the impoundment? (1679)

Response: The Agencies determined that the McKay Creek alternative underwent an adequate amount of review as prescribed by NEPA/MEPA prior to its inclusion as a "Considered but Dismissed" alternative. At this point there would be no further reason to revisit this site as a possible alternative tailings disposal facility location, especially since Alternative V was developed. McKay Creek site was dismissed for the following reasons: likely high hazard classification, tailings would remain saturated, the tailings disposal facility would disturb the greatest amount of wetlands and their replacement would not conform to Corps of Engineer preferences. These reasons are discussed in detail in Chapter 2.

23. Clearly the most important and significant eternal effect of the mine will be the permanent tailings pond; its size, location, and potential danger of leakage and catastrophic impact if rupture should occur…demand that the pond have a permanent, impermeable liner and ensure that it is built to specifications. (1223)(1385)(1678)(1772)(1781)

The DEIS downplays the likelihood of impoundments failures, based on the history of Montana mines. The impacts are predictable (base on experience with every mine in Montana, we know it will happen) yet the DEIS pretends that

such events are remote. It is certain that the unlined impoundment will leak toxic bilge into ground water, and the plan to detect, collect, and pump this corrupt seepage back to the impoundment ...will eventually fail. (1670)

Response: The seepage from both tailings impoundments and the paste facility have been modeled and the applicant has requested a Montana Pollution Discharge Elimination System (MPDES) permit based on this modeling for Alternative V. Additional permit analysis is contained in Appendix D. The collection system and backup seepage collection wells are typical of the designs for ground water collection currently employed in industrial applications. If Sterling can meet Montana water quality standards with its MPDES permit, no liner would be required.

24. One of the biggest problems with tailings impoundments is that they tend to create long-term environmental problems that are difficult or impossible to correct (Andrews 1975; Greber et al. 1979). There has not been as assessment of the site which even verifies the presence of clays, nor does ASARCO delineate the process by which they will even identify porous spots. (1223)

Response: Drilling and trenching in the proposed tailings disposal facility area has confirmed the presence of clay soils (see Chapter 3, Geology). The identification of potentially high seepage areas will be addressed during final design. Alternatives III -V propose placement of low permeability material (e.g., clay) in these areas.

25. Reclamation of the impoundment must prevent infiltration, and divert clean water from the site . (1223)

Response: Please see response to comments in SOIL-200 for more discussion on reducing infiltration into mine wastes. Infiltration will be reduced, not prevented. Elimination of infiltration could increase the potential for erosion, so there must be a balance achieved between the two conditions. Diversions would be used during operation to keep runoff from entering the mine facility sites.

26. What happens in the event of failure at the tailings piles, the interceptor wells, or holding lagoons? (1991)

Response: There are different degrees of failure when speaking of a tailings disposal facility failure. The impacts from the failures you describe can range from minor siltation to severe degradation of surface and ground water where water quality and aquatic life are severely impacted.

27. Page 4-19. Earthquake induced liquefaction. The problem in this alternative equates with the detailed laboratory testing and verification. Rock Creek and the Clark Fork do not exhibit laboratory conditions. We would like to know why none of the geologic information associated with the construction of the Noxon Rapids dam was included as background to the geology of the siting area. These facilities would be located within one mile of each other, and a check of the engineering report for the dam might shed light on unknown aspects of the tailings pond area. (1780)

Response: Reports in hand from the original Noxon Rapids Dam investigations in 1954 made no mention of regional seismicity. A review of later information and reports on the dam demonstrate that the seismic interpretation used as part of the Rock Creek project application is more rigorous and stringent than that used for the Noxon Dam.

28. It is stated (page 2-31) that the dam is designed to withstand a 7.0 magnitude earthquake occurring on the Bull Lake Fault. While we recognize that the probability of occurrence of an earthquake with a magnitude greater than 7.0 would be very low, we believe it would be appropriate to disclose the potential impacts associated with such a large earthquake, particularly if these impacts could include catastrophic consequences (e.g., seismic liquefaction failure of the impoundment and potential movement of tailings to rock creek and/or the Clark Fork River). We note that it is stated on page 3-13 that the 1959 Hebgen Lake earthquake had a magnitude of 7.1 (slightly exceeding the design earthquake). The FEIS should disclose any potentially catastrophic consequences or impacts that would be

associated with earthquakes near or exceeding the magnitude of the Hebgen Lake earthquake should such an earthquake occur in seismic zones near the proposed Rock Creek mine. (1214)(1914)

Response: Professionals in the field of geotechnical information designated the largest seismic event that could be generated by a suspected active fault near the proposed tailings disposal facility was comparable to a magnitude 7.0 event. Event size is dependent upon factors such as the type and geometry of the fault. The Bull Lake Fault near the Rock Creek site could not physically generate a bigger event than what is being used. According to the present analysis, even a 7.0 event on the Bull Lake Fault would not result in an tailings disposal facility failure.

29. The DEIS must fully analyze the results of equipment failure and catastrophic accidents at the tailings impoundment. (1936)

Response: Please refer to the following sections in the EIS, Chapter 4, Environmental Consequences for a discussion of equipment failure and catastrophic accident: Geotechnical Engineering, Hydrology (Accidental Spills and Ruptures subsections), Tailings Impoundment/Paste Facility Failure, and Aquatics/Fisheries.

30. ASARCO proposes to construct an unlined tailing impoundment for permanent disposal of mill tailings. According to ASARCO's plan, seepage of effluent from the impoundment to ground water would be controlled by a seepage collection system consisting of underdrains, perimeter recovery trenches and ground water capture wells. Faulted and fractured bedrock, lack of impoundment lining, potential impoundment dam failure, and the potential for contamination of ground water baseflow into the Clark Fork River near the proposed impoundment site, are concerns not adequately addressed in either the Water Management Plan or the DEIS. Failure of the impoundment could result in the discharge of waste material into the Clark Fork River with potential significant impact to aquatic resources. The presence of clay layers within lacustrine deposits of the impoundment site suggest the potential for instability and sliding associated with weighted, lubricated slickens. The potential for mass movement and/or impoundment failure and proposed mitigation should be addressed in the final EIS. (1779)(1296)

Response: Unstable material such as soft clays would be removed from the impoundment foundation prior to construction as needed to ensure stability and maintain low permeability to ground water. Sterling would need to collect more site-specific field data prior to preparing a final design. A technical review panel would evaluate the field data in conjunction with the final design to ensure impoundment stability would be maintained and that unfavorable foundation material was to be handled appropriately such that impacts would be no greater than disclosed in this EIS. If that could not be achieved, then the final design would be subject to additional NEPA/MEPA analysis and thus public comment prior to being approved, denied, or modified.

31. WWP is concerned about the location of the proposed tailings impoundment in close proximity to the Clark Fork River and employees living facilities. The tailings impoundment design is preliminary and inadequate for decision making. According to the project proponent, design details for the perimeter trench drain system will not be developed until geologic and geotechnical investigations are conducted. This suggests that the feasibility of such a system is uncertain and that there is difficulty associated with constructing such a perimeter monitoring system. In fact, page 2-34 of the DEIS reveals that depth to bedrock is unknown and it may not be possible to extend the trench drain to bedrock, allowing seepage to bypass the drains and migrate unrestricted toward the Clark Fork River. Geotechnical and geologic investigations should be completed and a perimeter trench drain system designed and circulated for evaluation prior to finalizing the EIS. (1779)

Response: The Agencies determined that there was a sufficient level of detail provided in the design documents to make a determination that the design as proposed was feasible and met the standard of care exercised by the engineering community. If a mine permit is granted, the final design will undergo further scrutiny as described to earlier responses. Alternatives II-V make a provision for a technical panel to oversee this phase of the work. This technical panel would include DEQ, Forest

Service staff, and third-party contractors, if necessary, and other interested state, federal, and tribal agency technical staff. If the trench drain foundation is not suitable to collect seepage, it would be lined as part of the final design.

32. Also there is no engineering specifications that would indicate just how much water it would take to unstabilize the impoundment facility? If there is a saturation point that must not be reached and how that equates with the amount of water that needs to drain from this facility to maintain stability. (1780)

Appendix B. #10. EPA recommendation that tailings impoundment be lined. Response : "ASARCO does not consider a lined impoundment a viable alternative due to engineering and cost constraints related to steep, irregular topography within the impoundment footprint." (1780)

Response: MEPA and NEPA require the Agencies create alternatives and/or mitigation measures to avoid, minimize, reduce, or mitigate potential impacts from a proposed action. A lined tailings facility was considered but dismissed as the liner was not necessary for compliance with water quality standards. A liner would potentially reduce the flow of seepage, but the tailings paste technology would achieve nearly the same reduction in seepage to less than 30 gpm over the entire tailings facility footprint. Nevertheless, under Alternative V, the technical panel would be required to re-evaluate the liner issue if field data collected for final design work or data collected from the evaluation adit indicated the potential for greater impacts than predicted in the final EIS. Any changes to the approved permit/plan of operations would require the appropriate level of MEPA/NEPA analysis.

33. It is very conceivable that supersaturated ground conditions will be a prevailing and uncontrollable norm with a tailings pond where proposed. It is also possible as with the Heron train derailment, man made conditions, the weather and unanticipated design functions come into play and you unknowingly setting the scene for a natural disaster, the likes of which you can only begin to imagine. It is possible that in designing for the seismic event you are overlooking the constant but steady dissolution that could occur under other circumstances. You must bet that at some point in the Rock Creek time frame conditions and forces will coalesce that will cause massive ground movement. This has occurred at Golden Sunlight, and it will occur here. You need to know what the Cabinet Reservoir is capable of handling and what the downstream consequences will be if this scenario is a possibility? What kind long term impacts and devastation could occur. These issues must be addressed and covered under a potential reclamation bond. (1780)

Response: A catastrophic failure of the proposed tailings impoundment is considered remote, and the consequences of this event are disclosed in the EIS. However, to further reduce the possibility of leaking or impoundment failure, and to be responsive to public concern, the agencies have developed a tailings disposal alternative that relies on the surface deposition of a paste-like material. Please see Alternative V.

34. There are no engineering specifications that would indicate just how much water it would take to unstabilize the impoundment facility? If there is a saturation point that must not be reached and how that equates with the amount of water that needs to drain from this facility to maintain stability. (1780)

Response: A range of water levels in the impoundment were analyzed for the paste facility. This analysis can be found in the Klohn Crippen report (1998). The question of water in the impoundment/embankment was approached by modifying such things as amount of water infiltration, the presence or absence of internal drains, and different rate of paste drainage. The analyses predicted that the water level within the impoundment/embankment may vary between 20 feet and 120 feet above the original ground surface. The stability of the impoundment/embankment was modeled using the above variations, different construction approaches (bottom up vs. top down) and

different paste strength parameters that could be expected. The stability analysis predicted failure in the case of top down construction, no internal drains, 20 inches of water infiltration, and lower paste shear strength. Stability was marginal for an impoundment/embankment with 20 inches of infiltration, top down construction and internal blanket drains. In summary, the stability of the impoundment/ embankment was not quantified using a discrete volume of water, rather stability was evaluated using a number of parameters that ultimately have an effect on an impoundments stability: amount of water infiltrating, strength of construction materials, construction sequence, and internal drainage. The Klohn Crippen (1998) report provides a good summary of impoundment/embankment stability under different conditions, and will provide the Agencies with valuable information in their analysis of the different impoundment/embankment options.

35. RWMP (ASARCO 1995) Apndx B. #10. EPA recommendation that tailings impoundment be lined. Response : "ASARCO does not consider a lined impoundment a viable alternative due to engineering and cost constraints related to steep, irregular topography within the impoundment footprint." (1780)

Response: The Agencies developed Alternative V to address public issues and comments related to a liner.

36. It is very conceivable that supersaturated ground conditions will be a prevailing and uncontrollable norm with a tailings pond where proposed. It is also possible as with the Heron train derailment, that man made conditions, the weather, and unanticipated design functions come into play and you unknowingly set the scene for a natural disaster, the likes of which you can only begin to imagine. It is possible that in designing for the seismic event you are overlooking the constant but steady dissolution that could occur under other circumstances. You must bet that at some point in the Rock Creek time frame conditions and forces will coalesce that will cause massive ground movement. This has occurred at Golden Sunlight, and it will occur here. You need to know what the Cabinet Reservoir is capable of handling and what the downstream consequences will be if this scenario is a possibility? What kind long term impacts and devastation could occur. These issues must be addressed and covered under a potential reclamation bond. (1780)

Is the tailings impoundment structure stable enough to hold the toxic wastes forever, given seismic activity and precipitation in the area? How much contaminated seepage from the impoundment will escape the interception system, and what will be the effects of that seepage? How will the impoundment and interception process be maintained in perpetuity? (1223)

Response: A catastrophic failure of the proposed tailings facility under all action alternatives is considered remote, and the consequences of this event are disclosed in the EIS. However, to further reduce the possibility of leaching or an impoundment failure, and to address such concern, the agencies have developed an alternative that relies on the surface deposition of tailings as a paste-like material. Please see Alternative V description in Chapter 2 and analysis of impacts in Chapter 4. Use of paste technology also greatly reduces the amount of seepage through the tailings. See Hydrology sections in the comments and responses and in Chapter 4 for more details. Once ground water quality standards were met without treatment and the tailings storage facility was reclaimed, there would be no further active maintenance of the site.

37. Require ASARCO to figure out a better way to dispose of tailings drainage, and to make sure the tailings themselves do not wind up in the river. (1740)

Response: Please refer to Alternative V which incorporates deposition of tailings as a paste and greatly reduces potential seepage and the risk of failure.

38. Tailings to be located so close to the Clark Fork River so as to degrade water quality and endanger the fishery. When one logically projects over 30 years or more, the effects of this impurity, it demands a complete and accurate safeguard. (1452)

Polluting the Clark Fork River & Lake Pend Oreille if the tailings impoundment walls collapse due to over saturation by storm water or possibly by earthquake is a concern. (1635)

Page 4-38 and 4-62 present conflicting conclusions about the significance of a tailings impoundment failure to Pend Oreille Lake and the Clark Fork River. (1993)

Response: The wording of these two sections will be clarified to eliminate any appearance of a conflict in the conclusions stated.

The tailings impoundment design for Alternatives III and IV has been reviewed and environmental consequences addressed in the EIS. Geotechnical review and analysis indicate that a tailings impoundment structure could be safely constructed on the proposed site. The "modified centerline" design provides adequate assurance of safety in the event of an earthquake. Regarding large scale climatic events, the tailings impoundment and associated mine facilities would be designed to convey and contain runoff from the probable maximum precipitation event. Finally, the proposed tailings facility would be one half mile from the Clark Fork River at its closest point. Seepage capture wells would be installed around the impoundment to preclude ground water contamination under Alternatives III and IV. Lastly, Alternative V, which is the Agencies preferred alternative, incorporates tailings deposition as a paste and is less susceptible to liquefaction and flow than a highly saturated tailings impoundment. This design would address many of the concerns about the long-term stability of the Alternative II impoundment.

GEO-103 Mineral Rights

1. Please justify how the 1872 Mining Law allows ASARCO to TAKE our wilderness, our grizzly bear, our waters (Rock Creek, the CFR, and groundwater), our scenic views, and our economies? (1916)

Response: The 1872 Mining Law provides certain access, development, and ownership rights to mining claimants, but those rights do not supersede environmental laws. If the Agencies find that other environmental laws would be violated, and that there were no reasonable alternatives that would not violate those laws, then the no action alternative would likely be selected. Chapter 1 contains a description of Agency roles and responsibilities regarding the various laws and regulations pertinent to the project as well as a listing of permits, licenses and approvals that would be required. Impacts that the Rock Creek Project might have on the wilderness, grizzly bear, water quality, scenic resources, and local economies, whether positive or negative, are discussed in Chapter 4.

2. Page 2-15: The DEIS states that there are mining claims that overlie the proposed mill site and part of the tailings impoundment. Are all lands to be impacted by the mine covered under valid mining or millsite claims. If not, is the Forest Service obligated to approve the project? In other words, the Agency can (and should) deny any project facility on the non-claimed lands due to their severe environmental impact. (1223)

Response: Sterling maintains mining claims throughout the entire project area except for the portion that is not under Federal ownership and a portion of the proposed pipeline and electrical transmission line (utility) corridor. The utility corridor would be permitted under a Special Use Permit. Nonetheless, Forest Service regulations at 36 CFR 228, Subpart A, specifically allow for approval of mining related activities (prospecting, exploration, development, mining or processing of mineral resources and all uses reasonable incident thereto, including roads and other means of access) associated with a plan of operation whether said operations take place on or off mining claims.

3. It took geologic ages to form the Cabinet Mountain Wilderness including its ore deposits. Much of it can be destroyed relatively quickly in the process of extracting the ore. Why not wait 10, 20, 50 or 500 years before mining the ore deposit? (1348)

Response: A requirement by the agencies to delay the project for a lengthy period of time would, in effect, be a denial of Sterling's proposal. Lead agency denial authority is discussed in Chapter 1. Generally, neither the Forest Service nor the Montana DEQ could exercise their denial authority unless laws administered by one or the other would be violated by the proposal and the agency could not find adequate mitigation measures to avoid the violation.

4. Are the agencies considering permitting the mine for the sake of profit for ASARCO, or is it for the good of the people and environment as a whole? (1371)

Response: The agencies are responding to Sterling's proposal to construct, operate, and reclaim the Rock Creek Project as is required under applicable laws, regulations, and rules. Chapter 1 contains a discussion of the agencies' roles and responsibilities.

5. The DEIS needs to demonstrate how this mineral deposit was determined to be "valuable." (1916)

Response: As discussed in Chapter 1, the Rock Creek mineral deposit was determined to be a valuable mineral deposit in two related analyses. In 1985 the U.S. Forest Service completed a valid existing rights analysis, which was required by the Wilderness Act. The valid existing rights determination concluded that the Rock Creek deposit claimed under the 1872 Mining Law was a

valuable mineral deposit. Additionally, all other applicable requirements of the Mining Law were found to have been met. This verified the applicant's rights under the Wilderness Act to mine the deposit. At about this same time the applicant submitted a patent application. A patent report was completed in 1988. In 1989, after again verifying that the deposit was valuable under the Mining Law, the Bureau of Land Management (BLM) issued patents to 99 lode mining claims. The Bureau of Land Management issued patent #25-89-0119 on March 2, 1989, which transferred ownership of the Rock Creek deposit to ASARCO (now Sterling). Once patented (title to the deposit having been transferred to the applicant) there is no further test.

6. Page 2-15: "In order to determine ASARCO's actual property rights and interest, these claims would have to be subjected to an extensive technical and legal examination to determine if they were valid in all respects under the mining law." –What technical and legal group will make this determination? What independent, politically neutral legal firm will be retained to make the determination? How will the public be informed when any pertinent public meetings are to be held? (1288)

Response: ASARCO's (now Sterling) claims that overlie the ore deposit were found valid in 1985 following a lengthy analysis. Four years later the U.S. Bureau of Land Management issued patents to 99 lode mining claims. At that time the ore body became ASARCO's private property. This concluded the Federal government's review of ASARCO's (now Sterling) rights under the mining law as far as validity was concerned. Sterling maintains a number of other mining claims in the project area. Mining law provides that claims may to be used for purposes that are reasonably related to Sterling's mining project.

The Forest Service does not, at this time, contemplate conducting validity examinations to determine Sterling's actual rights. This might occur should the no action alternative be selected. Only the U.S. Department of Interior (USDI) Bureau of Land Management (BLM) has authority to determine whether mining claims are valid under U.S. Mining laws. Should this occur, the public has the opportunity to appeal BLM decisions to the USDI Office of Hearings and Appeals.

7. Also the Forest Service is allowing ASARCO to go forward and totally destroy a section of land between 542 to 608 acres at the primary mining site! That does not even include the Cabinet Mountain Wilderness (CMW) area which is designated to be protected for its current pristine qualities and for the future. The CMW is not designated to have a mine drill underground or into its designated lands and destroy its quality. (2026)

Response: The Wilderness Act allows for mining of patented claims within a wilderness. The Forest Service must ensure that could be done with the least impact to the wilderness. Impacts on the Cabinet Mountains Wilderness are discussed in Chapter 4 of the EIS.

GEO-104 Rock Characterization and Geochemistry

1. The agencies should prohibit the development of any ore containing sulfide compounds above a low limit due to the very wet hydrology of the site. (1501)

We believe that much more extensive testing and characterization of the Rock Creek ore body and adit waste rock is needed to provide assurance that acid drainage or metals mobilization will not occur at Rock Creek. We are pleased that the Agencies are proposing to require additional geochemical testing with the preferred alternative, but are concerned that contingencies in the event of long term acid rock drainage and metals mobility are not well described or well planned for. (1214)(1223)(1638)(1955)(1957)

Response: The lead agencies do not have the authority to deny permits and approvals simply due to the fact that sulfide minerals are present in the ore body. For more details please refer to Chapter 1, Agency Decisions. The reader is referred to acid rock drainage and metals leaching discussions in the draft and supplemental EIS public comments. Further discussion on these topics including testing and monitoring requirements and contingency plans have been added to Chapter 4 of the final EIS and Appendix K (Acid Rock Drainage and Metals Leaching Plan).

2. The assessment in the DEIS of the likelihood of the development of acid mine drainage in the tailings impoundment and the mine proper relies primarily on analogy with the nearby Troy Mine in the Spar Lake deposit. The geology of the two deposits is similar; therefore, using the analogy is appropriate. Confidence in the conclusion reached in the DEIS that acid mine drainage conditions are not expected to develop could be increased substantially if a more comprehensive review of more extensive geochemical data from the Rock Creek site were performed. However, in comparing the Troy Mine, very few data from the Troy Mine are presented for the comparison. The FEIS should include more extensive geochemical data and analysis regarding this issue. (1223)(1780)(1933)

Page 2-71:. What information is this assumption that the potential for acid drainage is not expected, based on conditions at the ASARCO/Troy mine based on? My comments on the SDEIS - Montanore Project, dated Dec.20, 1991, p.8, demonstrated that acid drainage is indeed occurring at ASARCO/Troy. (Figures from DHES &DSL monitoring reports). (1504)

Similarly, few, if any, data from geochemical analyses of core samples from the test holes were analyzed. Geochemical analyses could have been performed to provide quantitative data useful for prediction of post-mining water quality conditions. The few geochemical data that are provided are for waste rock and not the ore zone. Therefore, prediction of post-mining water quality and the potential for acid mine drainage are difficult. Because of these data gaps, prediction of and ways to mitigate some potentially significant environmental effects will be postponed and only addressed after mining has been permitted and started. Therefore, the FEIS should correct these information gaps, analyze the impacts, and provide for appropriate mitigation. (1933)

Figure 2-7 (page 2-21) appears to show that drainage off the surface of the waste rock dump at the exploration adit site will flow toward a pond near the mine adit, where the water will be directed to the water treatment facility via a pipeline. What will happen to seepage through the waste rock dump? The potential for leaching of contaminants and acid-base testing should be determined for the 600,000 tons of waste rock excavated from the proposed mine adits (page 2-24). (1214)

The potential for mobilization and seepage of metals and other contaminants from the mill site waste rock should be rigorously evaluated and tested. We note that Alternative IV will produce 400,000 additional tons of waste rock and it is proposed that the bulk of this waste rock be used at the mill site located above and adjacent to the confluence of the east and west forks of Rock Creek (page 2-83). It will be of critical importance to geochemically test and characterize the ARD and metals leaching potential of the waste rock. We are particularly concerned since the additional 400,000 tons of waste rock associated with the 6,500 feet of additional adits with Alternative IV were

not proposed by ASARCO. Much of this lower elevation rock has not been cored and geochemically tested by ASARCO. Implementation of Alternative IV should require appropriate testing and characterization of the adit waste rock, particularly the waste rock not to be covered with mill area pavement, and the waste rock to be used as foundation material and tailings impoundment starter dams. (1214)

Page 2-83: states that relocation of the portal results in a 67 percent increase in waste rock, from 600,000 tons to 1 million tons. The one million tons of waste rock would be used in part to construct the mill site pad, potentially raising the ground level at the mill site by a maximum of 50 feet. Additional excavated rock from the adits would be used for foundation material and construction of starter dams at the impoundment. Increasing volume of waste rock increases the potential for acid mine drainage, particularly since ASARCO has not presented conclusive biochemical data on the waste rock. The DEIS also fails to discuss what materials will be used to build the mill site pad if the waste rock does prove to be acid generating. Also, the full impacts from the additional waste rock is not disclosed in the discussion of alternative IV. (1223)

Analyze thoroughly the closed Troy mine and tailings pond, and mine drainage water quality. Analysis of sulphate production over time, and complete acid-base account must be done on waste rock and tailings. Additionally, the issue of metals contamination at Troy must be carefully evaluated. The likelihood of similar scenarios developing at Rock Creek should be considered. These analyzes must also be done for the specific waste rock and tailings at Rock Creek, and appropriate cautionary measures must be taken to protect the environment. (1223)

Page 2-119: Table 2-13: All alternatives will have minor increases in metals, nitrogen, ammonia, and total dissolved solids. This statement is unsubstantiated. There is inadequate baseline data on the geochemistry of rock in the project area (no acid-base accounting, static and kinetic tests, or modeling), therefore, increases in metals cannot be accurately predicted. (1223)

Where is the analysis and disclosure of the effects of the mine's true potential to generate acid mine drainage from the sulfides present in the ore body? (1438)

The second major concern during mine operation is heavy metal contamination, and the potential for acid mine drainage. However, heavy metals and acid production also pose a serous long-term threat to environment after mine closure. (1223)

We are pleased to see that ASARCO would be required to develop a representative underground sampling acid-base testing program, and that acid generating material would be segregated for special handling, and not used for construction purposes (page 4-65). If a significant quantity of the 1 million tons of waste anticipated in Alternative IV were found to have acid generating characteristics what replacement materials would be used for mill foundation and starter dam construction? (1214)(1223)

Response: Please see revised geochemistry discussion in Chapter 4 of the supplemental and final EISs and previous responses to comments in this section. Table 2-23 provides only a summary of the analysis in Chapter 4.

Based on additional sampling and analysis the agencies have revised and expanded the Chapter 3 Geology section describing ore body and waste rock geochemistry. The agencies took 48 additional samples and had multi-element and acid-base (static) testing performed by a third party, at the applicant's expense. Thirty-two of the samples were from Rock Creek Project drill core (22 from the ore body and 10 from adit-area waste rock), and 16 were taken from the Troy Mine. Additionally, the applicant conducted one kinetic test on Rock Creek ore.

A third-party consulting company (Klohn-Crippen 1998) for the agencies evaluated the tailings and acid rock drainage geochemical data for the Rock Creek Project and the Troy Mine. Klohn-Crippen

found that the geochemical information (Rock Creek and Troy Mine ore, waste rock, tailings static testing and Troy Mine field water chemistry), while insufficient in amount, could be confirmed during operation of the proposed mine and need not delay potential development. In Alternative Additional analysis has been included in Chapter 4, Geology.

Sterling would be responsible to define suitable replacement alternatives should the waste material fail geochemical characterization criteria. Starter dam construction would not be necessary in Alternative V which proposes paste tailings technology although the toe buttresses require either waste rock or fill material for structural support.

3. Acid-base accounting data are listed in Table 4-14. The information provided is difficult to evaluate because the number of samples analyzed and the geologic zone of the ore body from which each sample was collected are not indicated. This information is needed to evaluate how representative the data are of the site and the rocks that will be mined. Because concentrations of acid-generating and neutralizing minerals vary considerably in each zone, analysis of more than a few samples would be needed to characterize the potential for generation of acid-mine drainage. Given that pyrite concentrations are greater than 0.2 percent by weight (Hayes and Einuadi, 1986, Economic Geology, 81:1899-1931) in some zones of the deposit, the value listed in Table 4-14 of <1 for the acid-generating potential of both Rock Creek tailings and waste rock may possibly misrepresent the acid-generating potential of some of the rock. The FEIS should provide the above information and reevaluate, as necessary, the acid-generating potential of the rock. (1933)

Response: There has been considerable confusion as to how much and precisely where - in relation to the ore body - pyrite occurs. Hayes and Einaudi (1986, 1990) describes in detail mineral zonation patterns in the Spar Lake (Troy Mine) deposit. In a March 6, 1995, communication, Hayes states that "all available information suggested that the geochemistry as defined by the mineral zonation of the two deposits [Spar Lake and Rock Creek] is essentially the same," and "the Rock Creek cores I examined up through summer of 1983 [the last year of ASARCO's drilling of the deposit] had mineral abundances that were virtually identical with the same mineral zones at Spar Lake (Troy)." Hayes describes six mineral zones: pyrite-calcite, galena-calcite, chalcopyrite-calcite, bornite-calcite, chalcocite-chlorite, and chalcopyrite-ankerite. Of these, ore that would be mined is found only in the bornite-calcite and chalcocite-chlorite zones. Pyrite does not occur in these two zones. The only zone where more than a trace of pyrite is found is the pyrite-calcite zone where "...pyrite constitutes only an average of about 0.2 volume-% of the rock whereas the calcite constitutes an average of around 4%." (Hayes and Eidaudi 1990). The only place where the pyrite-calcite zone would be exposed is in evaluation and mine access adits.

According to Hayes' data, of the two zones which surround the ore body - that is, surrounding the bornite-calcite and chalcocite-chlorite zones, one (chalcopyrite-ankerite) contains "local trace" amounts of pyrite, while the other (chalcopyrite-calcite) contains no pyrite. In his 1986 and 1990 discussions he divides different sulfide mineral concentrations into "local trace" amounts, "trace" amounts, and "greater than 0.1 volume-%" and "greater than 0.4 volume-%." He does not report pyrite in the "greater than 0.4%" category.

Hayes states that the pH-buffering capability of all of the zones leads him to conclude that waters (from the mine, waste rock, and tailings impoundment) would be close to neutral pH.

Nonetheless, as is noted in the response prior to this, additional testing and analysis was conducted. That analysis supports and confirms the agencies' original conclusions. Please refer to Chapter 3 and 4, Geology, for more information.

4. C-21. Require the Corps to have ASARCO have an acid mine contingency plan in place before permitting the project. (1196)

Response: The Corps of Engineers would require the applicant to have an acid mine contingency plan in place before permitting of the project. This plan shall be reviewed and approved by the COE and other applicable federal and state agencies prior to the start of any construction. Appendix K contains a geochemical contingency plan that would establish geochemical boundaries or limits for new data generated from underground construction. These limits would be based on the Saskatchewan Mine Rock Guidelines written by Steffen, Robertson, and Kirsten in 1992 and would determine mitigation and/or ultimate project progression.

5. Page 4-56 "The long-term potential for acid mine drainage from the Rock Creek Project is unknown." This uncertainty is unacceptable from a NEPA/MEPA standpoint. This information is obtainable, albeit at a cost to the company. However, reasonably obtainable information such as long-term acid mine drainage potential must be included in the DEIS. (1223)

Response: The statement in the draft EIS was based on information available to the agencies at the time. That information has been supplemented with additional sampling, testing, and analysis. Please refer to the Chapter 4, Geology section for more information.

6. Page 3-11 ASARCO has provided limited whole rock and acid-base accounting data for the Rock Creek ore body, choosing rather to depend on performance at their Troy mine. Reliance on the Troy data is unacceptable for evaluating the impacts of this proposed project. Table 4-16 (p. 4-54) clearly demonstrates that operational data from the Troy mine is incomplete. No data is presented for a number of critical water quality parameters– including alkalinity, arsenic, cadmium, copper (dissolved), chromium, iron, lead, mercury, silver, selenium, and zinc (dissolved). Considering this missing data, the natural variability of geochemical properties at different mine sites, and the inherent uncertainties with predicting acid generating potential, it is clear that the geochemical data presented in the DEIS is inadequate. (1223)(1960)

Response: The agencies have gathered additional information related to the Troy Mine and Rock Creek deposit. Analysis of this data, as documented in Chapter 3 and 4, Geology, is consistent with the agencies' original conclusion that the two deposits are essentially identical in terms of their potential for the development of acid rock drainage (ARD). The agencies' original conclusion was based on the U.S.G.S. Open File Report 90-0484 research on regional geology by Timothy Hayes and M.T. Einaudi (1990). Please see Table 4-22A of the final EIS, regarding missing data.

7. The potential for leaching of contaminants and acid-base testing should be determined for the 59,000 tons of waste rock and 119,000 tons of ore excavated from the proposed exploration adit. (1214)

Page 3-11: states that surrounding the ore zone is a zone of disseminated chalcopyrite, which in turn is surrounded, in places, by a zone of galena and finally by a zone of pyrite. All of these zones contain significant amount of calcite and other minerals capable of neutralizing acid that may be formed from oxidation of pyrite. This statement confirms that pyrite is present and that there is a potential for development of acid mine drainage. The impacts from acid mine drainage, particularly at the mill pad and tailings impoundment starter dams, must be addressed. Just because the calcite is present in the ore body does not mean it is available to sufficiently neutralize acid generated by the pyrite. (1223)

Response: Please see Appendix K of the final EIS for rock monitoring, mitigation, and contingency plans. Please see other responses to comments in this section.

8. The DEIS clearly states that kinetic testing may be useful in predicting acid mine drainage potential. Therefore, it must be completed for the revised DEIS. The severe acid mine drainage problems in the tailings area of the Thompson Creek molybdenum mine in Idaho should serve as a model to the Forest Service. Originally thought to be non-acid generating, the Forest Service incorrectly relied on the presence of neutralizing materials in its original

project approval. The Agencies should compare what went wrong at Thompson Creek with its overly optimistic predictions for Rock Creek .(1223)

What has happened to all of the ASARCO data? Did they use all their core for analysis and test work related to assessing the economic potential of the mine-leaving little sample material available for environmental assessment? EPA would like to feel more assured that adequate data has been collected to assure that ARD and/or metals mobility will not be a problem at Rock Creek. As an alternative, can we discuss the possibility of applying the Montanore rock type characterization to the ASARCO deposit? Based on our recent past and present experience at Zortman-Landusky where early assurances of "No ARD Expectation" was given in 1979, in the early analysis, we want to see an ARD plan for characterization of mined rock from exploration/ pre-development/development/ mining, ongoing sampling, analysis and sample storage, throughout the mine life. This accumulation of data must include waste rock from the "halo" pyrite and zinc-rich areas because this rock could be a large part of the abandoned mine back, walls and floor rock. We do not want to again be in the similar Zortman-Landusky scenario of discovering that it takes some time, perhaps years, for some of this rock to turn "sour" and discharge ARD bearing deleterious heavy metals to the environment. What if acid rock drainage does develop at some time after mining has begun or ended? ASARCO's liability and corrective actions in this event should be discussed. We cannot over emphasize our concerns regarding the potential for metals mobility, transport, and leaching from Rock Creek waste rock/tailings, and adit discharge water quality including potential metals mobility at near neutral ph levels. Any mineralogical and geochemical differences between the Troy and Rock Creek deposits, and between the Troy and Rock Creek milling processes, and differences in hydrological conditions that could lead to differences in contaminant mobility and transport at the two mines should be discussed in the FEIS. (1214)

Rainwater and snow will accumulate in the tailings impoundment, and will be available to dissolve and mobilize metals in the tailings (Ken Kapsi, MDHES, pers. comm. 1994). If acid is produced from the tailings, low ph can exacerbate this problem because acidic conditions increase the solubility, and thus mobility and bioavailability, of most metals (Laws 1993). However, metals mobility can occur without the production of acids in a tailings impoundments (Rob Walline, EPA Regional Mine Waste Expert, pers. comm. 1994). Therefore, even if acid mine drainage does not become a problem at Rock Creek, the issue of metals mobility and contamination must be addressed. (1223)

The monitoring at ASARCO's Troy unit and the currently available geochemical sampling of the ore body is insufficient to predict the chemistry of mine drainage at Rock Creek. Consequently, determinations as to the treatment plant's ability to comply with the limits set forth in this permit are premature. The applicant must be required to conduct comprehensive geochemical sampling of the ore body and future waste rock so that more meaningful predictions of mine drainage chemistry can be made.

At a minimum, the guidelines contained in Acid Mine Drainage Prediction, EPA Technical Document 530-R-94-036 (Dec. 1994) (incorporated into this record by reference), should be followed in the DEQ/Forest Service's review of the potential for acid mine drainage at the site.

While current acid drainage prediction methods, at a minimum, must be utilized at Rock Creek before any further permitting actions can occur (i.e., the revised DEIS and draft water quality permit must contain a complete review of acid mine drainage site specific studies), the department should also be aware that many of the current testing methods underestimate the potential for acid drainage.

The EPA has concluded that "because mineralogy and other factors affecting the potential for AMD [acid mine drainage] formation are highly variable from site to site, predicting the potential for AMD is currently difficult, costly, and of questionable reliability."

This finding is particularly applicable to Rock Creek in that the DEIS and Draft Permit both rely on a generalized preliminary review of acid mine drainage at the Troy mine as justification for not conducting specific AMD analysis

at Rock Creek. As noted by EPA, this is completely unacceptable due to the inherent "highly variable [factors] from site to site." (1223)

The federal Bureau of Land Management requires that "all proposals for surface disturbance must be evaluated for acid rock drainage." Williams, "The Bureau of Land Management Acid Rock Drainage Policy, An Evolution in Environmental Protection," Proceedings - International Land Reclamation and Mine Drainage Conference and Third International Conference on the Abatement of Acidic Drainage, U.S. Bureau of Mines Special Publication SP 06D- 94 (1994)(incorporated into this record by reference). This entire document (Conference Proceedings) should be reviewed and discussed in the revised DEIS and draft MPDES permit for its analysis of acid mine drainage issues relevant to the Rock Creek project. (1223)

Response: The statements in the draft EIS concerning all rock testing were based on information available to the agencies at the time. That information has been supplemented with additional sampling, testing, and analysis. Please refer to the Chapter 3 and 4 Geology sections, and Appendix K (Acid Rock Drainage and Metals Leaching Plan). Appendix K also provides discussion on mitigation and contingency plans.

It is difficult to compare the geochemistry from two unrelated deposits of different geological evolution such as Rock Creek (Montana) and Thompson Creek (Idaho). However, the agencies agree with the reader's point that the Rock Creek deposit must be extensively characterized geochemically and include long-term kinetic testing. Please see Appendix K for testing and mitigation information. A kinetic test was run on a core sample (RC-43) from the middle of the Rock Creek ore deposit by Shafer & Associates. The final report was issued April 30, 1997, and suggests there would be a minor generation of sulfate, and a general decline in alkalinity over time for this particular sample.

Recommendations by a third (independent) reviewer of rock and tails geochemistry (Klohn-Crippen 1998) included the observation that undetermined potential for net acid generation should be addressed with sampling and specific laboratory testing that could occur during operation. Additional kinetic investigation of the Rock Creek ore and waste rock would be necessary and would be required. Please also see the revised geochemistry discussion in Chapter 4; Geology of the EIS.

Since the draft EIS, Alternative V has been added as an alternative. Alternative V includes paste tailings technology for the impoundment. Paste tailings technology is expected to reduce seepage by 10 fold. Please see Golder and Associates (1996) report titled "Evaluation of Surface Paste Placement as Alternative Tailings Management Technology" and Summary of Findings in Alternative V discussion. Please also see Klohn-Crippen Report (1998) titled "Review of Tailings and Acid Rock Drainage." In addition, paste tailings samples from a bulk ore processing sample will be tested for metal leaching ability. Please see Appendix K.

9. It is stated that initial testing of the Rock Creek tailings material indicates a net neutralizing potential (page 4-45). Table 4-14, page 4-48, however, lacks definition as to source of the Rock Creek tailings and waste rock material and the mine lithologic units represented. It is our understanding that the average acid-base potential of Rock Creek waste samples of +84 (page 4-53) was based on three samples. Are these three samples adequately representative of the up to 1 million tons of waste rock that will be produced? Similarly are the Rock Creek Tailings test results of +11 (how many samples?) representative of the 100 million tons of tailings to be produced? Are the samples tested and disclosed in Table 4-14 representative of all lithologies to be encountered? (1214)

Response: Tailings material testing data were evaluated by an independent reviewer (Klohn-Crippen 1998). Although the reviewer concluded the data fell into a geochemical uncertainly range for acid rock drainage (ARD), the reviewer observed that undetermined potential for net acid generation could be addressed with sampling and specific laboratory testing that could occur during operation.

The agencies agree that the geochemical database, even with the additional sampling done at Rock Creek and the Troy Mine for the supplemental draft EIS, does not statistically represent the entire deposit. However, additional sampling (see previous responses in this section), in comparison with the geologic similarities of the Troy deposit, do provide strong evidence that the chance for unmitigatable ARD or leaching problems is low and therefore does not support denial of the permit. However, if the project reaches development, the entire deposit will be defined geochemically to satisfy statistical representation.

Based on additional sampling and analysis, the Agencies have revised and expanded the Chapter 3 Geology section describing ore body and waste rock geochemistry. The agencies took 48 additional samples and had multi-element and acid-base (static) testing performed by a third party, at the applicant's expense. Thirty-two of the samples were from Rock Creek Project drill core (22 from the ore body and 10 from adit-area waste rock), and 16 were taken from the Troy Mine. Additionally, the applicant conducted one kinetic test on Rock Creek ore.

10. The ore contains copper sulphides and copper-iron sulphides (Application for a Hard-Rock Operating Permit), and the potential for acid mine drainage exists. ASARCO is assuming that acid mine drainage will not be a problem at Rock Creek for two reasons. First, because the milling process does not use cyanide, which is frequently the cause of high levels of acid mine drainage (Rebecca Miller, DSL, pers. comm. 1994). Second, it is assumed that the flotation process will effectively remove all sulphides from the ore, and this potential source of acid drainage (Rebecca Miller, DSL, pers. comm. 1994). However, the flotation process will not remove 100 percent of the sulphides from the ore (Rob Walline, EPA, pers. comm. 1994). (1223)

Response: Much of the sulfide present in Troy ore is separated in the floatation process. Given that there may be small differences in geochemistry influences of floatation, and some sulfide does get into the tailings, the reactivity/type of sulfide, the amount and the tailings structure must also be considered. Copper sulfides, while still capable of producing acid through oxidation, are not as reactive as pure iron sulfides. Depending on the amount (% of the overall tails), there will still, the agencies believe, be a dilution factor within the entire tails. If acid should be produced in sufficient quantities, there would need to be metals associated with the tailings. Tables 4-18 and 4-19 of the final EIS provide recent data on metals levels in impoundment water from the Troy tailings impoundment (operation began in 1981). Using paste technology to construct the tailings storage facility would further immobilize metals. Please see discussion on Alternative V in Chapter 2 of the final EIS. A bulk ore sample will be processed from the evaluation adit prior to the operational use of the tailings impoundment. Acid base accounting and leach testing will be performed on the tailings generated from this sample for geochemical behavior verification. Addition of cement language has been added to the final EIS in the event that static and kinetic testing of data indicates significant acid rock drainage or metals leaching production.

11. Page 2-71: paragraph 1, sentence 1: The DEIS does not present enough baseline data. Baseline data are needed to make the first sentence anything but unfounded speculation, and that is the way it should be stated. Indeed, it is much more likely that acid mine drainage is to be expected, especially over the long term. And the paragraph does not say what would be done with materials to prevent acidification, only that "results would help identify them..." How these materials in the quantities predicted will be handled to prevent acid drainage must be addressed clearly and definitively. (1288)

Response: The agencies agree that the contingency protocol should assume there is a profound ability for acid rock drainage to occur. The geochemistry discussion has been rewritten to include discussion of additional sampling results. Please also see previous responses to comments in this section.

12. Where are the data showing the sulfide content of the ore body and other rocks to be excavated? Are these data not available? If not, why not, considering how much exploration and actual mining has already occurred in the area? Where are these data for the Troy site? And where are the comparable data for Rock Creek? Without these data, how can the assumption be made that the two sites are similar?

Compare Table 16 (p. 5-8) in RWMP(Revised Water Management Plan) and Table 4-14 DEIS p. 4-48. The values for waste rock and tailings solids are reversed. Which is correct? How can the reader evaluate this? And once again, how can any useful judgements be made from these data, which represent only 2 and 3 samples from a massive project site? Please explain why you expect anyone with a modicum of scientific training to accept any assumptions or conclusions from a couple of rocks? Why have the agencies not required ASARCO to conduct adequate analyzes of the Rock Creek ores and waste rocks and their potential for long term acid generation and heavy metals release? The EPA (p. 10 of the response document in the RWMP) raises these key issues and even suggests some potential mitigation.

What are the pyrite (sulfide) contents of the Rock Creek rocks (ores and other hard-rock materials)? (1288)

Response: Please see revised geochemistry discussion in Chapter 4 of the final EIS (Table 4-12), previous response in this section, and responses to comments in GEO-104 of the Supplemental EIS Public Comments and NEPA-900 for responses to comments and responses on the draft and supplemental EISs. Also, the reader is referred to 40 CFR 1502.22, "Incomplete or unavailable information."

13. Page 2-28: DEIS fails to mention that 2 lbs of steel balls are used per ton of ore in the ball mills. (see Mine Site Visit, EPA, may 1992, p12). Addition of 20,000 lbs iron per day to tailings could contribute to acid mine reactions in tailings impoundment. (1504)

Response: Acid rock drainage reactions would depend on the amount and type of sulfide minerals in the tailings. Please also see previous responses to comments in this section.

14. Page 4-45, Table 4-14: As discussed in my comments on the Montanore SDEIS, p 8, present monitoring results from seeps at Troy with sulfate values of up 216 mg/l, indicating oxidation reactions are occurring in the impoundment. The agencies refuse to look at Troy when something indicates problems. What if a.m.d occurs?... "Following operations, ASARCO would monitor water quality in the vicinity of the tailings impoundment". This is hardly a contingency plan. The addition of acid from acid rain should both be included in the analysis. (1504)

Response: Please see revised geochemistry discussion in the supplemental and final EIS and previous responses to comments in this section. There is no primary standard for sulfate in surface water. The secondary standard is 250 ppm, which the data stated in this comment does not exceed. The amount of any acidic drainage would still be limited by the amount of sulfide present. To the agencies' knowledge, the sample referenced was taken from a single seep near the tailings impoundment. Please see Appendix K for revised rock characterization, monitoring, mitigation and contingency plans. Please see discussion of Air Quality in Chapter 4 for acid rain issues.

15. In assessing the potential impact of leachate from the tailings impoundment on ground water quality, the assumption appears to have been made that no geochemical reactions would occur within the tailings to alter the quality of water percolating through the impoundment. The quality of leachate water is assumed to be that of tailings slurry decant water (page 4-45). This is not a valid assumption because mine tailings typically cause changes in the quality of infiltrating water. Virtually no data are provided on whole-rock analysis, sulfur content, mineralogy, and other geochemical conditions of the tailings. Therefore, it is difficult to predict what geochemical changes might occur and what the water quality of leachate will be. If the impoundment at the Troy Mine is to be used as an analogue to predict the water quality of leachate from the Rock Creek impoundment, water quality data for leachate or pore water in the impoundment at the Troy Mine would be needed. The above types of data do not appear in the DEIS; they should be provided in the FEIS along with the anticipated impacts. (1933)

Response: Please see revised discussion of Alternative V in the final EIS and previous responses to comments in this section. Also see Appendix K for testing and mitigation of tailings leachate.

16. The Agencies have failed to consider the environmental effects caused when those sulfides are re-oxidized and released to surface and/or ground water. These anaerobic systems do not destroy the metals, they only trap the metals until they are once again exposed to oxygen and re-released into the environment. It is also possible that sulfide concentrations in the anaerobic systems may be sufficient to generate acid, yet the DEIS offers no discussion of these issues. Therefore, we request that the Agencies fully evaluate and present alternatives for substrate handling in the revised DEIS. In addition, provisions must be made to assure the substrate material will not degrade the environment. (1223)

Response: The agencies are unclear as to what specific anaerobic environments the reader discusses. The reader is referred to previous responses to comments in this section and Appendix K for rock testing and rock handling discussions.

17. Page 4-45 (Table 4-17): states that Extraction Procedure Toxicity Test (EPA Method 1310 was used to characterize leaching potential and the degree of hazards associated with solid wastes. Is this the most effective and conservative procedure available? Why wasn't the TCLP procedure used to determine leachability and toxicity? (1223)

Response: The EPA Method 1310 effectively characterizes behavior of these materials in a non-acid to minorly acidic aqueous environment. The 1310 test reflects chemical influences from tailings and solid wastes in an environment that has not become acidic. The toxicity characteristic leaching procedure (TCLP) (EPA 1311) imitates an environment of decomposing organic matter, such as a landfill, where an acidic environment can cause leaching and migration of elements. The synthetic precipitation leaching procedure (SPLP) analytical test (EPA 1312) simulates rainwater. TCLP and SPLP tests were run on three tailings samples from Troy by Golder Associates (1996). Copper and barium were mobilized with the TCLP test but not the SPLP (Table 3-4 of the Golder report). Both exceeded human health standards but not TCLP standards. The reader is cautioned that TCLP concentrations cannot be directly applied to resulting water quality concentrations. However, TCLP does give an indication of elements that may be mobilized under those conditions. These elements can be further monitored and contingency measures will be provided in Appendix K. Please see revised geochemistry discussion in Chapter 4 of the final EIS. Leach testing would be incorporated into static testing requirements located in Appendix K in the final EIS. A kinetic test was run on a Rock Creek central ore zone drill core sample in 1997. This test produced a leachate after 20 weeks that was below detection limits for a suite of elements including arsenic, cadmium, copper, iron, selenium and lead. Sulfate concentrations did increase and alkalinity did generally decrease over time in this sample.

18. Page 2-19: 1st full paragraph: This is the first mention of sulfides in the DEIS. Not all the sulfides will be removed by the processes described. As described on p. 2-22, "...ore extraction is expected to be 75% with a milling efficiency of 85%." Sulfides exposed in mining and milling operations and not removed are a prime source of energy for lithotrophic bacteria. Thriving on mine leftovers and waste, these bacteria decompose sulfur-containing compounds and are the main source of acid-mine drainage, an effect that may show up during the mining operations or years thereafter. The DEIS never mentions the effect of these microbes or any methods to prevent it. I assume this means no experts have been consulted about the potential problem. How will this problem be addressed? What unbiased sources will be consulted to analyze the problem, and if their findings indicate a need for concern, how will that concern be addressed? Acid mine drainage often becomes a mitigation problem for taxpayers, after mining companies have shut down operations. How will this be prevented? (1288)

We are dealing with bacteria - potentially bad guys this time (called Thiobacillus) that use sulfur compounds to produce sulfuric acid. What if Thiobacillus populations build up 10 to 20 years after mine closure and acid mine drainage begins to occur then? Who will deal with the acid drainage/superfund site that could result? (1288)

19. Embankment Drainage: par 2: What is the timing for "preliminary rock and tailings characterization...?" Before the assumption is made that acid rock drainage might not occur, show quantitative evidence that the rock types in the proposed tailings provide sufficient chemical buffers to offset quantitatively modeled estimates of acid production by lithotrophic bacteria. Potential for acid drainage (high SO4) has been documented for ASARCO's "model" Troy mine since 1990. (1991).

Response: The commentor points out in this question that sulfur-reducing bacteria require sulfur to catalyze acid rock drainage (ARD) generation. The agencies agree with this observation but believe that even if this reaction were to occur 10 to 20 years from now that there will not be enough sulfur contained in the waste rock and tails to generate ARD that cannot be arrested by mitigation methods. In a worse case scenario, where any neutralizing capacity has been lost to weathering before sulfide weathering begins, the amount of sulfide will control the amount of ARD generated. The amount of acid generation and neutralizing capacity in the Rock Creek waste rock and tails has not been quantified. However, all waste rock and tails samples available from this site and from the Troy site give a range of sulfide contents that are amenable by mitigation.

An independent reviewer (Klohn-Crippen 1998) evaluated existing data (including data collected after the draft EIS). Although determining the data fell into a geochemical uncertainty range for ARD, Klohn-Crippen observed that undetermined potential for net acid generation should be addressed with sampling and specific laboratory testing that could occur during operation.

20. The DEIS in several places acknowledges ignorance of many important aspects of this mine including where polluted outflow from the mine would discharge after mining was complete (4-36) and the long-term potential for acid rock drainage from Rock Creek (4-56). Given the huge headaches Montana has suffered due to pollution from closed or abandoned mines, these issues must be fully addressed. (1220)

Response: Polluted water or water that does not meet discharge standards, will not be allowed to discharge from the mine, ever. If the water quality does not improve, Sterling is required to continue to treat it in perpetuity. The long-term potential for Rock Creek acid rock drainage has been addressed in previous responses to comments in this section.

21. Also in Table 4-17, note the high levels of potassium and barium. Where are the data for Rock Creek potassium? How can you dismiss potassium compounds as potential nutrients if you have no data? Barium is a highly toxic element. Concerning Table 4-17 as a whole, how can you imply that only 3 rock samples gives a meaningful average that accounts for the entire waste rock and tailings materials? (Same holds for Table 15 RWMP (Revised Water Management Plan), avg of 3 samples). Explain why the reader should not conclude that these results are only preliminary? That no conclusions about rock contents can be obtained from them? How were these samples taken, where, how much, what kinds of rock? For toxic elements such as Barium, how can an average of three rock samples give adequate assurance that toxicity analyzes are meaningful? Since virtually all barium salts are poisonous to humans, the public has a right to know what barium compounds are found in the Rock Creek materials. Please defend your apparent failure to ensure adequate sampling here. I will look for a detailed listing of chemical reactions that are likely to occur involving barium in future documents.

The pronounced differences in amounts of the elements listed in Table 4-17 seem to refute ASARCO s claim that the Troy rock materials are essentially the same as Rock Creek s. Where are the statistical comparisons of the data for each location demonstrating the stated similarity of the Troy and Rock Creek locations. If there are none, how can all the assumptions of said similarity, upon which so much of the planning for Rock Creek rests, be valid? Where are the data demonstrating the similarity? Also in Table 4-17, where are the data for sulfur? Sulfate levels recorded

in other tables are fairly high (e.g., Table 4-18). If there is no sulfur in the rocks (Table 4-17), where does the sulfate come from? What criteria were used in determining which elements were tested for in the tailings and waste rocks (Table 4-17)? Why should the reader not assume that this is far from a complete listing? How can any meaningful evaluations be gleaned from such incomplete data sets? (1288)

Response: Information regarding sample collection procedures can be found in the Rock Creek project's permit application baseline information. Table 4-23 shows analyses for whole rock and extraction procedure (E.P.) toxicity leach tests. The whole rock analysis is a highly aggressive chemical digestion that attacks silica structures allowing analyses of the entire composition of the rock. Not all of these constituents are chemically available to the environment. The columns labeled E.P. Toxicity (on the right of Table 4-23 in the final EIS) reflect what is available from the rock in situations similar to rainwater chemistry. Table 4-23 is comparing Troy tailings geochemical characteristics to Rock Creek waste rock since no Rock Creek tails have been generated yet. Additional data is found in Table 4-12 for sulfur analyses.

A comparison of geologic similarities by a qualified geologist is an acceptable technique, in combination with other types of information, for preliminary indications of leach and acid generation prediction for a new mine site (Saskatchewan Environment and Public Safety 1992).

Although there is no primary surface water standard for sulfate, the secondary standard in 250 ppm and the sulfate level is 44.9 mg/L. Sulfur content is more effectively evaluated by the acid base accounting (ABA) process. Please see revised geochemistry section in the supplemental and final EIS for this information. Table 4-23 of the final EIS contains the standard metals scan for environmental evaluation. Please note the same constituents on other tables in this section. Please also see previous responses to comments in this section.

22. On page 2-71 of the DEIS, it is stated " The potential for acid drainage cannot be conclusively determined from baseline data but is not expected, based on conditions at the ASARCO Troy Mine." Troy Mine has different geology make up than the Rock Cr. site. Each specific geological site will not be identical to another site. The DEIS already identified that there is Galena present in its core-samplings. This rock type is one that specifically creates acidic conditions in water due to its mineral make-up of the rock. The NEPA regulations state that if there is any significance (NEPA REGULATIONS Sec. 1508.27) to data presented, that extensive studies must be made to prove/disprove the questionability. (2026)

Response: In a March 6, 1995, communication, Hayes states that "all available information suggested that the geochemistry as defined by the mineral zonation of the two deposits (Spar Lake [Troy Mine] and Rock Creek) is essentially the same," and "the Rock Creek cores examined in through summer of 1983 (the last year the deposit was drilled) had mineral abundances that were virtually identical with the same mineral zones at Spar Lake (Troy)." No additional data that has been collected since that date provides any different conclusions. Therefore, comparing the Rock Creek ore and tailings to that of the Troy Mine is a valid analysis.

23. It seems to follow that the sulfide content is significant. Yes or no? If yes, please explain your response to EPA's comment on sulfide and its relationship to acid drainage potential. To adequately compare the Troy, Montanore, and Rock Creek sites, what is the sulfide content of the Revett ore body and overburden at all three of these sites? Why have adequate analyzes not been performed, and results analyzed statistically? Only when the Troy and Rock Creek sites are shown to be significantly similar, based on appropriate statistical analyzes showing high confidence levels, can ASARCO and the permitting agencies use Troy as a meaningful comparison system for Rock Creek. Please explain how you can refute this last statement.

Acid mine drainage and the concomitant heavy metals pollution of ground water and surface water may well be the single most significant long-term water quality impact of hard rock mining. Please explain why the public is not entitled to a full analysis of this problem before permitting. Please explain why the public should not expect the permitting agencies to ensure that the best available analyzes of acid drainage potential are made prior to permitting? Why have no mathematical estimates, using present and projected field conditions been done and reported to the public? Please explain your response to EPA s concern about acid drainage in light of the following statement in the DEIS: p4-56: "The long-term potential for acid rock drainage from the Rock Creek project is unknown."

Also RE acid drainage: DEIS p. 4-56: "Monitoring information would be evaluated and water treatment or other appropriate methods implemented." Please explain why this should mean anything to anyone. Where are the contingency plans for dealing with (and paying for) any acid drainage and heavy metals problems that develop after the mine closes. Because acid drainage may develop over years or decades, ASARCO may escape any responsibility for this problem in the future. Why have the agencies not addressed the potential problem of taxpayers being burdened, as they have repeatedly in the past, with future cleanups post ASARCO? Any future Rock Creek cleanup most likely would be on public lands and in public waters.

Is it really true that no acid drainage has occurred at the Troy site? Where are the data to demonstrate this? (1288)

Response: A comparison of geologic similarities by a qualified geologist is an acceptable technique, in combination with other types of information, for preliminary indications of leach and acid generation prediction for a new mine site (Saskatchewan Environment and Public Safety 1992).

The Agencies have gathered additional information related to the Troy Mine and Rock Creek deposit. Analysis of this data, as documented in Chapters 3 and 4, is consistent with the agencies original conclusion that the two deposits are essentially similar in terms of their potential for the development of acid rock drainage and metal leaching potential. An independent reviewer (Klohn-Crippen 1998) of Troy Mine and Rock Creek geochemistry data concluded that undetermined potential for net acid generation should be addressed with sampling and specific laboratory testing that could occur during operation. Please see previous responses to comments in this section and Appendix K for the Acid Rock Drainage and Metals Leaching Plan.

24. Effective remedies have not been developed to deal with the several abandoned mines that currently discharge metals laden and acidic water to surface waters across Montana. Worst-case post mining volumes and water quality should be estimated. Perpetual treatment cannot be relied on. If projected worst case conditions would be significant, revised, non-discharging designs should be required. (2082)

Response: It is beyond the scope of this EIS to develop remedies to deal with acid rock drainage at abandoned mines across Montana. These mines were developed under many types of geologic conditions without plans to prevent, control, or minimize the development of acid rock drainage. Analysis for this project indicates that the water draining from the Rock Creek Mine would not be laden with dissolved metals nor would it likely be acidic. Under near neutral pH condition, the metals content is primarily a component of the sediment. During mining there would be sumps and filters to initially settle and screen out sediment and thus remove a large percentage of the metals, if present. Under Alternative V, up to 95 percent of the remaining sediment in the mine discharge water would be removed in sedimentation tanks, a pretreatment portion of the water treatment system, and an additional 80 percent of the remaining suspended solids would be removed in sand filters (a total of 99 percent removal of suspended solids) before the water underwent treatment for nutrients in either the semi-passive biotreatment or reverse osmosis system. The remaining dissolved metals would be within water quality standards or would require treatment to meet water quality

standards. Postmining, the mine itself would act as a sump and sediment would settle out before the water seeped through bedrock and potentially surfaced down gradient somewhere.

There is a mitigation to include additional geochemical testing of the ore and waste rock throughout the entire mine life from development of the evaluation adit to mine closure. Contingency plans developed prior to mining would be implemented in the event that testing shows that there would be an acid drainage problem associated with one or more of the rock types encountered during mining. The need for perpetual water treatment is not anticipated, but rather the mine would be sealed and water would fill up the workings once the water met water quality standards. Other contingency plans could include capping the mill pad and tailings facility during final reclamation and thus essentially sealing acid producing rock or tailings off from seepage of precipitation. Please also see previous responses to comments in this section.

25. ASARCO mailed out a newsletter to the community. In it they state there are no pyrite (iron sulfide) or heavy minerals in the ore body. Why does the DEIS on page 4?953 state that all the rocks you will be working contain some sulfide minerals? How does a heavy mineral differ from a heavy metal? (1248)

The metals problem. Heavy metals have not been addressed in the Environmental Impact Statement. (1957)

Response: Minerals are naturally occurring elements and compounds. Some native elements, the native metals, are also minerals. The Hydrology portion of Chapter 4 discusses metals in surface and ground water. The Geology section has been expanded to more thoroughly disclose the potential for the release of metals from waste rock and tailings.

26. Page 4-56 - waste rock: Table 4-17 concern: The Table does not indicate where the three samples were taken. It is known that the ore body is enclosed in surrounding zones of mineralized rock (p 3?11); the first zone is mostly copper, then lead, then iron. These are not considered part of the ore body. Therefore, they would be considered waste rock. These are likely the source of some of the problems at the Troy mill site, although additional metals were contributed to Upper Stanley Ck from blowing, spillage or rinsing of crushed and ground rock from the numerous rock transport systems in use and the rock particles were then washed into or around the patio and eventually arrived in the stream. This is expected to occur at Rock Ck. (1504)

Response: According to the permit application/plan of operations (ASARCO Incorporated 1987-1994; Vol 2A, Section 3), ASARCO took a representative sample of the waste rock (primarily quartzite) from the Revette Formation at both Rock Creek and the Troy Mine. No other information was provided to identify which core samples were used.

Klohn-Krippen, a third-party consulting company for the agencies, found that the geochemical information obtained on this project was insufficient in amount as stand-alone determination of ARD potential for the project. However, they were clear that they believed the data available indicated that the Rock Creek deposit did not pose a significant ARD threat that could not be mitigated, and that adequate data could be acquired during the evaluation and construction portion of the project. ARD and metal leaching geochemical rock testing guidelines are described in Appendix K and summarized in Alternative V.

To supplement this testing data, a geologic and geochemical comparison of the Troy Mine rocks and ore with the Rock Creek ore and rocks was conducted by the Kootenai National Forest. The agencies too 48 additional samples and had multi-element and acid-base (static) testing performed by a third party, at the applicant's expense. Thirty-two of the samples were from Rock Creek Project drill core (22 from the ore body and 10 from adit-area waste rock), and 16 were taken from the Troy

Mine. Additionally, the applicant (as ASARCO) conducted on kinetic test of Rock Creek ore. The comparison was needed to establish whether the Troy Mine site could be used as an analogue for the Rock Creek proposal in predicting acid rock drainage potential and water quality mine adit discharge. Analogues can be used and are recommended when static and kentic testing is inconclusive. The comparison demonstrated that what has occurred at the Troy Mine site is what is expected to occur at the Rock Creek site in terms of potential for acid rock drainage and adit water discharge because the ore being mined is essentially the same from the standpoint of method of origin/mineralization, geo-chemical composition, and whole rock composition. The comparison of the ore matix and its geochemical composition demonstrated that the likelihood of ARD is small. Based on additional sampling and analysis, the agencies have revised and expanded the Chapter 3 Geology section describing ore body and waste rock geochemistry.

Alternatives III, IV and V contain additional monitoring and mitigation measures that would further define and help reduce the potential for ARD and metals leaching from ore, waste rock, and tailings. This includes a geochemical program to begin during construction of the evaluation adit and to continue throughout mine operation. It is a possible but undesirable option of the FS to allow further, limited collection of additional data within the wilderness area from the surface. A data evaluation plan required under Alternative V is described in Appendix K that describes how the data collected during evaluation adit construction will be evaluated to ensure that impacts would not be greater than predicted in the final EIS, if they would be greater, the mine designs would be modified accordingly and additional MEPA/NEPA analysis and public review could be required. This data would have to be collected and evaluated by the agencies before mine construction could begin.

Alternatives IV and V plans for the Rock Creek mill site have taken into account the erosion experienced at the Troy mill site and are designed such that erosion of sediment into the creek would be avoided. Best management practices (BMPs) with respect to controlling storm water runoff would be required for all mine-related disturbances and facilities. This would include silt fencing, collection/diversion systems, and retention ponds.

The public may comment on any new information at any time. The agencies agree that there is insufficient information to conclude that there is NO potential for net acid generation or metal leaching from the Rock Creek Project. What we have stated is that the ARD potential is uncertain but data to date indicates that if ARD were to occur, it is not expected to occur in significant or unmitigable amounts. Monitoring would be used to validate these assumptions and, if necessary, to stop mining.

27. We were unable to find any discussion of possible contamination of ground water from the waste rock dumps, except the brief discussion of the possibility of acid mine drainage. The fact that Alternative IV proposes to eliminate the waste rock dumps by using most of the waste rock to create an elevated mill site does not eliminate the fact that precipitation will result in both seepage and storm water run off from the mill site to the surrounding area The potential for contamination of both the surface water and the ground water in this area due to toxic heavy metal content of the seepage and run off from the Alternative IV mill site should have been thoroughly considered in DEIS. (1496)

Response: Despite years of data collection from the similar Troy mine, there is no evidence of acid drainage. Additional geochemical testing has also been conducted since the draft EIS was published. These new data also suggest that the potential for acid rock drainage is remote. In addition, the Alternative IV and V mill patio would be constructed with bedrock

removed from the access tunnels. Most of that rock is unmineralized. The material would also be paved, and storm water runoff from the site would be routed to settling ponds.

28. The initial dam construction is to be made out of waste material & borrow material from the initial mine excavation. The initial construction of the tailings pond will begin to contaminate the ground water from heavy mineralized rock from the exploration. Once again, there is no protection of the underlying soils or any protective measures prescribed for what the Tribe believes as the imminent leaching that will occur. (2026)

Response: The applicant proposes to build the starter dam using unmineralized waste rock that has been excavated before reaching the ore body. Impacts to water supplies outside the permitted ground water mixing zone is not predicted. Waste rock from the evaluation adit would not be used to construct the starter dams. Water quality impacts related to the proposed project are disclosed in Chapter 4 - Hydrology of the EIS.

DRAFT EIS
RESPONSES TO COMMENTS

SOILS

Soils SOIL-200
Reclamation SOIL-201

SOIL-200 Soils

1. Too much surface disturbance - claims are on 2000 acres. (1327)

Response: Surface disturbance is summarized in the Table 2-2 entitled "Surface Disturbance Acreage (net acres impacted)" in Chapter 2, Description of Alternatives. In the table, the agencies have detailed the surface disturbance for each mine disturbance type. Total disturbance for the mining alternatives ranges from 482 to 609 acres.

The mining company would not be able to disturb any more than 482 to 609 acres depending on alternative without an amendment to the operating permit from the State of Montana as well as an amendment to the Kootenai National Forest (KNF) Plan of Operations. These amendment applications would involve additional environmental review under MEPA and NEPA before a decision could be made.

2. Page 2-74 The DEIS indicates that after year 7 of the tailing impoundment construction ASARCO would apply a tackifier or hydromulch seeding to provide interim erosion control. What measures will be taken to control erosion prior to year 7? (1445)

Response: The discussion referred to in this comment is for the agency modified Alternative III and it details additional measures the agencies have identified to improve on ASARCO's (now Sterling's) erosion and sediment control plans. Sterling's proposed sediment and erosion control plans are detailed in Chapter 2, Description of Alternatives, in the Erosion and Sediment Control section. This section details what would be done for all years to control erosion.

In the Alternative II section, Sterling lists many standard accepted practices for controlling sediment and erosion. For a good description and sketches of standard accepted erosion and sediment control practices and Best Management Practices (BMP's) recommended to control erosion by the agencies, see the Montana Sediment and Erosion Control Manual (MT DEQ 1996a). Copies of this manual are available from DEQ.

Some of those practices proposed by Sterling that would provide interim erosion control and long-term flood control on the tailing storage facility under any of the action alternatives include:

- A drainage and diversion system would be constructed at all disturbance sites to control runoff and sedimentation during the operation period. This system would include diversion of off-site runoff waters and containment of runoff and sediment from disturbed areas.

- A sediment containment system downstream of disturbed areas would prevent sedimentation in natural drainages in the area.

- During the life of the operation, seepage collection ditches would intercept sedimentation originating from dam faces.

The section also indicates that Sterling would follow KNF and DHES (now Montana DEQ) soil and water conservation and storm water control practices. The final storm water plan would be based on final designs for facilities if any of the action alternatives are selected. At that time, agency personnel would review the final plans and make site-specific recommendations in the field for erosion and sediment control.

Also see comments in GEO-102 for additional discussion on sediment and erosion control mitigations.

3. Surface Disturbance pg2-28: Explain how the figure of 3,000 square feet of surface affected was derived. For an expected 8'x10' opening, this disturbance seems excessive. Also mention the 8'x10' parameter. I did not find it in this part of the document where it logically should be. (1196)

Response: The agencies have assumed that 3,000 square feet or 0.1 of an acre (includes the adit and waste rock fill at its mouth) would be disturbed by the air-intake ventilation adit as a worst-case scenario. The actual size could be much less as noted by the commenter. The actual size would be based on the selection of the final location and determination of the needed size to provide adequate ventilation as well as a secondary escape and would have to be approved by the Mine Safety and Health Administration (MSHA). The air-intake ventilation adit opening could even be smaller than 8' X 10'. In the agencies' alternatives the size of the disturbance has been reduced to 800 square feet or 0.02 of an acre due to the construction method.

The agencies have assumed the potential for some small rocks to be scattered around the opening as the adit is being constructed. The amount of disturbance is largely dependent on the final site selection so a maximum disturbance was analyzed. Final location could also be modified after consultation with KNF and U.S. Fish and Wildlife Service wildlife experts. There is the potential to modify the location based on the final closure plan for the adit to benefit other wildlife species. The adit could be closed off with cement and rock as proposed but the last few yards or feet of the opening could be left as a natural appearing small cave for use by bats. This would be a minor revision to the closure plan and would have to be approved by the agencies.

4. Page 2-29. Table 2-1. I seriously question the 1 acre figure of Mine Portal Area disturbance. Given the steepness of the slope at that site, the area taken by the two large adits, the room needed to handily move large equipment, and figures provided by agency personnel in conversations in the past I would suggest that closer to five acres would be disturbed. Please either correct this one acre figure, or demonstrate how it was determined. (1196)

Response: The commenter is correct that the size of the portal disturbance is marginal. Figure 2-10 shows the proposed mill site layout for Alternative II. This figure shows what the mining company has proposed. The mining company has tried to reduce the disturbance at the particular site which is extremely steep by proposing to leave the slope at 1 1/4:1. In this way total disturbance is reduced to a large degree. The Agencies have developed two alternatives which relocate the adits away from this site.

In Alternative IV and V the agencies have proposed a new mill site location which has the adits opening within its boundaries thus addressing the concern about steep slopes and portal size. In Alternative IV, the mine portal is separated from the mill by FDR No. 150 but connected by an underpass, while in Alternative V the portal was moved to the same side of the road as the mill.

5. Page 4-22, Alternative II, paragraph 2: As it is true that areas cleared of soil generally are more susceptible to erosive forces, this is primarily a function of vegetation removal, not subsoil characteristics as stated. Stating that subsoils tend to have lower inherent infiltration and percolation rates may be indefensible as nonlacustrine subsoils in the area often exhibit an increase in sands and coarse fragments (both quantity and size) resulting in an increase, not a decrease in infiltration potential. Page 4-24, paragraph 5: A 15 percent or greater rock content in the soil profile and the resultant offset to increased bulk density impacts should be cited. Wouldn't a 5 to 15 percent rock content also offset bulk density impacts? (1589)

Response: Following is a rewrite of the paragraph found in Chapter 4, Soils and Reclamation Alternative II, Soil Impact, Soil Loss section, which should clarify the discussion:

"Areas cleared of soil generally are more susceptible to erosive forces, primarily because of the removal of vegetation. Lacustrine subsoils in the area may become compacted during the soil salvage process and have lower inherent infiltration and permeability. Non-lacustrine soils in the area are not as susceptible to this compaction because they often exhibit an increase in coarse fragment contents both in size and quantity. Regardless of subsoil characteristics left on a disturbed site, the sediment and erosion control Best Management Practices listed by the company would control erosion to acceptable limits."

The effect of coarse fragment content on soils bulk density has been reviewed by the agencies and the effect cannot be generalized. The effect of rocks in soils depends on what can best be described as the soil composition. Composition includes the grain size, gradation, grain shape, mineralology of the coarser grains, and plasticity.

If the coarse grained particles can make contact with one another, the soil behaves essentially as a coarse grained material. If the coarse grained materials cannot touch but are separated by the fines, the fines predominate. For soils containing clay minerals, the volumes of fines control the behavior. Therefore, no fixed percentage of fines or rock content can distinguish fine or coarse grained behavior and the interpreter must exercise judgement if appropriate soil testing is lacking.

6. Page 4-30, paragraph 1: As the project area is within a high precipitation regime, soil depth may not be as limiting a reclamation factor as at other, drier western U.S. mines. Consider changing the last sentence to read "soil depth could limit productivity" instead of "soil depth would limit productivity." This same revision would also apply to the second sentence ("would be" changed to "could be"). (1589)

One of the greatest issues of concern regarding the reclamation plan is the depth of replacement soil upon which revegetation will occur. The Agencies have concluded that ASARCO's proposed 12" soil replacement depth is inadequate, and that they will require a 24" soil replacement depth instead. (1223)

Response: The goal of agency review of mine reclamation plans as stated in the Chapter 4, Reclamation Impacts, Soil Salvage and Handling section of the final EIS, is to return the disturbances to comparable stability and utility. Part of this stability and utility review is to evaluate the soil depth that was present on undisturbed soils before the site disturbance takes place. Effective rooting depth in the area is 18-33 inches as reported in the same Soil Salvage and Handling section discussion. The agencies also cited research in this section that concluded that 24 inches of soil replacement over suitable mine wastes would provide maximum revegetation.

It is true that the same research article cited above, indicated that in the absence of acid generating or other unsuitable growth materials in the rooting zone, 9-33 inches of soil material could provide a adequate substrate for plant growth in a semi-arid environment. This may even be more true in wetter climates as the commenter suggested. In wetter climates dominated by coniferous forests, the upper 24 inches of soil provide the mass of lateral feeder roots, while the smaller portion of roots found to 60 inches tap deep soil moisture during periods of moisture stress and provide physical stability.

The agencies concluded that soil replacement in this area of 13 inches or less is probably inadequate. Only 13 inches is proposed to be replaced over mine waste rock. The agency concluded this durable mine waste rock has a minimal water holding capacity because of a rock content that exceeds salvage soil thresholds of 50% by volume. So, this new soil profile would be not as productive as the current soil in place over subsoils which have less rocks and more water holding capacity. Salvaged subsoils have other desirable characteristics because of weathering for 10,000 years in the area.

The 9.5 inches proposed for salvage and replacement over tailings is certainly less than the 18-33 inches of effective rooting depth in the impoundment area today. No data is provided to substantiate that 9.5 inches of soil placed over raw tailings that have not been treated by 10,000 years of soil development or modified by deep ripping, organic matter incorporation, etc. would be comparable to the 18-33 inches of functional soil that existed before disturbance occurred.

Data being gathered as part of the Troy Mine, Tailings Reclamation Project may provide some valuable data to support the use of less soil over tailings. Until data is provided that tailings and/or waste rock are as good or better growth media than subsoils in place at Rock Creek today, the agencies will error on the side of additional salvage and replacement even if the subsoils need to be stored for extended periods of time. Therefore, our analysis stands: "soil depth would limit productivity".

The Metal Mine Reclamation Act also requires minimizing infiltration into mine wastes. By returning soils to comparable premine depths, this goal is also achieved.

7. Page 4-33, paragraph 3: Soil stockpile amendment with lime and organic matter should require a more thorough discussion and substantiating citation than that contained on page 4-27, paragraph 2: Use of these amendments prior to redistribution from the stockpiles should only be initiated after laboratory analysis (following stockpiling) indicates phytotoxic materials are inherent or likely to be produced from seepage. (1589)

Page 4-26, 2nd paragraph: "Coniferous forest debris in stockpiles can further decrease soil pH as material weathers.["] (Liming can minimize this effect but ASARCO has not proposed it.) (1214)

Response: The paragraph cited by the commenter has been expanded. A section has been added on Vegetation Removal and Disposition in Chapter 2. The liming discussion has been moved to Chapter 2, Alternative III, Soil Salvage and Handling Plan, First Lift Removal and Storage subsection.

8. Page 2-29, Table 2-1, Surface Acreage Disturbance (net acres impacted): Sediment sources listed for the project under Alternative IV include Borrow Area 2. Use of this borrow area is not required under Alternative IV, and should be dropped from estimated areas of disturbance. (1589)

Response: The discussion in Alternative III, Tailing Impoundment, Impoundment Construction section states that borrow area 2 may be needed if "the volume from borrow areas 1 and 3 and waste rock that could be economically transported was insufficient." As a result, borrow area acreages are analyzed at full acreage as a worst case.

Mine adit waste rock would be used for starter dam construction for Alternative IV as stated in Chapter 2, as well as for Alternative V paste facility buttresses. This would reduce disturbance acreage in the tailing storage facility area by 19.2 acres. Borrow areas would remain available for borrow if needed and borrow area 3 as a wetland mitigation site under the Wetland's Mitigation Plan.

9. The stability of saturated soils is a concern. Recent derailments in our area raise concerns about potential disasters which could be compounded if saturated soils liquefy and mine tailings are released. (1429)

Response: The impoundment under Alternatives II, III, or IV and the paste facility under Alternative V are designed to handle a Probable Maximum Precipitation event. The operational analysis and design for Alternatives II-IV requires that the tailings must be assumed to be saturated at the time of a seismic event. As a result, the issue of liquefaction has been addressed in the design. Alternative V utilizes a paste facility for tailings storage and because of its drier nature, it does not exists in a saturated state thus minimizing the chances of liquefaction. Stability of the tailings structure is also discussed in GEO-102.

10. Table 1-1, p. 1-6: DEQ responsibility: Timber Harvest --How will DEQ "ensure best management practices are used during timber harvest on private and state lands?" (1288)

Response: A list of best management practices to reduce soil erosion is presented in the EIS, and would be included as stipulations in the Rock Creek Mine operating permit.

SOIL-201 Reclamation

1. ASARCO is not committing itself to a remediation plan that genuinely will restore the area when mining is done. (1314)

Response: The goal of reclamation as defined by the Metal Mine Reclamation Act is reclamation not restoration. The definition states: "The term 'reclamation' does not mean restoring the landscape to the premining condition. Reclamation means the return of lands disturbed by mining or mining related activities to an approved post-mine land use which has stability and utility comparable to that of the premining landscape except for rock faces and open pits which may not be feasible to reclaim to this standard." ARM 26.4.101(b)(19).

For another general definition of reclamation see the glossary. Restoration of existing plant communities is not required. The agencies must review the proposed reclamation plan and ensure that the landscape is returned to comparable stability and utility based on the proposed postmine land use.

The agencies have reviewed the company's proposed plan and suggested modifications to achieve these ends. In the preferred alternative, the agencies have addressed and minimized impacts to postmine utility and stability. The agencies assume reclamation is successful if the site is stabilized (i.e. erosion is controlled, mass wasting potential is minimal and geochemical hazards are not a concern). Site stabilization sets the stage for soil development and plant succession processes to begin again.

2. The trees planted on the tailings pond would be stunted and not appear natural, if they grow at all. (1389)

Response: The agencies have addressed limited tree growth in the preferred alternative reclamation plan by requiring 24 inches of replacement soil. See Chapter 2, Alternative III, Reclamation, Soil Salvage and Handling Plan section. For a detailed discussion on soil thickness and reclamation potential see response to comments in SOIL-200.

3. 2-50. Revegetation Practices. What seed mixes are being considered? I have concerns about weeds and/or invasive species being introduced and spreading. Also the combination of sandy tailings and frost-heaving clays, and varying elevations and habitat types throughout the project site would mean several different seed mixtures would be needed to adequately reclaim the site. Please reference the appropriate appendices in this section. (1196)

Response: The agencies have modified the proposed seed mixes in agency Alternatives III through V. Please see Appendix J, Revegetation Plans, of the final EIS for the complete seed mixes and planting recommendations for all alternatives. The agencies typically will amend seed mixes throughout mine life as additional species become commercially available. The agencies have specified certified weed-free seed and mulch.

Appendix J, Revegetation Plans, is referenced in the Alternative II--Sterling's Project Description (Proposal), Reclamation, Revegetation section of the final EIS.

4. 2-54...Third paragraph. What is the estimated time frame for dismantling these facilities? 10 years? 100 years? in perpetuity? (1196)

Response: The agencies would require a reclamation bond that would be converted at closure to a trust fund signed over to the state of Montana and the Kootenai National Forest. This bond would assume that water quality would not meet discharge requirements in the short term after mining ceases. The bond would include enough money that the interest earned would be adequate to cover

operation, maintenance and replacement of water treatment systems as long as needed. See the discussion in Chapter 4, Hydrology, Alternative III, Surface Water Quality section.

Once water quality standards are achieved and the water treatment for surface and ground water is no longer needed, the company would have at least 2 years to reclaim the disturbances associated with the collection and treatment systems. Some structures, such as the mill facilities, could be dismantled and removed almost as soon as mine operations ceased. Roads not needed by the Forest Service would be removed or otherwise made unusable once a decision was made by the Forest Service about the roads, this could be immediately or at an unknown time after mining.

See the discussion in Chapter 4, Hydrology, Summary section which states that the impoundment perimeter seepage collection system would potentially need to be operated and monitored for several decades.

5. The single biggest problem with the proposed reclamation plan is that it does not exist, and consequently, the reader is unable to provide meaningful comment on its' chances for success. (1223)

Response: The reclamation plan is summarized in Chapter 2, Alternative II -- Sterling's Project Description (Proposal), Reclamation section. The detailed plan is in the application on file with the agencies. The agencies have reviewed the plan and suggested modifications in the agency modified alternatives to improve the plan. See Chapter 2, Alternative III through V reclamation sections for a description of the agency modifications to the reclamation plan. Also, see responses to comments SOIL-200 and SOIL-201 for more information on the reclamation plans.

6. Page 4-33 Increasing respread depths to 24" is an idea we applaud. However, the DEIS does not explain where the additional soil will come from. (1223)

Response: The additional soil will come from the impoundment footprint. The effective rooting depth (i.e. soil depth) in the impoundment footprint is 18-33 inches. Soil survey results indicate the soil volumes are adequate to achieve the 24 inches of soil replacement needed.

In the Soil Salvage and Handling section of Chapter 2 for Alternatives III through V the agencies are recommending two lift salvage and replacement techniques. In other words, the subsoils would be stored separately and returned in the landscape as subsoils and not used as surface soils. There is nothing in the subsoils that make them unsuitable for plant growth. The plant community growing in these soils today is healthy. The agencies see no reason to waste this valuable resource that is currently supporting deep rooted tree species and try to depend on the tailings for a subsoil resource.

7. Page 4-26 Re-establishment of plant growth and woody species is the foundation of the entire reclamation plan. The Agencies should require ASARCO to develop a plan to accelerate recovery of soil biological activity and that the plan be presented in the revised DEIS. (1223)

Page 4-23, 4th paragraph "It would be necessary to stockpile most of the soils salvaged from these areas for 30 years or more. Prolonged storage decreases or eliminates populations of important soil microorganisms. Thus the vast majority of stockpiled soil would have reduced biological activity." (page 4-25, 4th and 5th paragraph) "ASARCO has not proposed any methods to restore or accelerate the recovery of soil biological activity." (1214)

Response: The applicant has implemented some Tailings Reclamation Studies on the Troy mine impoundment trying to develop techniques that would enhance soil biological activity (Sindelar 1996). In the Agency-modified Alternatives III through V, Reclamation Impacts, Revegetation section, modifications have been made to seed mixes (see Appendix J in Volume 2 of the final EIS)

and inoculation is required for tree, shrub and legume species. This should help speed the return of soil biological productivity. See also response to comments in SOIL-200 and SOIL-201 for more details about revegetation and soil biological productivity.

The agencies are consistently looking for ways to modify reclamation plans to enhance success of revegetation efforts. The agencies can ask the mining companies to implement many of these measures as they are developed.

8. There are many statements in the soil impacts discussion (beginning on page 4-22) that create significant concern regarding potential erosional effects of Alternative II. For example: "Soil erosion caused by wind and water is likely to occur during all phases of the proposed project." (page 4-22, 1st paragraph) "ASARCO's proposed relocation of Road No. 150 crosses lacustrine soils. When wet these soils have a high slump potential." (page 4-22, 3rd paragraph) "ASARCO proposes to seed in the first appropriate season following construction." "Delays in seeding highly erodible sites, however, often results in crusting of the soil surface, in turn reducing seed establishment and resulting in more erosion." (page 4-22, bottom of page) "Soil eroded from disturbed sites and stockpiles may move far enough to be deposited as sediment to flood plains and streams. Increased sediment loads may in turn adversely affect water quality and fisheries." (page 4-26, 3rd paragraph) (1214)

Response: Erosion: The comment is based on the proposed reclamation plan in Alternative II. The agencies have recognized the potential erosional effects and have recommended modifications and mitigations to reduce those levels to acceptable levels in Chapter 2, Alternative III, IV, and V, Erosion and Sediment Control, Soil Salvage and Handling, and Monitoring and Mitigation Plans sections. Additional sediment modeling was completed in the supplemental draft EIS as well. See Chapter 4 for a discussion of erosion impacts as they would occur under other alternatives.

9. The reclamation plan for the proposal is based on conjecture. The DEIS is not providing necessary information and fully disclosing plans to interested reviewers. The reclamation plan, such as it is, is replete with statements like: "ASARCO would develop a plan to restore the ventilation adit"; "ASARCO would develop a design to recontour faces of the tailings impoundment"; "ASARCO would develop plans to shape slopes of the mill site, waste rock dumps, and mine portal areas"; etc. These plans must be developed as part of the EIS process prior to permitting. (1638)

Response: The additional plans and designs discussed in the comment are part of the agency modified alternatives and are not developed beyond the conceptual stage unless an alternative is selected for implementation. All agency "concepts" are reasonable and feasible based on experience at other sites. If the parameters of a final design would result in an increase in impacts above what was identified in this EIS, the final plan would be subject to further MEPA/NEPA analysis. Designs and time frames for submittal would be identified in the Record of Decision (ROD) as stipulations to the operating permit, if an action alternative is selected. A bond for completion of the designs would be held to ensure they are completed by the mining company. A bond based on a conceptual design would be held by the agencies to ensure the work is completed. These plans are considered preliminary designs by the agencies once the mining company and agencies know which alternative is selected by the decision maker.

10. Page 2-54: states that the diversion structures above the reclaimed tailings impoundment would remain as permanent stream channels to route runoff around the reclaimed tailings mass. Unless vegetation is established in these diversion structures, they will be a permanent source of sediment to Miller Gulch and the Clark Fork River. The revised DEIS should discuss what these sediment loading impacts will be and what mitigation measures will be taken to prevent them. (1223)

Response: Please refer to Chapter 2, Alternative II - Sterling's Project Description (Proposal) Tailings Impoundment Seepage and Storm Water Control, Storm Water Control subsection. The

diversions are designed to carry the calculated Probable Maximum Flood (PMF) as designed in the glossary. As such, the diversion would not be a long term source of sediment to Miller Gulch and the Clark Fork River and would be designed with a rip rap lined channel.

The drainage can be designed as a rock-lined structure that would eventually fill with sediment between the rocks over the initial revegetation years. This sediment is then stabilized with subsequent revegetation efforts as revegetation stands mature and sediment production decreases. This type of design process is similar to what has been called "opportunism" by Prodgers and Keck (1996: pp 141-157). Standard construction phase storm water control best management practices (BMP) would be implemented by Sterling as part of their storm water control system which would be reviewed by agency personnel. Revegetation would be required on all unarmored areas of the diversion channels.

11. The Rock Creek watershed is 70 percent coniferous forest, primarily cedar-hemlock types and cool, moist subalpine fir (Westech 1993). This is important because a cedar-hemlock forest is a fragile and complex ecosystem, and disturbed areas may be very difficult, or impossible, to reclaim to any reasonable degree (Bob Burm, EPA. pers. comm. 1994). We recommend that ASARCO clearly delineate a proven reclamation strategy that utilizes best available technology to reforest disturbed areas, and will return the site to a habitat comparable to a cool, moist cedar-hemlock wood. The 30 percent of the drainage which is not forested is a mix of high elevation shrub fields, rock outcrops, and clear-cuts (Westech 1993). (1223)

Response: The agencies have addressed the comment by modifications made to the reclamation and revegetation plans in the agency modified alternatives. The agencies assume that if seral vegetation types are established on stable reclaimed acreages, then plant and soil succession would begin again. Restoration of the existing habitat types is the agencies' goal as well in these disturbed areas. Reclamation has been designed and evaluated to ensure the disturbed acreage is returned to comparable stability and utility.

12. As described on page 4-31 of the DEIS there will be problems growing trees in shallow soil areas on top of sand at the impoundment area. On this page it is stated, "...trees would be likely to develop shallow root systems, resulting in possible stunted tree growth and blowdown during high wind events." Even with this statement ASARCO, in the next paragraph proposes to plant larch, spruce, lodgepole pine, and Douglas-fir anyway. Wouldn't it be more prudent to plant low-lying bushes such as a native scrub oak which would not be required to grow deep root systems like taller trees and would not be as susceptible to blowdown? Water retention in the soils will be minimized to the presence of the more porous sand layer underneath. Is it feasible to expect the area around the impoundment to be dewatered causing plant and tree growth rate decreases and death due to the decreased water table? (1673)

Response: The agencies have addressed the concern of limited tree production by increasing the soil replacement depth. The precipitation in the mine and impoundment areas is sufficient to produce substantial tree growth without dependence on subirrigation from the water table at depth. See also responses to comments in SOIL-200 and SOIL-201 for more information on reclamation success.

The water table is not in the rooting zone in undisturbed areas now, except in those areas identified as wetlands. Those areas will be mitigated by development of new wetland areas as part of the 404 permit process with the Corps of Engineers. See Chapter 2, Alternative III, IV, and V, Monitoring and Mitigation Plans, Wetlands Mitigation Plan section for details.

The water table would be lowered in the impoundment area during use of the seepage collection wells under Alternatives III and IV. Monitoring wells would be in place to evaluate the extent of water table drawdown in the area. If water table drawdown impacts a water user downstream, DEQ

must investigate and determine if the mining company is responsible. (See Metal Mine Reclamation Act [MMRA] 82-4-355). If the mining company action is the cause, then a replacement water supply must be provided.

The agencies have assumed in the final EIS that water treatment would probably be needed for several decades. Although the seepage collection wells are not part of Alternative V, except as a contingency measure, the paste facility underdrain system would continue to capture seepage that would need treatment for an unknown period of time after mine closure as would any water from the pumpback wells under Alternatives III and IV. A bond would be in place to ensure water treatment continues and the seepage collection system is operated, maintained and reclaimed when water treatment is no longer needed. The water table would rebound when the pumping is terminated. The replacement water supply would have to be maintained until the original supply is returned.

13. The DEIS is quite optimistic of the ability to reclaim the disturbed area and costs involved with these activities. The DEIS seems far too optimistic, given the history of mining in this state and the unproved nature of the reclamation proposals. (1670)

Response: Reclamation of disturbed mining lands has been taking place for over 25 years since reclamation laws were passed to prevent mining problems that occurred in the past. Reclamation techniques, research and case studies are reported regularly in symposiums and conferences in the US and across the world (Montana State Reclamation Research Unit 1996 and Colorado Water Resources Research Institute 1996). Successful reclamation and bond release have occurred on many active sites in Montana alone during this period. The analysis of abandoned "pre-law" sites is beyond the scope of this EIS.

The applicant's proposed reclamation plan and the modifications proposed by the agencies are commonly used. The complete reclamation plan is considered a proven technology.

In addition, costs associated with these reclamation activities are constantly reviewed in light of reclamation projects completed over the years. Modern bonding practices used standard construction engineering cost estimation procedures. DEQ is required by law to review the reclamation bond on mining projects every 5 years to keep them up to date. DEQ must assume the mining company will abandon the site and the reclamation work must be completed by the State of Montana using engineering firms and construction companies.

14. Page 1-4: To comply with NEPA, "KNF must ensure timely interim and final reclamation on National Forest System (NFS) lands." Where are the timetables for reclamation? What does "timely" mean? --Adhering to MEPA regulations, "DSL requires protection of air and water quality as well as successful interim and final reclamation of disturbed areas, and compliance with other applicable federal and state laws and regulations." How will DSL ensure protection of air and water quality, reclamation, and compliance? How will DSL resolve issues of noncompliance? (1288)

Response: Sterling has proposed a timely reclamation schedule for facilities. Agencies have proposed mitigations to reduce the visual impact time frames and limit potential sediment and erosion control during operations.

State law is just as stringent as Kootenai National Forest requirements. Reclamation must be completed within 2 years of "abandonment." If reclamation is not completed within 2 years, Montana DEQ would send out an "order to reclaim." If the "order to reclaim" is not completed within specified time frames, the agency would proceed with the paperwork required to forfeit the

bond and secure proposals from construction firms to conduct the reclamation as per the proposed plan using the company's reclamation bond.

Montana DEQ has been criticized for not requiring the reclamation of the Troy mine site. The difference is that the Troy impoundment and mine site is not abandoned. The Metal Mine Reclamation Act provides for interim shutdown of facilities in case of various events that may make continuation of mining unavoidable (see Rules and Regulations governing the Montana Metal Reclamation Act, ARM 26.4.108). In the interim period, the mining company must maintain the property and control erosion, and weeds, monitor water, and the bond must be reviewed every 5 years, etc. Sterling continues to submit required annual reports and DEQ will complete its next bond review in 1999.

Noncompliances are issued when the agencies discover that the approved plan of operations and reclamation plan are not being adhered to as permitted. A "Notice of Noncompliance" is issued with a time frame for completing the necessary work to bring the plan back into compliance. There are administrative and environmental impairment noncompliances. The company has to complete the necessary abatement work or further violations would be issued. Monetary penalties are assessed, based on past notice of noncompliances issued to the mining company, the amount of harm caused by the noncompliance, the days of violation that occurred, and a credit may be given for good faith and self-reporting by the company. A penalty of up to $5,000/day may be assessed by the agency. See MMRA 82-4-361. The company has the right to appeal any noncompliances issued.

15. --Reveg. Practices: As presented, these are only platitudes; no assurances, no mention of species to be planted; no mention of what would be done if failures occur. What if plants do not grow on the site? What if they grow for a few years and then die?

Page 2-52: Reclamation: Again, only platitudes with no assurances or avenues of public, even agency, action to preclude short-term or long-term reclamation failures. Following statement is not reassuring: "ASARCO proposes to provide...stabilization of most disturbed areas.." Why not all disturbed areas?

Page 2-54, par 2: "Inert waste such as steel, concrete, plastic, or wood would be buried in on-site waste disposal areas or sold..." What on-site waste disposal areas? Where located? How deep?

Page 2-58: line 1: Why not say ASARCO will meet ....objectives..." An adequate DEIS would have included assurance from qualified/unbiased agronomists and botanists that ASARCO's Reclamation Plans (ASARCO, Inc 1987-94) are appropriate to the soil types, topography, wilderness integrity, and animal life. There is no reason to believe that ASARCO has employed adequately trained professionals in developing their reclamation plans. Also, who will monitor the reclamation process and what will ultimately force its success? Where are the DEIS's assurances that these activities will be carried out? (1288)

Response: first paragraph: Revegetation practices are discussed under each alternative in Chapter 2, Description of Alternatives, Reclamation, Revegetation sections, as well as under the Monitoring and Mitigation Plans. Seed mixes and planting mixtures are presented in Appendix J, in Volume II of the final EIS for the different alternatives. The effectiveness of these plans is discussed in Chapter 4.

The agencies have increased soil salvage and replacement depths to ensure success of seedings and reclamation. Reclamation would succeed at this location with the reclamation plan as modified by the agencies. If a seeding failure occurred due to an unusual drought in the area or some other cause, then the mining company is required under the Metal Mine Reclamation Act to replant a second time

with modifications approved after consultation with the agencies (see ARM 26.4.106[3]). Bond would not be released until reclamation is considered a success.

Response: second paragraph: The rest of the paragraph in the Reclamation section for Alternative II, states "and after mining, to reclaim all disturbed areas by recontouring, and redistributing soil, and revegetating." The only disturbance not revegetated would be areas along access roads, waste rock dumps and adit portal slopes that are reclaimed to talus slopes as approved by the agencies. These rock areas would be sprayed with oxidants, if determined to be necessary by the Agencies, to make them look like weathered talus (B. Reynolds 1995).

Response: third paragraph: The Solid Waste disposal regulations in DEQ allows for certain types of inert wastes to be buried on mine sites in agency-approved landfill locations. This would typically be done in a waste rock dump although the tailings storage facility could also be used. The tailings disposal facility would be a potential alternate location. All types of solid waste are disposed of in accordance with solid waste disposal laws. All wastes that must be taken to a Class III EPA landfill would be disposed of accordingly. At this site, private lands would have to be used for the disposal locations. The KNF would not allow any solid waste to be buried on public lands. The site selected by Sterling would be subject to the Agencies review and approval before being put into use. If no suitable site could be found or approved, the all inert wastes would have to be hauled to an approved site off the permit area.

Response: fourth paragraph: The commenter is reading the company's proposed plan which has been presented by the applicant and its consultants. The agencies have evaluated the proposed plan and have made modifications that improve the reclamation plan and limit impacts to various resources. See Chapter 2, Alternatives III, IV, and V, Reclamation, Revegetation sections.

The decision maker must decide if the proposed modifications and mitigations are adequate or if the costs to the public outweigh the benefits of the mine to the public. Montana DEQ and KNF are charged with the monitoring for compliance with the reclamation plans.

The bottom line is that the bond must be adequate to ensure the mining company will perform the reclamation as proposed or modified by the agencies. The bond is the assurance that reclamation will proceed. The bond is calculated using construction estimates as if the State of Montana had to hire a subcontractor to do the required work. See also responses to comments in SOIL-201 and MISC-1601 for more information on bonding as well as Chapter 1, Agency Responsibilities.

16. P 2-60: Bulleted item 6: But DEIS p. 2-58 states that interim seed mix would be the same as the final mix; interim mix contains alsike clover, doesn't it? See par 3 p. 2-58. (1288)

Response: The seed mix in Appendix J does include alsike clover, but it would not be seeded along the transportation corridor. In Alternatives III through V, the agencies have altered the seed mix to remove this attractant to bears which occurred at the Troy mine site. See Appendix J for the agency altered seed mixes which include all native seed mixes.

17. Par 3: What kind of vegetation buffer? What kind of ground cover? Where are the data to show that the buffer will reduce sediment load? 2-84: par 3: Except for what heavy equipment? This phrase could nullify the statements on traffic conflicts and sediment reduction in this paragraph. (1288)

Response: The comment about the "vegetation buffer" is referring to leaving the existing forested vegetation intact without any disturbance for a minimum of 100' between FDR No. 150 and the

mine/mill facilities and 300' of either fork of Rock Creek. This is the best buffer possible for reducing sediment loads and is the most useful best management practice (BMP) recommended by the Montana Sediment and Erosion Control Manual (DEQ 1996a). Other sediment reduction BMPs would have to be implemented as the road approaches the bridge locations.

The heavy equipment is referring to construction equipment that would have to access the site, vendors carrying supplies to the mine and mill site and highway legal trucks hauling concentrate to the loadout site. The heavy equipment would not be able to use the underpass between the mill and the mine adit in Alternative IV. Relocation of the mine portal west of FDR No. 150 eliminates the need for the overpass bridge allowing the 100' buffer to be continuous around the mill site. The proposed mill site location in Alternatives IV and V does reduce traffic conflicts and sediment production more than Alternatives II or III. For more information on traffic and public access impacts see the Chapter 4, Transportation section for each alternative.

18. Page 2-86, Reclamation: No mention is made concerning long-term water quality monitoring requirements or monitoring after reclamation. (1589)

Response: The mitigations proposed for Alternative III that deal with the long-term reclamation monitoring plan and the comprehensive long-term water monitoring plan are carried into Alternatives IV and V. See Chapter 2, Alternative III - Proposed Project with Modifications and Mitigations, Monitoring and Mitigation Plans, Water Resources Monitoring Plan section (and Appendix K in Volume II of the final EIS) and the Reclamation Monitoring Plan section for details. Additional alternative-specific mitigation and monitoring plans are described in Chapter 2 for each alternative.

19. Page 4-98, paragraphs 3 and 6: The statements "revegetation efforts would be improved" (paragraph 3) and "The revegetation plan would be revised" are confusing. It is not immediately clear to the reader why Alternative III has this distinction relative to the other alternatives. (1589)

Response: The statements mentioned in the comment are simply indicating that the agencies have modified the reclamation and revegetation plans proposed by the company in Alternative II to minimize impacts from noxious weeds and wildlife habitat/vegetative communities. See the Chapter 2, Alternative III through V, Reclamation, Revegetation sections for details. Seed mix and planting changes in agency alternatives are summarized in Appendix J of Volume II of the final EIS. See also responses to other comments in this section for more details on revegetation.

20. I want to see numbers in the final EIS stating what ASARCO is going to be held responsible for. (1982)

Response: Numbers are presented in the final EIS on acres of surface disturbance that Sterling would have to reclaim, on soil depths and volumes that would need to be replaced, on seed mixtures, rates and planting requirements. Even more details and numbers are in the comparison of alternatives at the end of Chapter 2 in the final EIS.

21. What assurances will the community and other interested parties have that if this project does go forward, state-of-the-art reclamation techniques will be employed to protect the area? (1645)

Response: See response to other comments in this section for detailed descriptions of the state-of-the-art reclamation techniques. Sterling would be required to comply with its permit as defined in a Record of Decision document if approved, and Montana DEQ and KNF would be responsible for enforcing compliance.

22. Please address the complete plan for tailings impoundment restoration. This should include where the topsoil will come from, and make sure they revegetate both the pile and the wetlands and other disturbed areas with locally collected native plants. (1637)

Response: The topsoil comes from the impoundment footprint, see the Soil Salvage and Handling sections in Chapter 2 descriptions of Alternatives II through V. See also the response to comment SOIL-201-6 for a detailed description of the soil salvage plan.

The agencies have changed the requirements in the seed mixes in Alternative III through V to require all native species. This is certainly a reasonable change. The use of locally adapted species has been required in the agency modified alternatives whenever possible. The agencies also prefer to use locally collected plants if that is a reasonable alternative. Traditionally, many of the native plant species needed for reclamation of disturbed sites were not commercially available and revegetation plans were developed based on availability of seed and nursery stock. Additional information on the revegetation plans can be found the alternative descriptions under Reclamation in Chapter 2.

23. Which mycorrhizal fungi does ASARCO deem appropriate (p.2-58)? Not all fungi will find the tailings an acceptable environment. Furthermore, fertilization with N and P will probably hinder or destroy any mycorrhizal fungus that would be beneficial on the tailings. (1914)

Response: Plant material dealers and seed suppliers are knowledgeable in appropriate micro-organisms available for use with the proposed plants on mine sites. All plant materials suppliers to mining companies would advise the companies to buy the products which will enhance reclamation success. Various research is being conducted and reported at reclamation conferences keeping reclamation scientists and nursery suppliers up to date on the importance of soil biological activity (Stahl 1996, Ianson 1996, and O.S. Moynahan 2001a, 2001b).

Soil storage over an extended period of time (i.e. greater than one season) severely limits the ability of the soil to reproduce native plants from the seed bank in the soil or root and stems deposited at depth in the stockpile (pers. comm. R.A. Prodgers, Bighorn Environmental, with Patrick Plantenberg, March 17-23, 1996). In addition, soil microflora become severely reduced, limiting the potential recovery of the soil upon replacement (Stahl 1996).

Restoration of the soil microflora is necessary to accelerate soil development which will drive plant succession and revegetation success overall. Research is continuing on ways to inoculate plant material as well as soil for post-disturbance use (Ianson 1996 and O.S. Moynahan 2001a, 2001b). Direct haul soil islands on reclaimed plant communities may be useful to accelerate inoculation of reclaimed areas with desirable soil microflora populations (pers. comm. D. Ianson, Bitterroot Restoration, with Patrick Plantenberg, February 21-23, 1996).

Fertilization and soil amendment practices can limit microflora in disturbed lands because of the salt content and pH changes (CASI no date). Several practices can be used on disturbed sites to stimulate plant growth and organic matter decay which will stimulate soil microflora populations (CASI 1991).

Agencies personnel review the literature and fertilizer and planting programs regularly and recommend changes to these practices based on research and results gleaned from reclamation conferences and other sources. As more information on using liquid foliar fertilizers, natural sugars and biological catalysts to stimulate litter decomposition by feeding the microflora populations on

disturbed farmland and mine sites becomes available, the agencies will recommend or require updated microbiological stimulants in the reclamation programs.

Also, please see the responses to comments in SOIL-201 for more information on soil biological activity.

24. ASARCO has bragged about how they have revegetated tailings at their Troy mine and how they would do the same at Rock Creek. Are the metals in the tailings available for plants to take up through their roots? Will these toxins be bioaccumulated in the food chain? Will our children be given warnings about how much deer meat they can eat safely from the Rock Creek area the way fish consumption is limited in much of the country? (1753)

Response: The agencies are reviewing the Tailings Reclamation Studies being conducted by the applicant at the Troy mine site. Data is being collected in plant and animal tissue to evaluate the accumulation of metals from the tailings. This data will reflect a worst case situation as the reclamation is being conducted on raw tailings with only isolated soil islands being created. The study will provide important research data for evaluating the needs to limit plant root growth into the tailings mass. The agencies are also keeping track of similar research along the Clark Fork River between Butte and Deer Lodge being conducted by MSU Reclamation Research Unit at Bozeman, MT.

Under Alternatives III through V, the agencies require Sterling to replace 24 inches of soil over the tailings. The majority of the plant roots are in the upper 18 inches of soil. The tailings do have elevated levels of metals such as silver and copper. As long as the tailings stay at a pH of 7 or above most metals are immobile. The agencies concern is that as the forest plant community reestablishes over the tailings the pH of the soils will drop below 7 which would begin to mobilize metals such as iron, manganese, and aluminum. This is a natural occurrence in forested soils. The replacement of 24 inches of soil over the tailings would minimize the potential for metal accumulation from the tailings in plant and animal tissues even after the soil pH drops in future years.

There is not expected to be any toxic materials created by the milling process, and those chemicals that are used in the milling process would be diluted to non-toxic levels. Thus, there would be no direct effect from toxic materials on wildlife. None of the chemicals used are known to bioaccumulate and have no Threshold Limit Values established by the American Conference of Governmental and Industrial Hygenists. The reagents and their toxicities are listed in Appendix I.

25. The Metal Mine Reclamation Act mandates that a mining/reclamation permit cannot be granted unless the applicant submits a reclamation plan that will "prevent the pollution of air or water and the degradation of adjacent lands." However, the applicant admits that contaminated water may be released from the site for decades, if not forever. For the Rock Creek project, the long-term discharges from the tailings impoundment, the perpetual releases of contaminated water from the mine itself (into the ground water as well as through seeps and springs into the Rock Creek system), as well as potential adit discharges for an indefinite time period, all indicate that the site will never be fully "reclaimed" - as required by Montana law - and thus, cannot be permitted as proposed. (1223)

Response: The agencies have reviewed the proposed plan submitted by the applicant and have modified it in Alternatives III through V in the final EIS. The agencies have also detailed the changes in impacts resulting from the agency modifications. It will be up to the decision makers to decide after reviewing the final EIS, and Responses to Comments on the draft and supplemental draft EISs, if the proposed mine with modifications made by the agencies is permittable and does not violate any state or federal statutes.

26. Reclamation of this project: the draft EIS does not go into great detail of how ASARCO will accomplish these goals. On 2-52, several topic agendas are outlined, of which the permanent protection of air, surface water, and ground water, plus restoration to wildlife would occur. The Tribe does not believe that ASARCO can achieve this goal in any way. The tailings pond would still remain for all time after the mining was completed. It would just be covered up. It is not known how much the tailings water may be contaminated or how long the contamination will remain. If the tailings impoundment is left intact there will be post-mine contamination into the surface and ground water simply from general hydrological activities that would be occurring over time. ASARCO also wants to "design… a land configuration compatible with the watershed." The Tribe believes that has already been created by nature itself and that there should not be anymore needless destruction of the land. It was also commented on the re-vegetation type of plants to be used. The Tribe believes that re-vegetation of plant materials should be all native species. There has been far too much introduction of non-native species into the area that there is no clear definition as to what is native and non-native anymore. Native species will be used. (2026)

Response: The agencies have modified the proposed reclamation plan to meet the reclamation objectives discussed by the commenter. In the water resources section of Chapter 4 the agencies have identified the projected tailings water quality and adit water quality. Bond would be held for treatment of seepage water for several decades to ensure water quality standards are achieved.

After review of the EIS and Responses to Comments on the draft and supplemental EISs, the decision maker must decide if the project is permitable.

The mining company has a right to apply for a mining permit. The agencies have modified the design of the tailings deposit landform to make it as natural as possible.

Finally, the agencies' goal is to use all native plants. Appendix J lists the seed mixes proposed by Sterling and the agency modified seed mixes which contain all native plants for Alternatives III through V. In addition, the agencies have required use of locally collected seed and plants whenever possible in Alternatives III through V.

27. The ASARCO plan calls for capping of the abandoned passive biotreatment cells. In all alternatives listed in the draft EIS the biotreatment system is located in a geographic area which is subject to periodic flooding. There will eventually be seepage into the biotreatment cells creating the potential for pollution of the waterways, it is only a question of when. The biotreatment cells should be excavated completely of all potentially contaminated materials including pipes. There should be additional bonding required to insure all reclamation is complected in a high quality manner. The mine proposed to operate for 30 years, so reclamation of the land in 2 years as stated by ASARCO in the draft EIS will not only be a challenge but expensive as well. Reclamation costs need to be accounted for financially at the beginning of the project to insure compliance. (2065)

Response: Your comment is addressed in Chapter 4, Alternative III, in the last paragraph of the Surface Water Quality section discussion. Please note that this treatment system only applied to Alternatives II to IV. An alternate water treatment system was incorporated into Alternative V that did not use this type of biotreatment cells. DEQ would require Sterling to test the biotreatment cell contents using EPA-1311 or EPA-1312 type extractable metals analyses to identify if leachable metals are a concern. If the tests indicated a potential problem, then the agencies would require complete removal of the cell systems at the end of operations. The substrate removed from the cells at closure would be enclosed in a geomembrane lined cell in the paste facility. The substrate would be buried in the facility under a graded compacted layer of at least 6 feet of tailings near the embankment face. Topography in the area of the cell would be mounded to prevent excess water from potentially moving through the substrate. If no problem was indicated, then the cell contents could be either left in place and revegetated after being topsoiled with 24 inches of soil or removed

and the site reclaimed as described above. In either case, Sterling would need to get approval from the agencies.

Reclamation of the mounded tailings over the cell substrate would be completed by applying a minimum of 24 inches of soil, followed by revegetation. The biotreatment area would be backfilled with clean subsoils to a mounded configuration to produce an area which will limit infiltration through the old cell areas. Then the mounded subsoil area would be covered with a surface lift of soil and revegetated.

Bond would be calculated to cover this reclamation modification and would include the salvage and storage of the materials needed to complete the reclamation at mine closure.

28. Page 2-73 indicates a requirement to do interim seeding "as soon as possible" after disturbance rather than waiting until the next appropriate season. I would hope that this does not mean seeding over snow or during winter where seed could be entirely lost during melt and runoff. (4502)

The ASARCO plan calls for stabilization of roads and other disturbances in the "first appropriate season." By whose definition? Why not at the time of the disturbance? Much can happen while waiting for a season - all bad.(1914)

Response: In the agency modified alternatives, the mining company would be required to reclaim all disturbances as they are completed. See the Revegetation section in Alternatives III through V in Chapter 2. Seeding would take place as soon as possible regardless of the time of year. Seeding in the winter can be done successfully with the use of mulches to protect the seed and bare soil. Seed would not just be broadcast over the snow as the soil surface must be prepared first. If seeding is not successful, reseeding is required.

29. Page 2-74, last paragraph requires color additive to mulch with agency approval of color. I would prefer no color to having a joint state and federal committed deciding on the latest politically correct color. What are the chemicals in the dyes to be considered? What is the impact of the short-term effectiveness of a colored mulch over the more important goal of establishment of vegetation. The purpose of an EIS should be to evaluate impacts not chose colors of buildings, rocks or mulch. (4502)

Response: Hydromulching is typically done with a color additive to reduce visual impacts. Vegetation establishment is enhanced with the use of hydromulches if applied properly. The color of any additive would be selected from those currently available for use in hydroseeding and would be subject to agency approval. The water-soluble dyes are non-toxic to wildlife.

30. Page 2-79, paragraph 4 - This section states that since tree establishment takes 5 to 7 years ASARCO should have a long-term monitoring plan of at least 20 years. What is the logical connection here? First of all I don't agree that tree establishment takes 5 to 7 years, and if it does take up to 7 years to determine if establishment is successful then monitoring for 7 years should be sufficient. (4502)

Response: The agencies would define "tree establishment" as the time needed for planted tree losses to equal tree gains from new seedlings volunteering on the site. The agencies selected 5 to 7 years as a reasonable minimum time period to achieve this goal. Twenty years was selected as a maximum to conduct this reclamation monitoring. The end result could be 7 years as the commenter noted.

31. Surface degradation from roads, mining operations and equipment and utilities, and waste disposal areas that will persist for centuries. (1650)

Response: The mining company would be required to reclaim all disturbances within 2 years after abandonment. The agencies have required many mitigations of the landforms created by the mining company to reduce the impact of the altered topography. See the post-mining topography sections and mitigations and modifications in agency modified Alternatives III through V in Chapter 2. Water treatment would be required until water quality standards were met.

32. The DEIS identifies several factors that may preclude successful reclamation, including soils with high clay content, low fertility, low organic matter content, elevated aluminum concentrations where soils pH is below 5, and nutrient deficiencies or toxicity problems if stored soils create acidic conditions. The DEIS fails to disclose how these factors will be mitigated and how successful reclamation can be guaranteed. Major problems with the reclamation plan include the fact that the plan has not been finalized, the soil salvage and revegetation discussions are inadequate, and the effects that perpetual pumping of contaminated ground water on revegetation efforts have not been disclosed. (1223)

Response: Clay soils: The clay (lacustrine) soils existed on the site on gentle slopes and would be used by the agencies on gentle slopes. In Alternative V, in case of a shortage of suitable soil for slopes over 8%, the agencies would require Sterling to mix rocky colluvial or alluvial subsoils with the lacustrine soils to minimize erosion potentials.

Low fertility: Many reclamation soils are low in fertility until soil nutrient cycling is reestablished. Soil testing at reclamation time would identify soil amendments needed to enhance revegetation success until nutrient cycling is reestablished.

Low organic matter content: The stockpiled soil would be low in organic matter content when replaced on the reclaimed landforms. The agencies have required more aggressive concurrent reclamation which will facilitate more direct haul soil salvage and replacement on the site. This would enhance soil organic matter contents on those areas receiving direct haul soils. The agencies have added a requirement to amend the stored soils with organic amendments to accelerate reclamation success. Soil organic matter contents would slowly return to normal as the plant community and soil develops on the reclaimed areas.

Aluminum in soils: The agencies addressed the aluminum content of soils in the Soil and Reclamation section of Chapter 4 in the Metal Content in the Reclaimed Rooting Zone subsection. The agencies concluded this elevated aluminum would not be a problem because the native species are adapted to the elevated levels. Sterling has committed in its permit application to identifying nutrient/phytotoxicity problems in the event of poor germination and/or growth.

Nutrient deficiency or toxicity problems in soil stockpiles can occur when a large amount of forest vegetation is placed in soil stockpiles. The forest vegetation is acidic and produces tannic acid when it breaks down. The soil stockpiles will be amended with lime to prevent this problem. In addition, the majority of the forest vegetation will be stockpiled separately to prevent contamination of the soil stockpiles. For a detailed discussion of vegetation clearing and soil stockpiling practices see Vegetation Removal and Disposition and Soil Salvage and Handling subsections in each alternative in the Soils and Reclamation section of Chapter 4 and the alternatives descriptions of reclamation plans in Chapter 2 of the final EIS.

The reclamation plan as discussed in the final EIS is adequate for agency review and approval. The final reclamation plan required in the final EIS would allow for even more detail and will further

refine the volumes of soil available, etc. The agencies do not require a final design until a preferred alternative is selected.

Soil Salvage/Revegetation: The soil salvage discussion is typical of any large construction project and outlines the volumes and acreages of disturbance as well as storage sites. Soil quality problems have been discussed and mitigated. Revegetation plans have been modified in agency alternatives to mitigate problems with the proposed seed mix. Revegetation practices in the proposed action and modified by the agencies in their alternatives are typical of reclamation projects of this size. The revegetation seed mixes can be modified by the company with agency approval at any time as species availability changes over time. The Montana DEQ has concluded that the soil salvage and replacement program and revegetation plan would meet the requirements of the Metal Mine Reclamation Act.

Ground water Pumping Effects on Revegetation: The plant communities on the proposed reclaimed tailings paste facility are not dependent on shallow ground water to survive. The ground water table is below the rooting zone. The amount of rainfall the site receives is adequate to support the proposed revegetation plan plant communities even if ground water is pumped perpetually.

33. While the DEIS states all facilities are designed to take into account a hundred-year flood, we should all realize we cannot underestimate the power of nature. Cleanup plans and the remediation of the Rock Creek site appear to be weak and glossed over. (1991)

Response: Sterling has submitted a reclamation plan as part of their application package which in turn has gone through numerous completeness reviews and revisions. This plan would be revised to incorporate all agency mitigations specified in whichever alternative was permitted, if a decision to permit is made. By law, Sterling would be responsible for the reclamation of its mining disturbances and will be bonded accordingly to ensure compliance with the approved plans. Reclamation designs (e.g., tailings impoundment cap, revegetation success criteria, etc.) are consistent with commonly accepted industry standards, and are in conformance with the applicable Montana laws.

34. Page 4-24, paragraph 4: Three to five years is given as a time span required for recovery to predisturbance vegetative ground cover. This value should be cited or otherwise elaborated. (1589)

Response: The applicant's proposed measures to control runoff and sediment (see Chapter 2, Erosion and Sediment Control section in the alternatives descriptions) combined with native topsoil and subsoil characteristics, such as rock fragment content, would help reduce erosion rates. Until vegetation canopy cover reaches predisturbance levels, however, erosion rates would be higher than before disturbance.

Reclamation communities typically develop over a three to five year period and then reach a peak in production and canopy cover (Sindelar and Plantenberg 1980)

35. Page 4-87, paragraph 5 - The statement "...succession would be slow due to changes in soil materials and revegetation..." is unsubstantiated and does not seem to follow from the referenced section. (4502)

Response: The goal of reclamation is to speed up the time needed to reestablish productive plant communities that meet the post mine land use. The purpose of soil salvage and replacement is to try and preserve some of the qualities of soils that have developed in the area over the last 10,000 years. These soil materials would be radically altered and would be slow to develop predisturbance soil characteristics (i.e. organic matter content, porosity, etc.). This explains the statement "changes in

soil materials." These changes in soil materials do not mean the developing plant communities will not be productive or will not be of value to wildlife, etc.

Succession will be slow for many reasons. First, these are forested habitats and the time needed to grow a forest is much longer than trying to reestablish a grass dominated meadow. Aggressive revegetation practices can limit invasion of native species into the reclaimed communities. For example, the research being conducted at Troy has shown that the number of species growing on the unreclaimed tailings exceeds the number of species on reclaimed tailings. This is because reclaimed seed mixes can be very competitive and dominate the site minimizing the invasion of many species. Noxious weeds will also limit the invasion of desirable species onto reclaimed areas, complicating succession of desirable species. Another example, would be the reestablishment of old growth forest stands. We can surely establish early seral species on reclaimed sites but the time needed to recreate plant communities like old growth forest cannot be accelerated to any great degree. The agencies feel the statement in the text of the EIS is a fair evaluation of succession in the area.

36. The impacts of metal leaching will depend on the success of impoundment reclamation. The plan is to stabilize the impoundment post-closure by adding topsoil and revegetating with "grasses, brush, and trees to simulate the natural topography of the area" (Application for a Hard Rock Operating Permit, Section 8.0). No mention is made of plans to first cap the tailings with some kind of impermeable liner, which would reduce percolation through the tailings, and percolating of metals from the tailings into ground water. This is a serious omission.

ASARCO has not stated whether native vegetation will be used to stabilize the impoundment, and if so, how that vegetation will survive under high metal concentrations. Even if native vegetation can survive without an impermeable cap on the tailings, will it take up sufficient amounts of water that there will be no percolation of rainwater, snowmelt, and metals into the ground water? It seems doubtful that no precipitation will percolate through the tailings pile without a cap on the impoundment. Furthermore, it is stated in the Application that two ditches will be constructed to minimize runoff into the impoundment by diversion into surface waters; no discussion of the possible impacts of sedimentation from these ditches is described, and no strategy is outlined to minimize these impacts.

These questions must be carefully evaluated, and a more complete, environmentally protective reclamation plan must be submitted. This plan must include reclamation strategies for minimizing leaching from strata in the abandoned mine shaft, and from the unlined tailings impoundment. Acid production from the mine shaft strata and from the tailings impoundment must also be addressed. The option of portal plugging, as in extensive grouting of the entire shaft, must also be seriously evaluated. (1223)

Response: Seepage impacts would be significantly reduced under the Agencies' preferred alternative (Alternative V), where tailings would be deposited as a paste.

Additional monitoring and studies are recommended as part of Alternatives III-IV mitigations. Tailings seepage is added to the water treatment plant until water treatment standards can be met. The Agencies have increased the soil depth to the reclamation plan for the tailings storage facilities under Alternatives III-V which would increase plant growth and evapotranspiration and reduce seepage quantities through the tailings to acceptable limits.

Seed mixes proposed by Sterling and modified by the Agencies in Alternatives III and IV are listed in Appendix J of the EIS. Sterling is conducting studies on the Troy mine tailings that will provide valuable information on metal concentrations in the tailings, and plant and animal tissue (Sindelar 1996. "ASARCO Troy Mine Tailings Reclamation Project." Interim Report Prepared for ASARCO, inc. by Rangehands, Inc. Belgrade, MT).

The diversions are designed to carry the 100-year, 24-hour storm event and would not be a significant source of sediment once they were constructed. All portions of the constructed diversions would be revegetated except the armored portions.

37. Revised Water Management Plan (ASARCO 1995), Apndx B. "Response to EPA comments..." #15 ASARCO does not answer the question of the appropriateness of disposing of biotreatment sludge into tailings pond. (1780)

Response: The biotreatment sludge from the passive system under Alternatives III-IV would either be reclaimed in place or by burial and encapsulation within the tailings impoundment. See the reclamation plan for Alternative III in Chapter 2 for more details.

38. Reclamation of the passive biotreatment system site - the state says that the materials in this system will be moved to the impoundment following mine closure if metals levels are too high, but does not say what that level is. So citizens cannot evaluate whether this is an acceptable plan or not. The permit must state at what metal level the PBS would have to be moved to the impoundment. (2066)

Response: Once the mine wastewater treatment system is no longer needed, the passive biotreatment cell will be sampled to determine if leaving the substrate in place would result in an unacceptable risk to human health or the environment. This determination would be based on whether or not the substrate exhibits toxicity characteristics as defined by section 261.24 of 40 CFR Part 261 - Identification and Listing of Hazardous Wastes using the Toxicity Characteristic Leaching Procedure, Test Method 1311. If the substrate is determined to be a hazard it will be moved to the tailing impoundment, encapsulated below a minimum of six feet of tailings, and the surface graded to minimize seepage through the material.

Please see description of Alternative III for more information about reclaiming the substrate from the passive biotreatment system.

39. Page 4-30: states that ASARCO predicts it would take 15 years for the tailings impoundment to be fully drained and for the entire tailings impoundment surface to be workable. Some areas would be workable within a year. These statements seem to assume that pump back of seeping ground water will not affect the reclamation plan, yet pumping is expected to occur for several years, even decades. This pumping will cause delays in the implementation of the revegetation plan. p. 4?30 states clearly that foregoing or delaying tree planting may reduce success of establishment, and resulting in lower growth rates. How will delays cause by pumping contaminated ground water back into the impoundment effect success rates for the revegetation plan, and how will adverse affects associated with this be avoided? (1223)

As a contingency for mitigating water quality degradation caused by seepage from the tailings impoundment, ASARCO and the Agencies propose to pump seeped ground water back into the tailings impoundment until that seepage meets water quality standards - a process that may continue several decades after active mining is complete. Yet the DEIS fails to disclose what impacts this possibly perpetual discharge will have on the success of reclamation efforts for the project, particularly regarding regrading and revegetating the tailings impoundment. (1223)

Response: Reclamation of the surface of the impoundment under Alternatives II-IV could not begin until the surface was dry enough to support reclamation equipment. That could take anywhere from 2 years to over 10 years. Under Alternative V there would be free water stored on the surface and less water contained in the tailings paste; therefore, reclamation of the surface would probably begin within 2 years. Also much of the paste facility would be reclaimed as it was constructed.

The paragraph from Chapter 4 refers to the proposed reclamation plan for Alternative II which the agencies have modified in Alternatives III, IV, and V. See Chapter 2, Alternatives Descriptions and

the Reclamation Impacts, Revegetation sections of Alternatives III, IV, and V in Chapter 4 to see how the agencies have addressed minimizing the impacts of delayed revegetation.

The question about influences of pumpback water on reclamation under Alternatives II, III, and IV can be best illustrated by the water balance table, in Chapter 2. Note that in the water balance table significantly less water is reporting to the impoundment surface than is captured by the pumpback wells. There is excess evaporation and the majority of water is reporting to water treatment systems. The net effect of the pumpback volumes would simply delay reclamation of the final slimes portion of the impoundment until the water treatment system can take the water directly. The pumpback may be of such a quality that it can be used to spray irrigate reclaimed areas on the impoundment surface as is being done on the Troy impoundment. This spray irrigation would enhance the evapotranspiration process. The agencies do not believe the pumpback water will delay reclamation in the agency modified alternatives. No pumpback water is proposed to be captured, stored, or used on reclamation of the paste facility under Alternative V, however it is possible that water stored in storm water ponds or seepage capture ponds could be used to irrigate reclaimed areas.

40. We request the following issues be clarified in the revised DEIS so the public is given adequate opportunity to evaluate the proposed reclamation plan.

Page 2-19: Postmining reclamation is estimated to last 2 years (after the tailings impoundment surface dried enough for reclamation activities).

Page 2-51: states that trees would be planted in years 34?35 (end of mine life) on the tailings impoundment face and surface for stabilization, wildlife edge, seed source, and screening.

Page 4-20: states that the potential for reclamation success would be improved and mitigation of impacts identified for other resources would be enhanced by reclamation plan changes proposed by the Agencies.

Page 4.4-33 goes on to say that these changes to the reclamation plan would decrease concerns about plant root growth into compacted tailing and enhance tree and shrub growth rates. In turn, the goal of returning the site to comparable stability and utility would be more closely achieved. As the discussion above demonstrates, these mitigations have not been finalized, and without them, the likelihood of successful reclamation is drastically reduced. These issues must be addressed in the supplemental DEIS, or the Agencies will be required to deny the application because of it's inadequate reclamation plan. (1223)

Response: Sterling plans to reclaim and revegetate the tailings facility concurrently with construction. How concurrent reclamation can be done varies with each Alternative (see Chapter 2, Alternatives Description).

The Metal Mine Reclamation Act requires that all reclamation must be initiated within two years after abandonment of a mine facility. The tailings impoundment surface under Alternatives II, III, and IV would be reclaimed incrementally as the surface dried and tailings consolidation is complete. During the drying process, Sterling would be required to control blowing dust from the impoundment surface. The drying process would proceed from the sand portions of the impoundment near the dam face to the slimes area of the impoundment near the back of the impoundment. This process could take up to 15 or more years. Once the final wet surface is dried to the point that equipment access is possible, Sterling would have two years to complete the reclamation program on the tailings as required by MMRA 82-4-336(1). The lesser amount of water contained in the tailings paste under Alternative V would allow even the surface to be reclaimed as soon as each action reached final grade well before the entire facility was constructed.

Planting trees in years 34-35 refers to the tree planting program proposed by the applicant for the impoundment face for Alternative II. The impoundment face would be constructed in stages over mine life. The agencies have modified the plan in Alternatives III, IV, and V to speed up the reclamation program and reduce visual impacts from the impoundment face. See the Alternatives III, IV, and V Reclamation, Revegetation Practices sections in Chapter 2 for more details.

The mitigations presented in Alternatives III, IV, and V would reduce impacts over that proposed by the applicant. The agency's preferred alternative is Alternative V which incorporates the suggested changes in reclamation plans the commenter raised in the above paragraphs. If this alternative is selected, Sterling would have to implement the changes.

41. Page 2-36. I did not find a discussion of the scenario of ASARCO discontinuing its project after construction of the exploration adit. What would happen to the exploration adit waters and the possible need for treatment? Would they be discharged in perpetuity into the Clark Fork miles away? Or would they be abandoned to run into surface waters? Would the adit be permanently closed? (1196)

Response: The discussion of the exploration adit site reclamation in the EIS can be found in Chapter 2, "Description of Alternatives." The exploration adit would be a decline beginning above the water table; it would not be expected to discharge water. The exploration adit would also be sealed.

The plan as proposed does not include an early shut down after construction of the evaluation adit. However, a contingency plan for dealing with the waste rock and stockpiled ore was included under Alternative V, in the Acid Rock Drainage and Metals Leaching Plan in Appendix K. If Sterling decided not to continue with the mine after constructing the evaluation adit, then the final reclamation plan would need to be revised accordingly, resulting in additional MEPA/NEPA analysis. The final reclamation plan in such a situation would need to address how long the water would be treated and discharged before pumping the water down to the temporary treatment plant ceased and the adit was sealed. If the company abandoned the site, the reclamation bond would be used to reclaim and decommission the site and its facilities.

42. Page 2-54...Second paragraph, last sentence. Assumptions are not appropriate in a Draft EIS. This word should not be used anywhere in such a document. Either something is proposed, or it is not. How can we, the public, comment on document contents, when the agencies can not even get needed information from ASARCO? (1196)

Response: Assumptions made in the description of alternatives would become part of the permitted mine plan and are analyzed as such. The applicant had not defined what would be done with the buried pipelines under Alternative II, but pipelines are typically left in place whenever possible to avoid redisturbance of the ground above the pipeline. Therefore, the agencies made this assumption. Under Alternative V, all pipelines are buried except at stream crossings and would remain buried. Approximately 15-20 feet of pipe would be removed on either side of stream crossings, capped, and then reburied and reclaimed. See Pipeline Corridor Reclamation in the Alternative V description in Chapter 2 for more detail.

DRAFT EIS
RESPONSES TO COMMENTS

WATER RESOURCES

Surface Water Flow and Quantity WTR-300
Ground Water Flow and Quantity WTR-301
Surface Water Quality WTR-302
Ground Water Quality WTR-303
Water Monitoring WTR-304
Water Treatment WTR-305
MPDES Permit and Process WTR-306
Total Maximum Daily Loads (TMDLs) WTR-307
Idaho Water Quality Issues WTR-308
Wetlands and Non-wetland Waters of the U.S. WTR-309
404(b)(1) Permit WTR-310

WTR-300 Surface Water Flow and Quantity

1. For example, in Table 3-2 (page 3-19) one flow record per month for twelve months is not enough flow data to describe flow regimes and hydrology of affected waterbodies, and is not likely to be representative. No flow data is provided for potential impact areas above RC-1 or East Fork Rock Creek or Miller Gulch. Data presented is not adequate to serve the functions of baseline information at locations that could be impacted, and the assertion that the data presented in Table 3-2, described as "representative streamflows for watersheds in the proposed project area" on page 3-17 of the DEIS, is questionable.

Chapter 2, Part I identifies flow (i.e., water quantity) as a significant issue. If there is no possibility of any of the construction & operation activities influencing flows or water volumes, then that should be stated. If this is not the case, then some detail and data on flows is necessary. (1214)

Response: There appears to be some confusion over Table 3-2. This table is not an unabridged listing of the baseline flow data collected by the applicant (as ASARCO). This table was constructed for comparative purposes only. Its intent is to provide a relative comparison between the volume of flow in Rock Creek and Clark Fork River. ASARCO did collect several years of flow data throughout the streamflow monitoring network. The complete baseline streamflow data record is presented in Sterling's permit application, on file with the Agencies. In addition to these records, continuous streamflow gauging stations were installed at several locations. These data can be found in the permit application on file with the Agencies.

2. Based upon the information presented, it is apparent that the Rock Creek system already is stressed by low to no flows at various locations within the drainage. Any decrease in the flow volume or duration of low/no flows in stream segments would have to be considered a negative effect on aquatic life and could influence populations of westslope cutthroat and bull trout within the drainage.

The most likely locations for change in flows are locations that; 1) presently provide spring or seepage flows that could possibly be interrupted; 2) locations that presently provide the major portion of flows (i.e., the East Fork drainage); and 3) locations that presently experience very low to no flows, such as on the West Fork above its juncture with the East Fork and in the area just upstream of the highway crossing on Rock Creek.

Station RC-1 is not representative of effects that could occur in the East Fork or West Fork or springs that could be affected by interference with ground water fed baseflows. RC-1 is in an area that loses water to the alluvium, as noted on pg 3-20. Also, page 3-20 states that flow data are available through August 1993. This data should be presented.

Although mathematical estimates of monthly average flows are made, the precision of reported values is not in consonance with the error involved in the methodology, leaving a false impression that the flow estimates are more reliable than they really are. In addition, there is no indication what the deviation from these values would be in a dry month or a wet month, while impacts will be more related to these extremes than to averages. (1214)

Response: Please refer to Chapter 4, Environmental Consequences, Hydrology in the final EIS for a complete discussion on surface water quantity as it relates to the proposed project. This chapter specifically discusses the potential changes and disruptions to surface water quantity as they relate to the proposed project.

Streamflow monitoring stations WRC-2, ERC-1, and RC-1 are specifically placed such that streamflow at key locations and confluences within the proposed permit boundary and at the edge of the permit boundary can be quantified. It is based on these streamflow locations that segments of Rock Creek or periods of time can be identified as carrying no flow. The complete baseline streamflow data record is presented in Sterling's permit application, on file with the DEQ. ASARCO collected several years of flow data throughout the streamflow monitoring network.

Table 3-2 in Chapter 3 of the final EIS provides a comparison between the volume of flow in Rock Creek and the Clark Fork River.

Monthly flow estimates are made in the water balance; however, the balance is intended to be an operational water balance for use during the project. The balance was used in these early stages to investigate average and excess water volumes and to predict facility volumes required to handle flows.

3. It does not appear that the proponent has spent adequate effort to quantify flows where they are needed to evaluate potential impacts. How will the agencies use these few data to assess and quantify any changes in flow that are caused by the mine? What criteria, based on these data, will be used to assess change? (1214)

Baseline hydrology information is not extensive and is marginal in its usefulness to estimate the flow regime during critical periods of flow, such as winter flows. Additional data and some permanent flow stations are needed at critical locations. (1595)

Response: Streamflow monitoring stations on the west fork of Rock Creek (WRC-2), the east fork of Rock Creek (ERC-1), mainstream Rock Creek (RC-1), Miller Gulch (MG-1), and the three stations on the Clark Fork (CF-1, CFBNB, CF-2) are specifically placed such that streamflow at key locations and confluences within the proposed permit boundary and along the edge or below the edge of the permit boundary can be quantified. A complete record of the baseline streamflow data collected by the applicant (as ASARCO) did not appear in the draft EIS. Summary tables of streamflow data are presented. The complete baseline streamflow record is presented in Sterling's permit application, on file with the Agencies.

4. Page 4-58 & 59. A side-by-side comparison of the two tables considering the 7 to 1 ratio difference in CFS flows doesn't quite jive, and perhaps deserves a second look. (1780)

Response: These two tables show the predicted result in water quality of the Clark Fork River based on an additional inflow of approximately 2,200 gallon per minute (gpm) of treated discharge from the proposed project. The 2,200 gpm or approximately 5 cubic feet per second (cfs) of discharge is equal to approximately 2 one-hundredths of a percent of the average flow in the Clark Fork (20,183 cfs) and 14 one-hundredths of a percent of the low flow in the Clark Fork (3,610 cfs). It is therefore reasonable that the differences reported in Tables 4-25A and B and 4-26A and B in Chapter 4 are slight. The tables are revised in the EIS to note the above inflows used for the loading calculations provided.

5. It is not clear from this section what actual data base on hydrology exists. Data needs to be presented in an appendix. In particular, if a 7Q10 is used as a limiting condition for water quality calculations, what is this based upon?

How does the "low flow" condition in the water quality impact section relate to 7Q10 flow or 1Q3 flow and the available database?

Given the short period of record and the lack of complete characterization of actual flows in the drainage during the period of record, and the importance of flows in relation to stream habitat conditions and predicted water chemistry, why was there not more flow information collected for baseline conditions? At a minimum, data should be provided that characterizes daily, within month, between month, and seasonal flows over a 2-year period. Had this been required, a more reliable basis for water chemistry impact would have been available. (1595)

Underground mine storage is likely to reduce surface water flows in both the W. Fork and mainstem of Rock Creek, and those reduced flows must be incorporated into those streams' assimilative capacity to accept additional pollutants, ie. 7Q10. (1223)

Response: A complete record of the baseline streamflow data collected by the applicant does not appear in the draft EIS. Summary tables of streamflow data are presented. The complete baseline streamflow record is presented in Sterling's permit application, on file with the Agencies.

The 7-Q-10, or the 10-year, 7-day low flow value presented in the draft EIS is estimated using a regional analysis, basin characteristic methodology. This methodology uses long-term flow records from nearby representative drainages. It is impossible to generate a site-specific 7-Q-10 without at least 10 years of continuous record. The accuracy of a 7-Q-10 improves with each year of additional data. Thus using an estimated 7-Q-10 from a nearby drainage with a long period of record is the only viable methodology.

The 7-Q-10 for the Clark Fork River is based on daily flow statistics generated by Washington Water Power and reported by the U.S. Geological Survey (Station number 12391400) for the period of record June 1960 to September 30, 1996. Please refer to Part I of the MPDES Statement of Basis (SOB) in Appendix D for a discussion of these values.

The 1Q3 flow was not calculated but would be numerically smaller than the calculated 7-Q-10. The use of 7-Q-10 is required under Section 17.30.635(4) of the Administrative Rules of Montana (ARM).

6. Water treatment in the plan is based on average annual flow. Seasonal variations in flow have already caused excessive levels of arsenic, zinc and cadmium to be released into the Clark Fork River at Milltown. What allowances have been made for storms such as occurred in February, when the flow was dramatically above the average? Have you obtained any data on water flow during the February storm, or any other major storm or rain-on-snow event, at either Rock Creek or the Troy mine? If data are available at Troy, does it compare with the numbers used when the Troy mine was permitted? (1248)

Response: Average annual flow as shown in the water balance and used for discussions relating to proposed treatment is presented in the EIS for descriptive and comparative purposes only. In the case of extreme climatic conditions, the applicant has prepared a storm water management plan as part of their mine permit. This document is on file with the Agencies. As part of the storm water management plan, the applicant proposes to temporarily store excess mine water underground in mined out sections. The applicant would then be required to route excess water though the normal operational treatment path and all discharges will be required to meet effluent limitations set forth in the MPDES permit.

The proposed mine facility is also designed so that runoff from the surrounding area is directed away from the mine area. These proposed diversions, as well as proposed mine facilities are designed to convey and contain runoff associated with the probable maximum precipitation (PMP) event. The probable maximum flood (PMF) resulting from the PMP is a very conservative value to be used in the design of storm water measures. The PMP event itself is in excess of 15 inches of precipitation in a 24-hour period. The PMP is estimated in accordance with procedures outlined by the National Oceanic and Atmospheric Administration (NOAA). The PMP is a much greater event than has even been recorded at the Troy facility. The Troy Mine does not have a storm water permit as there are no discharges to surface waters. Water from the mill area goes into a large pond and overflow is pumped down to the tailings impoundment. Storm runoff is collected on the surface of the impoundment or the toe ponds. There was no specified storm event sizing for these facilities.

7. EPA is concerned that flows in the Rock Creek drainage may be reduced due to interruption of ground water flows that feed surface waters. This is of particular importance during the low-flow periods of July through February/March. If there is a decline in surface base flows due to interruption of ground waters, the data base presented is not adequate to characterize or determine the extent of changes that could occur, unless they were to be catastrophic. Of particular concern would be lowered flows that increase the length of time that intermittent

sections presently flow, or lower stream levels that prevent the ability of bull trout to ascend and successfully spawn and rear young within the drainage. This would include locations near the mouth of the stream and near the juncture of the East and West Forks that presently are intermittent.

Since the East Fork is reported to contribute an average of 82% of the flow to the stream below its confluence with the West Fork (page 3-17), more quantitative data should be presented for this waterbody? Any possible diminution of flows in this stream would have the greatest importance and should be carefully monitored. The monitoring program defined in the Appendix is too general to give any assurance that adequate flow monitoring would be done. Flows in the West Fork are significant because of potential affects of the proposed mill site on water quality (and thus dilution effects). If there is a possibility of mining operations affecting base flows (through interruption of ground water entering surface waters) in this largely perennial stream, this would be a significant deleterious effect. (1214)(1389)

What effects will the diversion of those waters which would have been held within the mountain for future use by nature have on the watershed, particularly in prolonged drought . (1389)

The summary discussion does not adequately describe possible changes in surface water flows (particularly lowered flows during the low flow periods of the year) as the result of mining exploration or production. Altered flows could have significant effects on the ecology of the Rock Creek basin, and thus, are of potential concern. Sources of impacts could include interruption of springs or other ground water sources that presently feed the drainage. These could be caused by changing pathways of ground water flow to surface flow because of tunneling and fracturing from blasting.

We are concerned that the hydrology section does not adequately quantify potential changes in flow regime that may occur within the basin as a result of mining-related activities. The section should discuss potential impacts, including magnitude, duration and frequency within the Rock Creek basin and its potential significance to altering the flow regime, and thus, aquatic life.

Changes in flow are critical to evaluating potential impacts to water quality and aquatic life. Also, the monitoring program should allow detection of altered flow impacts. (1214)

Response: A water resources monitoring plan that takes into consideration public concerns and comments would be finalized by the applicant and approved by the agencies prior to startup of the proposed project. EPA would be included in this process. Any change in flow rates would likely be less than the wide variation in flows observed during the project baseline period. Therefore, measurable changes in flow are not expected. The flow in Rock Creek is largely in response to precipitation. At times, parts of the west fork and lower reaches of the mainstem go dry. These data suggest the baseflow contribution from bedrock in the vicinity of the ore body is relatively insignificant (unmeasurable).

8. How does the Q-7-10 of 3,100 cfs for the Clark Fork River reported in the DEIS (page 3-20) relate to the Q-7-10 of 4,089 cfs identified in Table 14 of the water management plan? (1214)

Response: The 7-day, 10-year low flow as reported in the EIS was taken from U.S. Geological Survey (USGS) statistical summary reports, and modified based on the difference in contributing area between the USGS gauging station and the proposed Rock Creek Mine project. The applicant calculated the 7-day, 10-year low flow, as reported in the "Water Management Plan," using the same technique as above, but with a slight modification. It was determined the USGS statistical reports which provide 7-day, 10-year low flows, do so on a monthly basis. These reports do not account for the case where a low flow period spans two months. In other words, in the event that a low flow period begins in the end of one month and carries over to the beginning of the next month, this period is not included in the USGS calculation. The applicant used the available USGS data to calculate the 7-day, 10-year low flow regardless of timing within a given month. The 7-Q-10 calculation has been updated in the Fact Sheet/Statement of Basis and the final EIS, and is equal to 3,610 cfs.

9. Page 2-130 - No impacts to stream flows in Rock Creek. If approximately 2,000 gpm of water from the west fork Rock Creek watershed is piped to the tailings and treatment areas and discharged there, this will deplete the water that is available for stream flow in the west fork Rock Creek by that amount. The creek will dry up sooner and remain dried up longer. This could also affect dry-ups in the mainstem of Rock Ck which is already seriously stressed by this. (1504)

Page 4-49 - surface water quantity concern: As discussed above, removal of around 2000 gpm of water from the W Fk Rock Ck watershed would contribute to dry up in the streams of the area. (1504)

Response: An appropriation of 2,000 gpm from the West Fork of Rock Creek has not been proposed. Makeup water would be appropriated from a well developed in Clark Fork River alluvium. See Chapter 2, Alternatives Descriptions, for a discussion of project water requirements and Chapter 4, Hydrology, for impacts of the project.

As a result of public and agency comment, the applicant has moved the location of their proposed production well away from the west fork and east fork confluence to the Clark Fork alluvium to avoid potential dewatering of Rock Creek. There still remains one proposed drinking water supply well near Rock Creek at the support facilities site under Alternatives III and IV. This however, is not projected to impact flows in Rock Creek. And this site has been relocated down near the tailings facility site under Alternative V and a drinking water well there would be located in the Clark Fork alluvium.

10. I also have the water rights on Engle Creek which feeds my fishponds and my power plant. The proposed 2500 gallon seepage water through the mine will influence the Rock Creek and Engle Creek drainage and water flow loss is expected. (1689)

Response: Water seepage from the proposed mine (mine adit water) would not impact flow in Engle Creek. However, if flow in Engle Creek was reduced due to mine activities to a point where existing rights to this water would be adversely impacted, the applicant would be responsible for correcting the problem.

11. The proposed water withdrawals and diversions may affect existing water users. (1595)

The list also fails to disclose reduced quantity of surface water in the Miller Gulch drainage caused by the tailings impoundment seepage collection and pump back wells. These issues must be addressed in the revised DEIS. (1223)

I am concerned about spring/wells and the aquifer that feed the lay down gradient from the proposed tailings impoundment planned for this project. The draft EIS states there is a real possibility that this and other water sources could dry up as a result of the construction and operation of this impoundment. (1271)(1224)(1455)

Will the south fork of Miller Gulch be dewatered? Mitigation of the dewatering of the south fork has not been included in the DEIS. (1455)

The reduced flow of water from the south fork of Miller Gulch will have an impact on the power generating capability which is a sole power source for this homestead. (1455)

Page 2-130 - Miller Gulch flows are expected to decrease, but there are no expected impacts to downstream users. Surface flow is indicative of ground water levels. If Miller Gulch dries up, downstream users of the aquifer, i.e. households with springs and wells, can expect decreased water availability. (1504)(1245)(1779)

Page 2-34: states that water will be needed for drilling the exploration adit, dust suppression in the adit, and a potable water supply. In addition, ground and surface water flows to Miller Gulch will be affected by the operation of the tailings impoundment.

ASARCO does not have water rights to appropriate surface water in Miller Gulch. The disruption of natural surface water runoff to Miller Gulch during the proposed mine life could, at times, reduce flows for existing beneficial uses

of surface water. These impacts cannot be quantified. These statements clearly indicate that ASARCO needs to appropriate water to operate the mine and that they do not have a water right to do so. The revised DEIS must include a discussion of how ASARCO will appropriate this water and how this use will not adversely affect beneficial uses for water right holders in Miller Gulch. In addition all necessary water rights must be obtained by ASARCO before the project can be approved. At a minimum, construction commencement must be conditioned upon ASARCO's ownership of all water rights. (1223)

Response: Impacts to domestic water supplies outside the permitted ground water mixing zone are not expected. However, to eliminate concern, it is recommended that the existing well yield and water quality be documented by an independent third party or the agencies. Should mine-related impacts occur, the applicant would repair or replace the water supply.

The southern tributaries to Miller Gulch are ephemeral. Construction of the tailings storage facility in this portion of the watershed would reduce the average seasonal flow volumes in these tributaries. However, all surface runoff above the tailings facility would be diverted to an ephemeral tributary of Miller Gulch so only the water from the facility footprint would not contribute to flows into Miller Gulch. No effects to water rights are anticipated. Should water rights be affected, the water supplies would have to be replaced with waters of equal quantities and qualities.

Appropriations of water in Miller Gulch are dependent on flow from springs on Government Mountain that would not be impacted by the tailing facility. Wells located in the west half of Sections 20 and 29 are completed in Clark Fork River alluvium, and would not be expected to be impacted by reduced surface water flow in Miller Gulch.

The applicant must apply for water rights for any appropriation of ground or surface water put to beneficial use during the operation of the mine.

12. Page C-11; second full paragraph, The south fork of Miller Gulch wetland mitigation site would add to the dewatering of the south fork of Miller Gulch. (1455)

Response: The text has been revised to refer to the south fork of Miller Gulch and the main fork of Miller Gulch. Long-term decreased soil water infiltration rates and soil hydraulic conductivities for the paste tailings compared to native soils may alter the frequency and duration of saturation, inundation, and ponding of water for some downgradient wetlands.

Text will be added to describe the potential for the proposed project and tailings paste alternatives to cause impacts to surface water flows to the south fork of Miller Gulch. However, impacts to wetlands in the portion of the north fork of Miller Gulch from potential changes in surface waters flows cannot be quantified.

13. Page C-19; 6.1 change to: The project will not have any effect or impact on municipal water supplies but will impact private water supply. (1455)

Response: The text will be revised to state that the proposed project could potentially reduce surface water flows to Miller Gulch, however, the impacts from reduced flows cannot be quantified. The existing beneficial uses for surface water from Miller Gulch include power generation, irrigation, and domestic uses (Water rights PO29428, W131977, and W131978). The applicant would be required, under the Metal Mine Reclamation Act to repair or replace any existing use of surface or ground water that was affected by the proposed project if it receives a permit.

14. Fig 2-16: Stabilization of tailings impoundment water level depends in part on evaporation. Yet there are no data for the evaporation rates for the impoundment. Were evaporation rates not considered alone because they are relatively low for many months in this area of Montana; perhaps not high enough to permit stabilization of the impoundment given the amount of water pouring into it daily? "Evaporation" is combined with "Dust Sup." (suppression?) in Table 2-2, making both categories meaningless. How much water will be used in dust sup? It

seems very unlikely that any would be used during wet months which are also when evaporation rates could be near zero. How then, would impoundment water level be controlled in the wet months? Also, if dust suppression means spraying impoundment water on roads, etc. then the DEIS must evaluate the potential effects of chemical wastes in that water (e.g., Am Cy Superfloc S-5595 and its breakdown products). Bulleted entry #4 p. 2-49 states that surface drainage from unpaved roads would be indirectly channeled to streams. One would therefore conclude that toxins would flush into streams from the dust-treated, unpaved roads. This could also impact the proposed wetland and waters of the U.S. mitigation areas located along the proposed access road (see Fig 2-22). (1288)

Response: As indicated on Figure 2-16, excess reclaimed tailing impoundment water may be routed to the water treatment system for treatment and discharge to the Clark Fork River. Reclaimed tailing pond water would be used for dust suppression only on the tailing pond area. The proposed project would be required to implement Best Management Practices for road construction to minimize erosion and sedimentation impacts to all undisturbed (including wetland) areas along the roadways.

The proposed paste technology under Alternative V would not require water removal by evaporation and use of excess water for dust suppression. See Figure 2-34 and Table 2-15 for more information on Alternative V.

15. What happens to the water during years 0-10? (1996)

Response: The water balance tables cover all years of mine operation. Figure 2-16 of the draft EIS only shows years 10-23 for display purposes. The complete water balance can be found in the Water Management Plan for Alternative V (ASARCO 1997).

16. The agencies have been deficient in analyzing the operational water balance in the DEIS. (1526)

Response: The water balance has been reviewed by the Agencies and is discussed under the Mine Operation Requirements section in Chapter 2 for Alternatives II and V. Also provided in Chapter 2 are three figures (Figures 2-15, 2-16, and 2-34) which further enumerate particular issues related to the water balance.

17. The tailings impoundment will be used as a giant water reservoir in which the water will be contaminated with dissolved metals from the tailings and residual mill chemicals. Water management is, therefore, a critical issue. The water balancing data provided by ASARCO on pages 2-39 and 2-40 (table 2-2) conveniently adds up to zero for the impoundment balance. The way the system is set up with the capture wells returning water to the impoundment water would actually accumulate in the impoundment. There are no treated discharge losses from the impoundment itself. The only treated discharge is coming from the passive bioreactor which is only designed to handle mine storage water for removal of nitrogen containing compounds. The data in table 2-2 for the impoundment balance somehow adds up to zero for every year. This makes no sense! The only way for this to be possible is if untreated water is actually being dumped out of the impoundment. This appears to be what is happening. (1673)

Response: Summaries of the water balance for Alternatives II and V are provided in the EIS. The detailed water balances are included in the applicant's original and revised Water Management Plans and are on file with DEQ and Kootenai National Forest.

The water balances were designed as an operational water balance. It therefore would sum to zero by design, hence the term balance. As can be seen on Figure 2-16 and in Table 2-3, water in the impoundment would be decanted and returned to the mill or retained in the tailings under Alternative II. If necessary, water could be directed from the impoundment to the treatment systems to prevent accumulation of water. In fact, in the last two years of the proposed project, water from the impoundment would be specifically routed to treatment to facilitate drying out the tailings for reclamation. Schematics and water balance for Alternative V can be found in Figure 2-34 and Table 2-15, respectively. The applicant has proposed a new treatment method that has been incorporated into Alternative V. Regardless of the type of treatment facility used, all discharge from the mine would be required to meet effluent limitations in accordance with an MPDES permit from DEQ.

18. Page 3-5 - The estimated precipitation and evaporation figures- Why are they not incorporated into the water budget given in Chapter 2? (1504)

Response: The estimated precipitation and evaporation values presented in Chapter 3, Climate, are included in a generalized statement characterizing the climate of the proposed mine area. The appropriate monthly precipitation and evaporation values have been converted to flow rates and used in the water balance models as presented in Chapter 2.

19. Water Use and Management: Valid estimates, performed by unbiased, nonASARCO, nonAgency, qualified, professional consultants must provide a detailed water balance estimate prior to permitting. The water balance data in the DEIS is inadequate, as discussed above. For instance, evap rates are not computed. The DEIS also fails to provide any info about methods used to determine the water balance data. And what will be done by the Agencies or ASARCO with the "refined annually" water balances? (1288)

Response: The water balance as presented in the EIS is a summary of a very complicated series of calculations. The complete water balance, along with detailed discussions of equations used in the water balance and the meteorological data used to derive climatic variables, can be found in the applicant's "Water Management Plan" on file with DEQ (ASARCO 1997). Evaporation rates are computed and used in the water balance. Of the 135 lines of calculation in the water balance, lines 15,16, 24, 25, 60, 77, 85, 112, and 120 all address evaporation. Regarding the water balance itself, a detailed monthly water balance was developed in order to account for actual timing of climatic events rather than performing an annual balance. The water balance not only accounts for the timing of climatic variables such as precipitation and evaporation, but also for the timing and sizing of the proposed mine facilities.

20. Even as weakly described in the DEIS, the water balance data leads me to doubt if the impoundment system is near adequate to provide a balanced system. It seems doomed to overflow. What if it becomes clear that the impoundment cannot function as designed? The DEIS does not provide adequate assurance that any of the Agencies or ASARCO would make necessary alterations. Are there feasible alterations? (1288)

Response: The impoundment designs incorporate standard engineering criteria such that they are capable of retaining the volumes contained in the water balance table. However, the large volume of water would be a factor in an impoundment failure and increases seepage. Alternative V was developed and uses a technology that would reduce the amount of water stored in the tailings and thus reduces the risk of failure and the amount of seepage.

21. We cannot find meteorological data for the impacted area in the DEIS, and yet the weather plays an important role regarding the water balance in the system as shown on page 2-38. This shows the contribution of water from rain and snow to be 235 gpm in year 10 and to drop to 209 in year 23. Does ASARCO control the weather? 235 gpm on an area of 340 acres represents only 13.2 inches of rainfall per year. Actual rainfall in the impoundment area is 30-35 inches per year, and in the mining area much higher than that. It is therefore reasonable to expect that mine flow is based on the same flawed assumption, and in reality will be considerably more than stated. The actual weather contribution to the tailing water will be approximately 550 gpm. What is ASARCO's plan to deal with these contingencies? (1296)

Page 2-38 - water budget: Does not compute. 35in/year on 350 acres yields 633 gpm, not 235gpm. Impoundment storage cannot continually increase at 158 gpm. No figure given for evaporation. Figures given for seepage to ground water and pump-back return system are preposterous. Figure given for amount of water in tailings slurry is unlikely. concern: lack of agency attention to and disclosure of facts to public for public review. (1504)

Response: The information regarding the water balance, as presented in the EIS, is in summary form only. The complete water balance and associated meteorological data used by the applicant are included in the storm water management plan on file with DEQ. Regarding the water balance itself, a detailed monthly water balance was developed in order to account for actual timing of climatic events rather than performing an annual balance. The water balance not only accounts for the timing of climatic variables such as precipitation and evaporation, but also for the timing and sizing of the proposed mine facilities. It is reasonable that, based on the proposed mine plan, values such as runoff

reporting to individual entities such as the tailings impoundment will change along with the shape and configuration of the tailings impoundment. Insofar as the contribution of precipitation ("weather") to the tailings impoundment, the 340 acres reported is the final tailings impoundment footprint, not the incremental collecting surface area. The applicant used a proportional function in the water balance to determine the staged collecting surface area. Given the slope of the tailings impoundment berms, the surface or collecting area of the tailings impoundment is significantly less than the footprint area under pre-mine conditions. As for the reduction in size of the tailings impoundment in the later portion of the life of mine, this error has been brought to the applicant's attention. The applicant developed a revised water balance that has been provided in the EIS for Alternative V (see Chapter 2).

22. During the twenty-five years I have lived in this area, I have seen four major 'rain-on-snow' events. In January 1974, December 1980, December 1995, and February 1996. These naturally occurring wet periods cause hillsides to slump, roads, culverts and bridges to be damaged. ASARCO has not addressed the problem of excess storm water. You should not accept ASARCO's water plan unless it is secure enough to withstand a 100-year storm event. (1340)

The DEIS provides no detailed water balance analysis showing the public how much discharge there will be, what quality it will be and how and where it will be disposed of, during instances of heavier than average precipitation events, or during rain-on-snow conditions. (1526)

Quite recently, 11/24/90, this area of Montana experienced rain and snow melt that caused the streams to reach "bank full" and residents were preparing for flooding (Missoulian, 11/25/90). You cannot stabilize a tailings pile of this size in mountainous country that may get more than 100 inches of rain and snow. In fact, this area is located in a meteorological area known as Continental/Maritime (or Modified Continental) which is well known for incidents called "rain on snow events." In these events, a heavy late fall or early spring rain event falls on unstable snowfields, causing the snow to melt, fracture and avalanche, sending a torrent of snow, water and debris down narrow mountain valleys and chutes, such as those which are predominant in the project area and the entire Cabinet Mountains range. (1595)

All waste water ponds must have absolutely impermeable liners and sufficient capacity to contain any runoff that might occur in the worst case rain or snow incident. (1740)

Please consider the impact of all freak weather conditions possible and probable during that time frame. (2052)

The waste water plan says that "The Clark Fork River is much less susceptible to water quality impacts during high flow events, since there is a much greater dilution factor." Rather than being reassured by such statements, it seems we should be considering an impoundment design capable, beyond doubts, of containing waters of "extreme precipitation events", seepage, etc. (1196)

I am very concerned about the proposed ASARCO project on Rock Creek and its potential impact on water quality of the lower Clark Fork River and Lake Pend Oreille. Mining is a very environmentally destructive activity. Even where the best known and proven mining waste-treatment techniques are used, there is still no guarantee that a 200-year flood event will not wash mine tailings into adjacent streams, rivers and lakes. (1350)

Did any of the tailings systems deal with the potential of severe weather events, the type we had this past winter? (1459)

I want flood conditions (like February's) included in the base data. And, I want it to apply not just to the mine water, but to pond overflows and collapse as well. (2012)

ASARCO's plan doesn't seem to address pump failures, and does not give adequate consideration to large storms (that we get frequently) and 100 year flood conditions. (2021)

Experience in this region dictates that designs based on twenty-five year storm events, precipitation averages, and unspecified "BMP's" for a project of this size is a formula for eventual failure. Rain on snow and/or frozen soil, localized occurrences of much greater than the twenty-five year events, and regular recurrence of consecutive design storm events, often results in a Storm Water Protection Plan (SWPP) which may comply with the minimal requirements for the region, but are inadequate for the site specific climatic conditions. Yearly reminders of this has demonstrated that SWPP must design for the extreme, not the average. This is particularly true for a project of this size. (2084)

The DEIS does not take into account for 100 year flood events. In the water year of 1995-96, the Pacific Northwest has been hit by not one, but three 25 year flood events. Each one of these events created large amounts of runoff and sedimentation, the last event being the worst. The area is currently going through its annual spring runoff. That in turn makes four floods in one water year. This mine plan does not take into account for any meteorological event as this. This area is also at the "super-saturation point" for water holding capability. In essence, all ground water is filled to the limits. Transportation of suspended particulates, metals, and toxins would have a greater mobility factor than would normally be considered. Also, this mine plan does not take into account for surface movement of water from rain-on-snow events. This is a very common occurrence in the North Idaho- Western Montana region. What action plans does ASARCO have for containment of "blown out" tailings ponds? (2026)

The plans for treatment of storm water runoff don't seem adequate to handle pollution from probable storm events over the life of the mine and tailings. (2090)

Response: Only a summary of the storm water management plan and the water balance is contained in the final EIS. The detailed plan and water balance are on file with the agencies. The applicant's storm water management plan goes well beyond the legal requirements of designing for 10-year/24-hour storm events.

No data was collected from the various storm events mentioned in these comments. However, the water balance was developed as a monthly balance rather than as an annual balance specifically so the timing of precipitation and evaporation could be predicted with greater accuracy. Calculations for monthly snowpack accumulation and rain-on-snow events are also built into the balance. The water balance was run for projected dry, average, and wet years. In addition, the largest expected runoff event for the life of the mine (25-year/24-hour) was routed through the model on top of the peak snowpack and assuming 48-hour pump shutdown.

Mine facilities are designed to avoid the 100-year flood plain. Diversions would be constructed above the various facilities to route runoff from the mountains away from the facilities to existing streams and channels. This would reduce the amount of water that storm water ponds would need to handle to that generated on and within the mine facilities.

Under Alternatives III-IV, the probable maximum precipitation (PMP) event and its associated probable maximum flood (PMF) were used for design purposes. This was necessary because of the greater volume of water retained in the tailings impoundment under these alternatives. The PMP event is in excess of 15 inches of precipitation in a 24-hour period and is estimated in accordance with procedures outlined by the National Oceanic and Atmospheric Administration. However, under Alternative V, the 100-year/24-hour storm event (2.8 inches of precipitation) or the equivalent snowmelt was used for design criteria. All diversions and all storm water ponds except the mill underdrain containment pond would be sized to convey or hold the 100-year/24-hour event. All storm water ponds would be lined. Discharges from the storm water ponds would be limited to storm events that exceed the 10-year/24-hour event and must meet water quality limitations and restrictions specified in the proposed MPDES permit. If the discharges cannot meet the limitations, then the water would be routed either to the mill for use as process water or to the water treatment plant for treatment prior to discharge to the Clark Fork River. No other treatment is proposed for storm water. Refer to Chapter 4 of the final EIS for a discussion of the quantity and quality of the proposed discharge from the mine and the projected water quality of the Clark Fork River.

23. All of these issues must be clarified and corrected so the public and decision-makers have a chance to make sense of the storm water and mine drainage discharged from the project. Perhaps some of the confusion is caused by the unresolved questions regarding the final project design (e.g., mill site location). If it is confusing to state and federal regulators, it is near impossible for the public to adequately review the project. (1223)

Commenting on storm water discharges from the project is particularly difficult because the agencies and the applicant have not agreed on, or presented to the public, the final location of the mill facility (W. Fork site or the Forks site). This decision will have a direct effect on the volume and quality of storm water and mine drainage generated and its impacts on receiving waters. (1223)

Response: The EIS described Sterling's mine plan as well as a number of alternatives to Sterling's mine plan. A final design is recommended in the final EIS, but the decision maker ultimately decides which alternative will be selected. The preferred action alternative is Alternative V which includes a mill at the confluence mill site. The MPDES permit application was revised from Alternative IV (in the draft EIS) which also includes the confluence mill site to Alternative V. If the decision were made to permit the facility using the proposed mill site as described for Alternative II, then the MPDES permit would need to be revised accordingly. Nevertheless, regardless of the location of the proposed facilities, Sterling would be required to provide a final storm water management plan for the selected alternative to the agencies for review. This plan would be comparable in detail to the plan submitted for the proposed MPDES permit. In addition, all discharge from the mine would be required to meet effluent limitations in accordance with the MPDES permit.

24. Most of the precipitation in this area is in the form of snow; therefore the periods of highest runoff tend to occur in the winter and spring as rain, snow, or snow melt events (Westech 1993). Steep mountainous terrain in this area means that high runoff events at times of intense precipitation pose a threat to water quality and aquatic biota from exposed soils and the possible release of hazardous substances from the mine operations (Bob Burm, EPA, pers. comm. 1994). (1223)

Response: All water conveyance and retention structures would be designed to handle the 100-year 24-hour storm event. The sediment source reduction plan under Alternative V would help reduce sediment production from existing sites. Implementation of a spill prevention control plan would minimize the risk of spills reaching surface waters.

25. The storm water detention pond to capture run-off from sub-basins C and D is only capable of capturing run-off from a 10 year, 24 hour event. This does not provide for a worst case scenario in case of flooding. In order to assure protection of the watershed, a worst case scenario must be planned for. A worst case scenario probably is too severe but a 10 year storm has a 10% chance of happening in any one year and this is not good enough protection. A 100 year storm with a 1% chance of happening in any one year is a more appropriate level of protection. (2107 (2103)

Statement of Basis p. 2, par 2: Provisions are for a 10-year flood. What about a 50 or 100 year flood? Please explain your meteorological calculations demonstrating that current weather patterns reasonably preclude the chance of a 50 or 100 year flood within the life of the mine. (1288)

The S.O.B. at p. 3 states that "Storm water will report to a lined detention pond sized to contain a 10-year, 24 hour event. Storm water flow in excess of this amount will be by-passed to the West Fork of Rock Creek."

Sizing the detention basin and water conveyance structures to hold a 10-year, 24-hour event is inadequate. Accepted engineering practices require that these facilities should be sized to hold a 100 year rain-on-snow event (at a minimum, they should be based, or reflect, the recent flood events in Feb. of 1996). The DEIS' biological evaluation, at p. 17, states that "rain and snow events are a feature of this drainage which may cause particular problems for bull trout in [Rock Creek] drainage." INFISH also requires these sizing consideration. Thus, the storm water detention basins should be redesigned accordingly. (1223)

Storm water facilities design should be increased to a longer reoccurrence level, such as the 50 year storm event. (2067)

Response: Under the current regulations, undisturbed areas, roads, and disturbances not related to wastewater or wastewater production does not require the same storm water runoff control measures as do areas associated with waste or wastewater. Best management practices (BMP) are required to minimize erosion and sedimentation and will be required for outfalls associated with the routing of normal storm water runoff. Outfalls which require detention ponds will be designed to contain the runoff and sediment load associated with the 10-year, 24-hour storm, as required under the current regulations. Effluent limitations for discharge from storm water detention ponds have been established and are detailed in the proposed MPDES permit. These effluent limitations must be met in order to discharge. Design of conveyances and detention structures for storm water outfalls does not require design based on a "worst case" scenario. The applicant has committed to designing for a higher flow volume of a 100-year, 24-hour event for all storm water structures except the mill underdrain containment pond.

26. RWMP (ASARCO 1995) Page 3 - 8, para 2. Storm water management conveyances will be designed for the 25-yr/24-hr event. In the following sentences the detention ponds into which these conveyances will spill are only being designed for the 10-yr / 24-hr event. In reference to those very same ponds above, any potential leakage through the bottom of those ponds must be addressed as an outfall in the MPDES permit! (1780)

Response: As stated in the proposed MPDES permit, the detention ponds would be lined, properly maintained, and continuously monitored. No leakage would be expected to occur from the lined ponds. The applicant has committed to designing for a larger flow volume than required by law.

27. What will be the predicted effects of this project on Rock Creek and what is the biologic condition of Rock Creek now? It would be appropriate to supply the same amount/types of data regarding Rock Creek as was devoted to the Clark Fork River. (1344)(1636)(1674)

Response: Please refer to Chapter 3 – Aquatics for baseline conditions in Rock Creek. The impacts of the proposed project are disclosed in the final EIS, Chapter 4.

28. We've seen no contingencies in case one of those rain-on-snow events that happen every few years around here should happen and the walls of the impoundment fail. (1925)

Response: The proposed project is designed so that runoff from the surrounding area is directed away from the tailings facility. In response to comments related to the applicant's proposed tailings impoundment, the agencies developed Alternative V, which relies on tailings deposition as a paste. For Alternative V, there is no impoundment. Therefore, the potential for breaching of the tailings impoundment is mitigated. Furthermore, the storm water detention ponds associated with the paste facility would be lined and sized to contain runoff from the 100-year/24-hour storm event from the maximum active face. Water would be recycled at the mill

29. How will changes in operations of the Noxon and Cabinet Gorge Dams, and eventual dismantlement of the structures, impact water quality in the Clark Fork and Pend Oreille Lake. These projects are undergoing relicensing and there is no guarantee they will continue to operate as they do now. The DEIS must explore the many possible scenarios resulting from relicensing. (1936)

Response: Water releases from Noxon Rapids dam are regulated to track daily and seasonal demand for electricity and the limited storage capacity of the reservoir. Releases fluctuate from zero to 51,000 cfs (maximum turbine capacity) during a 24-hour period. Flow is reduced to zero daily for approximately 6 hours each day and longer on the weekends to allow the reservoir to fill. Therefore, when the reservoir is filling and flows are reduced, less water is available for downstream dilution, and instream concentrations below the proposed diffuser may be higher. If the project was not relicensed or it is at some time dismantled, the natural flow regime would be reestablished, and an improvement in water quality would occur relative to historic operations, at least for some portion of the day. Removal of the dams on the Clark Fork River would have no effect on the average rates of

flow though the river system. Removal of the dams would not impact the amount of ground water entering Lake Pend Oreille. Avista Corporation (formerly Washington Water Power) has not proposed removal of the dams in its license renewal application.

30. I am concerned with water that will be discharging from the adit, both during the operations of the mine and then for the decades after the mine is closed. Discharge from abandoned mines is a serious problem throughout Montana and Idaho now, and I believe that this issue needs to be carefully addressed. (1642)

Response: Abandoned mines in Montana predate the Metal Mine Reclamation Act (MMRA) of 1971. Mines which have been in operation since that time are required by their permit to protect water quality and are bonded to assure that reclamation and appropriate water treatment occur.

31. In light of the flooding which occurred during the time frame of February 5th - 13th, did anyone take baseline data on stream flows to determine what could have happened if the ASARCO project had been in full operation? Was anyone on-site during the high water event to record the effects of the flooding? How much of the corridor (especially the proposed pipeline section) was under water? (1991)

Response: No data were collected on these dates. The water management plan and water balance take into account the potential surplus of water resulting from wet years, as well as the potential water deficits caused by dry years. In addition, the storm water management plan accounts for runoff resulting from the probable maximum precipitation event (PMP). The probable maximum flood (PMF) resulting from the PMP is a very conservative value to be used in the design of storm water measures. The PMP event itself is in excess of 15 inches of precipitation in a 24-hour period. The PMP is estimated in accordance with procedures outlined by the National Oceanic and Atmospheric Administration (NOAA). The water balance was developed as an operational tool as an aid to water management.

WTR-301 Ground Water Flow and Quantity

1. EPA has concerns that the hydrological & aquatics baseline data and information is inadequate to properly determine characteristics of the pre-project hydrologic resources, and to provide the basis for evaluating, predicting, and measuring impacts, and basing an assessment of monitoring plans. The reviewer suggests that the Agencies specify the degree of accuracy and precision their analysis of impact is aiming at, and over what time periods (days, weeks, months, years) the precision and accuracy can be justifiably applied. (1214)

Response: Precision of the hydrologic impact analysis is predominantly limited by ability to predict mine and adit inflows. Also, prediction of tailings seepage rates and recovery efficiencies involve a degree of uncertainty. Given these factors, as well as frequency of data collection, impact assessments would most appropriately be applied over a time period of months to years.

2. How were the hydraulic conductivities in Tables 4-7 and 4-8 page 4-42, determined? By field measurement or estimates made without field measurement. ASARCO should explain. (1214)

Response: Both conductivities were measured in near-surface bedrock in the proposed tailings storage facility area. It was then assumed for purposes of modeling that bedrock permeabilities decrease by an order of magnitude per 1,000-foot depth.

3. There also should be water table data taken during all months of the year to trace the seasonal fluctuations in ground water volume. It would then be easier to manage the capture rate during spring runoff in order to prevent being surprised by large water flows. (1673)

Response: Even though the water table may fluctuate due to recharge, the hydraulic gradient would not. Quarterly ground water monitoring data are generally adequate for the intended purposes of monitoring.

4. Is it appropriate to state that the exploration adit will not affect existing spring flow, or tributary flow to Rock Creek (page 4-49)? It appears that this statement is based upon a single exploration drillhole that produced less than 5 gpm. Depending upon what season the spring flows were measured, even this amount could provide a reduction of up to 25%. Sources of impacts could include interruption of springs or other ground water sources that presently feed the drainage. These could be caused by changing pathways of ground water flow to surface flow because of tunneling and fracturing from blasting, and would be difficult to predict in advance.

Since the stream becomes perennial at the point of the springs, the existing data on flow is insufficient to determine whether future effects of mining would significantly decrease these spring flows and there is no proposed monitoring program that would detect an effect. It would appear that some of the water inflow into the adit that will eventually be treated and discharged to the Clark Fork River, presently may drain/flow into Rock Creek, but during operation of the mine, bypass Rock Creek, and possibly after mine closure. How carefully have the hydrologic connections between potential mine water inflow and Rock Creek water sources been investigated?

We note that change in surface water flows (particularly lowered flows during the low flow periods of the year) as the result of mining exploration or production, could have significant effects on the ecology of the Rock Creek basin, and are of potential concern. (1214)

Response: Although such a scenario is not anticipated, Rock Creek and springs and seeps in the vicinity of the mine and the evaluation adit would be monitored. Possible mechanisms to minimize loss of water from the mine include grouting of rock fractures within the mine. Despite similar geology, problems such as those indicated in this comment have not been observed at the Troy Mine facility. In addition, the final EIS discusses the potential impacts and relationship between mine inflow and base flow to Rock Creek.

5. Information on ground water movement and contribution to the Clark Fork River is not included in the DEIS. While the DEIS acknowledges some reduction will occur in ground water flows down gradient from the impoundment, due to extraction wells, no quantitative data is provided. Several private domestic wells with recorded water rights, including the Noxon Rapids Project domestic water well, may potentially be impacted by decreased recharge capabilities. (1779)

Response: Because seepage has been reduced under Alternative V, extraction wells may not be necessary although they are still proposed as mitigations. Nevertheless, impacts to domestic water supplies outside the proposed ground water mixing zone are not expected. In addition, domestic water supplies would be monitored for changes in water quality and availability either by an independent third-part contractor or the agencies. Should mine-related impacts occur, the applicant would be required to repair or replace the water supply.

6. Flow characteristics of ground water from the area of the tails pond to the Clark Fork have not been investigated and are a complete oversight of this document. Other than the plate 3-6 on pg. 3-35, no ground water hydrology study exists that can document potential hydrologic connections between the artisan springs in the tailings pond area and domestic water appropriations demonstrated on pg. 3-41. This entire spectrum of thought has been conspicuously absent from this DEIS document. (1780)

Response: Detailed information regarding ground water flow characteristics in the area of the proposed tailings facility is provided in Chapter 3 of the final EIS. Detailed information is provided related to lithology, hydraulic conductivity, and hydraulic gradient magnitude and direction. Information is also presented on maps in both plan view and cross section. The location of springs is also identified. For purposes of analysis, it is assumed that ground water in both the basal gravel and lacustrine hydrostratigraphic units eventually mixes with the alluvial aquifer associated with the Clark Fork River. Springs located in the area of the tailings facility footprint appear to be located where perched water above the lacustrine clay contacts the surface. Springs that are currently used for domestic purposes, appear to be associated with fractures along Government Mountain.

7. Page 3-32. The estimates for ground water flow towards the Clark Fork are very important. Without a clue as to how large the mixing zone will be around the facility it is hard to determine how soon pollution's plume would reach the Clark Fork much less the domestic wells that the agencies have so conveniently forgotten to address. (1780)

Response: The mixing zone has been defined and is explained in the MDPES permit in Appendix D. There are no anticipated impacts to downgradient domestic wells. However, should seepage impact those wells or reduce their flows, the applicant would be required under the Metal Mine Reclamation Act to repair or replace those water supplies.

8. The DEIS must analyze the impact that removal of such large quantities of water from the water table will have on ground and surface water resources. For example; will removal of this water impact the amount of ground water entering Pend Oreille Lake. (1936)

Response: The mixing zone has been defined and is explained in the proposed MPDES permit in Appendix D. No impacts to the Clark Fork River were predicted from the withdrawal of ground water from the pumpback wells under Alternatives II-IV. Under Alternative V, the pumpback wells would not be used unless ground water monitoring around the tailings paste facility showed a trend towards non-compliance with MPDES permit discharge limits. Therefore, there would be only minimal amounts of groundwater extracted from the alluvium adjacent to the river. No impacts are anticipated from the withdrawal of water as a result of monitoring under Alternative V. If removal of ground water under any action alternative reduced the quantity of water claimed by valid water rights, then the applicant would be responsible for replacing that water supply.

9. The tailing pond could leach harmful contaminants for generations adversely effecting the water quality of Lake Pend Oreille. (1263)(1481)

First of all, Rock Creek could become clogged and polluted. The tailings pond, which I doubt will support that long, will seep over 350 gallons of water per minute into ground water, destroying the quality of water in lakes and wells. (1941)

Why accept seepage from the tailings impoundment at a rate of 350 gallons per minute? And why not spend the time and resources to develop an effective liner so seepage of pollutants is not an issue or our legacy? (1951)

Major problem with this mine DEIS process that's occurred thus far. First of all, we've got a 340-acre tailings impoundment they're proposing that they do not think that they can afford to line. This tailings impoundment must be lined so that we know what kind of stuff is in it, and so that, that polluted water can be treated before it's put into the ground water. If the tailings impoundment is not lined, it's just going to leak into the ground water and eventually go down the river to Lake Pend Oreille. (1979)

Response: An estimate of the quantity and quality of seepage that could leach from the proposed tailings impoundment is discussed in Chapter 4. A tailings impoundment perimeter seepage containment and collection system would be constructed that would pump the majority of seepage laden ground water back to the tailings impoundment. Water quality in Lake Pend Oreille is not predicted to be impacted by the tailings impoundment under normal operating conditions. To further reduce the possibility of leaching, the Agencies have developed a tailings disposal alternative that relies on the surface deposition of a paste-like material and reduces seepage.

10. Rock Creek mainstem: Several statements in the draft MPDES permit and S.O.B. indicate that contaminated ground water seepage from the tailings impoundment will impact Rock Creek.

First, in their 1990 Petition for Modification of Ambient Water, ASARCO states that "ground water flow direction in the tailings impoundment and land application areas generally is towards the Clark Fork River. There is also a smaller component of flow towards Rock Creek (p. 13)."

Second, Figure 6-1 in the WMP shows that pumpback and compliance monitoring wells will be located between the tailings impoundment and Rock Creek. These wells are placed here for a reason, and the reader must assume it is to intercept seepage flowing from the tailings impoundment to Rock Creek.

Third, the potentiometric surface maps (basal gravel/shallow bedrock aquifer and the shallow unconsolidated sediments) presented in the WMP clearly indicate that at least a portion of the ground water flow system impacted by tailings impoundment seepage (Sub-basin 3) will recharge Rock Creek.

Fourth, the ground water mixing zone associated with the tailings impoundment extends to (and includes depending on whether the 500? or 700 mixing zone is used) the mainstem of Rock Creek adjacent to the tailings impoundment.

ASARCO's only attempt to refute the fact that tailings impoundment seepage will effect Rock Creek is the discussion in Section 8 of the WMP Evaluation of the Tailing Impoundment Seepage Study . In that discussion, data from only one monitoring well (MW-21) is used to conclude that "Rock Creek is perched approximately 40 feet above adjacent ground water levels, and therefore, is not recharged from ground water in the area of the proposed impoundment."

Other evidence presented in the Draft Permit, S.O.B., and elsewhere directly contradict this statement. At a minimum, the applicant must present more statistically meaningful and definitive geologic and hydrologic data to demonstrate there is no hydrologic connection between ground water associated with the tailings impoundment and Rock Creek. Without that absolute assurance, Rock Creek must be considered a receiving water for tailings impoundment seepage. (1223)

11. RWMP (ASARCO 1995) Appendix. D. 8.0 page 40. (a). Rock Creek being perched @ 40 ft. above adjacent ground water levels is nothing, and the contention that it is not recharged from ground waters in the area of the proposed impoundment mean even less. This 100 million ton tails pond will illustrate its own hydro-dynamics and

as was demonstrated recently at Troy, what is now will not necessarily be tomorrow. Also one well # MW-85-21 is not an appropriate example of a ground water level in a reach of almost 3000 ft. (1780)

The ground water potentiometric maps prepared for the proposal indicate without adequate basis that ground water will mainly; move towards the Clark Fork and not Rock Creek even though surface gradient moves towards the smaller stream. We believe the potential impacts to Rock Creek from the tailings impoundment have been understated because ground water movement in the area probably mimics surface flows more than admitted. At least we assume that until ASARCO proves otherwise, which it hasn't. (2058)

Response: Information from baseline monitoring of ground water indicate the water table elevation at this location (Monitoring Well MW-85-21) is up to 30 feet below the creek elevation. The final EIS also indicates that Rock Creek is a losing stream in the vicinity of the proposed tailings facility. Unless significant mounding occurs under the tailings facility, the water table elevation would not be expected to rise sufficiently for Rock Creek to become a gaining stream at this location. Under Alternative V, tailings would be deposited on the surface as a paste and seepage from the tailings facility would only be 20 to 30 gpm. A small component of this discharge possibly could migrate in the direction of Rock Creek, but would never enter the Creek due to the significant difference in water level elevation.

12. RWMP (ASARCO 1995) Page 5 -11, para.2. (a) Seepage that passes containment and capture system will contaminate downstream well water users. (b) 5.2.2 Water in the basal/shallow bedrock (this is potentially an absolute misnomer here / I do not believe they ever got to bedrock in the tailings pond area) does not recharge Miller Gulch or Rock Creek. How convenient! How possibly a lie! This potentially could hold the same element of surprise that John D. experienced at Stanley Creek with observations from the transducers. Needs more research.

RWMP (ASARCO 1995), b. 5.2.2 Impacts to surface water. As discussed in Appendix. D (sec.8), water quality changes are not anticipated in Rock Creek or Miller Gulch because ground water in the basal gravel/shallow aquifer does not recharge these drainages, and ground water in the lacustrine sediments will be intercepted by seepage collection ditches and capture wells. Where's the proof for this statement? Insufficient data to prove this.

RWMP (ASARCO 1995), Apndx. D. pg. 22, # 3.2 The measured depth to bedrock used in the analysis for vertical seepage in sub-basin 1 appears to have been generated from borings 88-3,4,5 & 6 , accounting for the 5-22 ft depth and the assumption that the seepage collection ditches along this perimeter will capture all vertical discharge. Interestingly MW-84-7 records bedrock at 58 ft. and MW-84-6 was drilled to 46.5 ft. without reaching bedrock. These two wells are behind the proposed perimeter capture ditches and indicate a downslope of bedrock into the tails impoundment. It is also interesting to note that bedrock depths to MW-84-12, MW-85-22,and MW-84-11 further into the impoundment are conspicuously NA. A problem that has been very apparent and criticized in much of the data generated for the Rock Creek DEIS. There is then a very real and almost deceptive quality to figure 2-14, "conceptual layout for impoundment seepage collection system," used on page 2-35 of the DEIS.

RWMP (ASARCO 1995), *(c).Page 41, para. 1. Why is there NO DATA documenting the hydraulic connection between the basal gravel / shallow bedrock ground water system in the impoundment area and the Clark Fork River? What kind of disclosure document is this anyway?*

Page 42. 241 gpm is an extremely conservative seepage for tailings pond water that will ultimately mix with the Clark Fork River. Along with the unknown geology of the Rock Creek site and the fact that the smaller facility at Troy leaks at a rate of 1170 gpm it appears that the D&M numbers are more a placebo than anything else. (1780)

The fourth paragraph discusses the various hydrostratigraphic units. The statement that the basal gravel is relatively dry during times of the year other than spring recharge events is confusing. Please provide an explanation of this, and how this affects the performance of the ground water trenches. (1214)

The last paragraph discusses the proposed seepage collection system. While we realize that the details of this recovery/collection system are yet to be developed, we have some concerns. For example, the basal gravel aquifer is stated to be 40-100 feet deep. Recovery trenches may not work at these depths. If the trenches do not work, it must be clearly understood that DEQ has the ability to require more ground water recovery wells. (1214)

Response: The basal gravel is the principal water bearing unit and is characterized by the higher hydraulic conductivity. A perimeter seepage collection system comprised of an underdrain, collection trench, pump-back wells, and monitoring wells would intercept seepage so that MPDES permit requirements outside the mixing zone would be met. However, to further reduce the possibility of leaching and respond to public concern, the agencies have developed a tailings disposal alternative (Alternative V) that relies on the surface deposition of a paste-like material.

The actual depth to ground water ranges from 2 to 35 feet below ground surface, and fluctuates seasonally about 8 feet. Highest elevations occur in the spring, because the aquifer is recharged from melting snow and rainfall. The ground water trenches are part of a perimeter seepage collection system that also includes an underdrain, pump-back wells, and monitoring wells. The trench would be most useful in areas where the base of the trench was keyed into bedrock. The trench would also intercept near-surface ground water at locations where the aquifer is deeper than the bottom of the trench; however, not all ground water would be collected. Therefore, there is a need for pump-back wells and ground water monitoring.

13. It's ridiculous to pretend that all the contamination can be contained and captured. The area in question is full of bed rock outcroppings and small drainages going every which way. Worst-case pump-back system shut-off/failure should be estimated and evaluated as a possible unacceptable risk. (1530)(2082)

Polluting domestic wells (mine & others) when the Clark Fork River is polluted with heavy metals, nitrates, ammonia, and processing chemicals from an unlined tailings impoundment seeping 850 gpm into ground water & that will a pumpback system that cannot detect or intercept all the seepage is not acceptable. (1635)

A final design needs to be completed with the required number and locations of collection and monitoring wells and pumps that will supposedly detect, intercept, and perpetually pump contaminated seepage back into the impoundment. (1675)

What is the certainty that the proposed system will intercept all of the seepage from the tailings impoundment? (1655)

Not only has ASARCO proposed, and the state tacitly approved, a tailings design that is vulnerable to catastrophic failure, but also the company wants to use it as a conduit to discharge pollution to ground water and surface water. The interception and pumpback wells are not adequate. There simply is too much distance between interception points and too much potential for discharge to escape. (2058)

The DEIS does not take into account the ability for leaching of minerals into ground water. Glacial till & flood plain rock is the predominant substrate underlying the drainage basin. The DEIS predicted that ground water would move at a rate of 16 feet/ day at the tailings pond. That is a considerable movement rate for water. The ability of the substrate to tie up the any toxins or suspended metals and/or sediments is virtually impossible. Seepage of the ground water into the Clark Fork River and Rock Creek would be eminent. (2026)

The proposed methods for avoiding serious pollution of ground water as a result of seepage from the tailings impoundment are inadequate and unacceptable. The design of the tailings impoundment does not include an adequate liner. Instead it is proposed that the tailings pond be unlined and that the sole method for reduction of seepage from the impoundment be a system of return pumping from a perimeter drain and extraction well system. For such a system to provide satisfactory protection to the ground water, it would have to capture essentially all of the tailings impoundment seepage. At the Rock Creek project that would very clearly not be the case. Witness the

DEIS statement (page 4-37) that seepage from the tailings impoundment to ground water within the mixing zone could approach several hundred gallons per minute. (1496)(1730)

Your agencies must disclose and analyze the effects of pollution of local wells and the Clark Fork River with heavy metals and other mine processing chemicals from seepage from the proposed unlined tailings impoundment which is to be controlled by an experimental pumpback system which cannot, even in the best of all worlds, intercept all the seepage. (1730)

The DEIS claims that the system of capture wells downgradient to the perimeter trench drain system would intercept ground water prior to leaving the permitted mixing zone, and return it to the impoundment. This system is expected to prevent changes in ground water quality outside of the mixing zone, and would prevent discharges of tailing impoundment seepage to Rock Creek, Miller Gulch, and the Clark Fork River. Review of the DEIS reveals that this statement is largely unfounded. The Agencies and ASARCO have an extremely limited understanding of hydrogeologic conditions in the vicinity of the tailings impoundment and have yet to design the seepage collection system. This is completely unacceptable from a NEPA/MEPA standpoint.

Page 4-64: the conceptual design for the perimeter collection system is based on preliminary hydrologic data. Data collected during additional site characterization would likely result in refinement of initial estimates of hydraulic conductivity and the hydraulic gradient.

Page 2-34 Additional geotechnical drilling to support the final design plans for the perimeter seepage collection system would determine the final design, number of well, depth of completion, spacing, and pumping rates for each of the wells in the capture well system.

Page 4-49: ASARCO's conceptual plan for the collection system consist of 11 capture wells. The seepage collection system could be designed to eliminate potential for migration of constituents to Rock Creek and the Clark Fork River. In less than ideal settings, the effectiveness of this technology may decrease. All of these statements demonstrate that the final design of the perimeter collection system has not been completed, and consequently, its effectiveness cannot be evaluated. Yet the DEIS concludes on p. 4-45 that: "The Agencies are confident that a perimeter seepage collection system can be properly engineered to prevent degradation to ground water outside an established mixing zone, to Rock Creek, or to the Clark Fork River."

We question how the Agencies can voice such confidence in a system that has yet to be designed. To comply with NEPA/MEPA, the Agencies and ASARCO must present the final engineering and design specifications for the perimeter collection system for public review in the revised DEIS.

Page 8 of the draft permit states that the "permittee shall submit plans and specifications for the tailings seepage recovery system and a workplan to propose additional capture wells." The efficiency of the tailings seepage recovery system is critical in evaluating the potential impacts to ground and surface water quality in the project area, yet the design specifications do not exist. Without a finalized design, it is impossible to evaluate the scope and quality of the discharges from the tailings impoundment to Miller Gulch, Rock Creek, and the Clark Fork River. (1223)

Page 4-45. "Leachate from the proposed Rock Creek tailings impoundment would probably percolate into ground water and change the quality of ground water below the tailings impoundment." "The agencies are confident...." Just what inspires the agencies confidence that long term degradation to waters outside the mixing zone will be avoided when the agencies have failed to require an adequate baseline be established? (1780)

Toxins held in suspension and accumulation in pump-back system into mine is extremely dangerous. The pump back system is not a good method of trapping any contaminants and replacing them back into the tailings pond. The substrate make-up does not allow for great trapping capabilities due to high alluvial and lacustrine content. The porosity of these soils is high making the fluvial movement high to extremely high.

With the soil profile that of the tailings impoundment area, any leachate that escaped the tailings pond would go directly into the ground water. As stated above, no pump back system will recover this contamination once it gets into the ground water. The trough system, placed directly below the tailings impoundment, will only trap a fraction of that leachate. The soil profile is that of alluvial, glacial till, and heavy lacustrine soils. All of these soils are made up of sands, gravels, cobbles, and small boulders. At one point in the DEIS, the estimated water movement in this type of soil was estimated at 16 ft./ hr. That is very rapid movement underground. Once these contaminated leachate hits the ground water, it will go directly into the Clark Fork River. ASARCO wants to use collection systems and mixing zones to address its pollution capability. ASARCO also believes that the "solution to pollution is dilution". The Kootenai Tribe of Idaho does not. (2026)

Polluting domestic wells (mine & others) when the Clark Fork River is polluted with heavy metals, nitrates, ammonia, and processing chemicals from an unlined tailings impoundment seeping 850 gpm into ground water & that will a pumpback system that cannot detect or intercept all the seepage. (1635)

While details remain inappropriately sketchy at this time, ASARCO is proposing to employ a system of wells to detect and intercept tailings impoundment seepage. There has not, however, been sufficient study of the underlying geology of the area to determine paths of ground water flow. Analyses of the number of needed monitoring wells and pumps, their depths, and locations is needed, as well as evidence that such a pumpback system will actually work. (1638)

ASARCO proposed to construct an unlined tailing impoundment for permanent disposal of mine tailings. It is proposed to use underdrains, perimeter recovery trenches and ground water collection wells to control the escapement of contaminated ground water. Experience has shown in the Coeur d'Alene River basin that unlined tailing ponds continually leak contaminated ground water. These areas are difficult to remediate, and the contamination of ground water is difficult if not impossible to control (1991)

The S.O.B. at p. 2 states that "ASARCO proposes to construct an unlined tailings impoundment for permanent disposal of mill tailings." "Seepage of effluent from the impoundment to the ground water system will be controlled by a seepage collection system consisting of underdrains, perimeter recovery trenches and ground water capture wells."

The seepage collection system has not been designed, therefore it cannot be evaluated to determine if it will in fact operate as effectively as predicted. Again, the MPDES permit application is supposed to describe the facility. Since an alternative has not been selected, and the design specifications have not been submitted, the project cannot be adequately evaluated.

The S.O.B. at p. 19 states that "if pollutants migrate beyond the mixing zone at concentrations greater than the allowed limits additional pumpback wells will be installed to maintain compliance with criteria of Table 4. The seepage collection system will minimize potential impacts to beneficial uses."

What if the additional wells fail to provide the necessary protection for ground water supplies? It is highly unlikely that any number of wells will be able to capture all of the contaminated ground water. Thus, the only adequate way to protect beneficial uses of surface and ground waters is to install a multi-layer synthetic liner system beneath the tailings. As noted above, the word "minimize" admits that all beneficial uses will not be protected - a violation of state and federal requirements. (1223)

The idea of sinking wells around the 340 acre impoundment and pumping the polluted ground water back into the impoundment is a joke. Since when is ground water laying in a pool waiting to be pumped away. It could well be a stream flowing directly into the Clark Fork River. Who is going to keep the pumps running long after the ASARCO mine closes? (1288)(1336)(1504)(1530)

The system of monitoring wells and repumping the seepage from the tailings pond seems questionable. We are concerned about the effectiveness of this system for protection of down stream water quality. How long would the wells be maintained? (1384)(1429)(1371)(1607)

We have an experimental pumpback system for the tailings. Again, pumps that have to be maintained for the life of the mine and -- and in perpetuity after the mine closes, at least 80 years. Who's going to pay for the maintenance of these systems? (1957)

TI monitoring should be based on statistical analysis, taking into account possible affects of channeling of aquifer. The number of wells and monitoring frequency should be sensitive to non-homogeneity of aquifer & substrate (1404)

Has the pumpback system to deal with seepage been successfully employed elsewhere? How will the continuation of pumping for "decades" following the mine's closure be guaranteed? (1638)

RWMP (ASARCO 1998) Appendix. D. page 35, 6.0 para. 4. "Additional geotechnical drilling to support the final design plans for the perimeter seepage collection system will determine the final design and spacing of the impoundment capture wells". pg. 37, par. 1. "The ability to effectively recover seepage through the capture well system will depend upon local hydrostatigraphic conditions." Is it upon this unknown quantity the DEQ categorically claims that: "the department believes that a seepage collection system, properly constructed, operated and maintained, can be effective in preventing degradation of the potentially effected aquifers?" (1780)

I was struck by what the expert panelists could not tell me about the actual mitigation for seepage in the tailings impoundment. The Montana DEQ and other panelists said they simply don't know how much contaminated ground water and tailings seepage will escape to the Clark Fork River. The proposed eleven test wells and test frequencies could be woefully inadequate. I was told that if contamination was detected, they would probably have to drill a lot more wells and "pump like mad." This is in real contrast to the statements of ASARCO's Rock Creek project manager, Dave Young. He contents that just over 300 gallons per minute will go into the impoundment's underdrains and that "40 gallons per minute" is all that will impact the ground water. (1680)

The impoundment should probably at least be lined in the upper portion, because it's pretty close access to that sand and gravel aquifer, on page 2-32 of the Impact Statement. And that sand and gravel aquifer sits right on top of the bedrock. And that's where most of the water will go. It will travel, move faster, through that layer. And our people downstream from the impoundment that have wells -- I think that will probably have problems. That's the layers that you're going to see it come through on. Without a liner I believe ASARCO should at least double the number of ground water capture wells. (1270)

Install additional groundwater monitoring wells! (2071)

Response: A perimeter seepage collection system would be constructed that would intercept poor quality water within the mixing zone and return this water to the impoundment under Alternatives II-IV for reuse in the mill circuit or for treatment before discharge. Impacts to water resources in the project are discussed in Chapter 4 of the EIS.

Case studies and operating site-specific examples of how to properly design hydraulic barriers using pump-and-treat technology to contain and remediate hazardous waste sites are well documented in scientific literature and known in the waste management community. Pump-and-treat technologies have successfully been used at other mines in Montana. An example is the Golden Sunlight Mine near Whitehall, Montana.

There is no need to conduct further studies until it is determined whether the proposal will be permitted. There is sufficient baseline and technical information to develop conceptual designs; final designs are not required for EIS analysis. The 11-well system is considered a conceptual design that would most likely be modified as more intense hydrologic testing was done after and if a decision to permit the mine was made. Modifications to the conceptual design could include increasing the number of wells, changing the spacing of wells, and varying the discharge rates. A down-gradient

monitoring system would be installed to monitor system performance and to provide data to further refine the system design if necessary. This observational approach to optimizing system performance is standard practice at many existing hazardous waste sites. In addition, seepage flow has been significantly reduced under Alternative V to a maximum of 20-30 gpm and the pumpback system would only be installed as a contingency measure if needed. Variations in hydrologic conditions beneath the tailings storage facility may result in actual seepage rates (all alternatives), capture rates (Alternatives II-IV), and interception rates (underdrains, etc. under all alternatives). Hence, a monitoring program as planned.

Note that while recharge to the basal gravel unit has a seasonal component, the ground water collection system would still function if water was seeping through the tailings facility under any of the action alternatives. See also comments in WTR300 for other comments regarding surface water quantity.

14. Page 2 of the S.O.B. also states that "seepage not collected from the perimeter collection system would mix with area ground water. Compliance with Montana water quality standards would be assessed at monitoring wells located down gradient of the collection system."

Where will the tailings impoundment effluent that is not captured end up? Page 2 says that "the seepage recovery system will minimize the volume of effluent downgradient of the capture system," not eliminate it. Therefore, the applicant admits that some volume of contaminated tailings seepage will reach surface waters. As noted above, traditional NPDES permit requirements must be established for these discharges of tailings seepage to Rock Creek, Miller Gulch, and the Clark Fork River. The draft permit's lack of inclusion of compliance outfalls to these waters fatally flaws the application.

The S.O.B. at p. 2, DESCRIPTION OF OUTFALLS, states that "because of the uncertainties involved in designing and implementing the capture system, compliance with water quality standards will be monitored in compliance wells located downgradient of the capture system and mixing zone. No numeric effluent limits will be placed on seepage from the impoundment." As noted above, this is an unacceptable approach - the Clean Water Act requires that such discharges be regulated as traditional point sources. (1223)

Response: As discussed in the draft and revised draft MPDES permit and the EIS, seepage from the impoundment will mix with area ground water, which ultimately mixes with the Clark Fork River alluvial ground water system. The discharge permit would be issued pursuant to the Montana Pollutant Discharge Elimination System (MPDES), which authorizes the discharge to ground and surface water.

The permit establishes compliance points and monitoring requirements in ground water below the facility. The permit considers the seepage as a point source discharge to ground water and regulates the discharge accordingly. The Clean Water Act does not regulate discharges to ground water.

15. The plan states that even if the seepage collection system at the tailings impoundment works as planned, 10% of the seepage will escape untreated. What pollutants will this 10% carry, and what are the cumulative effects of the untreated discharge? (1248)

Response: Seepage that bypasses the underdrain and cutoff trench would migrate downgradient and mix with ambient ground water in an approved ground water mixing zone. Pump-back wells would be located at the fringe of the mixing zone and would return all seepage back to the impoundment for reuse or treatment before discharge under Alternatives II-IV. There are no expected cumulative impacts to ground water from tailings seepage outside the mixing zone under any of the action alternatives.

16. There is no estimation of how much seepage will NOT be intercepted by the tailings impoundment pump-back system and what its quality will be. (1526)

The potential for seepage from the impoundment is obviously great when you consider the amount of water being pumped into it with the tailings slurry alone. The ground water capture wells will be critical for removing the threat of dissolved and adsorbed metals escaping to the environment. The efficiency of these wells is not discussed in the DEIS. What is the potential for removing all of the ground water? There also is no discussion of how the efficiency will be determined. (1673)

Response: Many hazardous waste sites make use of hydraulic barriers that are effective at capturing ground water contamination. With a sufficient number of pump-back wells installed, the system would be nearly 100 percent effective. Monitoring would be required to ensure the system was operating properly and effectively.

17. The seepage collection system, page 2-34, is said to continue to operate until water quality standards are met. If that is the case, the seepage collection and the pump back system would have to operate well beyond a half a century or even into a century from this point in time. The expected life of the mine is that of 30 years, "several decades" could mean any where between 20 to 60 years, and tear down of these pump back systems would take as much as 20 years including the reclamation time. Is ASARCO guaranteeing the Kootenai Tribe of Idaho that they will be around in the 22nd Century to ensure that all cleanup will occur? In the Tribe's vision, it will not happen. (2026)

Response: DEQ would require a bond in the amount necessary to cover maintenance costs associated with operation of the pump-back system in case Sterling did not maintain the system. To reduce the possibility of leaching, and to address other concerns, the agencies developed Alternative V that relies on the surface deposition of tailings as a paste-like material.

18. Page 4-37: states that an engineered perimeter drain and ground water extraction well system would pump seepage water back to the tailing impoundment, and would prevent changes in ground water quality outside of the mixing zone, or would prevent discharges of tailings impoundment seepage to Rock Creek, Miller Gulch, and the Clark Fork River. Which one is it? The water management plan admits that some seepage will move past the perimeter drain and pump back system. Therefore, changes to ground water quality outside of the mixing zone would not be prevented. The question is will they be diluted back to baseline before they reach the surface water streams. (1223)

Response: The text should have read "and would prevent." Limitations on ground water quality at the edge of the mixing zone are provided in the MPDES permit found in Appendix D.

19. The discussion on impoundment seepage on page 4-45 should include a discussion of the potential for contaminated ground water to flow beneath the capture wells located at the downgradient end of the mixing zone. There is very little detailed information about the stratigraphy of the glaciofluvial sediments below the proposed impoundment site. With high hydraulic conductivities and velocities in the unconsolidated sediments the potential for contaminated ground water to move quickly through this aquifer is high. Uncertainties regarding dewatering of the impoundment and seepage are stated to exist (page 4-44). (1214)

Response: Ground water would not be expected to flow beneath pump-back wells if the wells are fully penetrating. The final pump-back well system design would need to incorporate fully penetrating wells. Chapter 3 of the EIS summarizes stratigraphy in the proposed impoundment area. Additional detailed information can be found in numerous geotechnical reports on file at DEQ.

20. Because of tunneling below the water table, there are severe risk of toxic contamination of ground water as well. I am not at all confident that ASARCO's plans for mitigating this are scientifically sound. (1481)

I do not believe that any plan thus far has put forward a design that is proven to avoid water contamination of the area. According to statements made at the Sandpoint Hearing there is no control over seepage and eventual channeling underground. (1378)(1952)

SOB Page 19, paragraph 4: Pump-back wells "installed to maintain compliance with criteria "are non-science." Hundreds would be needed to cover the probability that channels will form in the basal gravel aquifer. Page 20 section 9: (1404)

TI monitoring should be based on statistical analysis, taking into account possible affects of channeling of aquifer. Number of wells any monitoring frequency should be sensitive to non-homogeneity of aquifer & substrate (1404)

Response: The process of channeling through the face of an earthen dam is possible if the water level surface in the dam would be sufficiently controlled in the impoundment embankment under Alternatives II-IV. The problem would be evident and would express itself as a seepage face. In this case, channeling could cause failure of the dam if the problem was not corrected. Underground channeling would not be possible because the ground water and seepage velocities would be low and there would be physically no room for potentially eroded material to move in an underground environment. A ground water monitoring plan would be approved that would provide sufficient data to enforce the MPDES permit.

21. After mine closure Seepage from the tailings impoundment will still have to be collected by the ground water capture wells according to the last paragraph on page 4-44 under the Tailings Impoundment Seepage heading. Under the same heading it also states that the seepage from the impoundment would gradually decrease "because tailings water would no longer be stored..." and a "steady-state" would be reached. How is a "steady-state" going to be achieved if the ground water capture wells are still in operation? Evaporation would definitely occur to reduce the volume of water in the tailings pond. But, how are the tailings going to dewater? Evaporation does not seem to make sense since the tailings will be 300 feet high and will be retaining over 200 gpm of water over 30 years according to table 2-2. The amount of water stored in the tailings alone would have to be allowed to seep out of the impoundment and escape the ground water capture wells in order to reach a steady-state. Will the retained tailings water be allowed to seep in order for the steady state to be achieved? It seems to be even more necessary to have another water treatment plant in order to treat the impoundment water. According to the DEIS, diversion ditches would be placed around the upgradient perimeter of the impoundment facility in order to divert (1673)

On page 2-34 of the DEIS it states "After mine closure, tailings impoundment seepage would continue and would diminish with time. It is estimated that the tailings impoundment would drain for several decades before reaching a >steady state= condition." This comment is a loaded gun. The comment itself is admitting that the proposed tailings impound will have seepage. Contamination will be occurring. Secondly, define "several decades". To the Tribe, that indicates that ASARCO blatantly admits that they will continue to be polluting the Rock Cr. watershed and destroying the ecosystem within. Also, the Tribe would like a definition of "steady-state". Current conditions, without human intervention, is the Tribe's definition. Any disturbance by means of human disturbance is not "steady-state". (2026)

Response: The EIS discloses that the proposed tailings impoundment under Alternatives II-IV would seep. For the proposed impoundment, seepage water would be contained by a perimeter seepage collection system. To reduce the possibility of leaching, and to address public concerns, the agencies have developed Alternative V that relies on the surface deposition of tailings as a paste-like material. "Several decades" refers to a period of time that is at least 20 years. "Steady state" is a hydrologic term that refers to a situation, either natural or influenced by people, where inflow equals outflow.

Achieving a steady state depends upon the rate of infiltration into the tailings mass, which would decrease significantly after the surface has been recontoured to promote runoff and the reclamation effort has resulted in revegetation of the area, which would promote evapotranspiration. The net result would be a decrease in the rate of seepage out of the impoundment, until a new steady state was established. Ground water monitoring and water treatment activities would continue until MPDES discharge requirements have been met.

22. Several factors combine to make a tailings impoundment of this size and location unacceptable. Contaminated water from an unlined (current plan) impoundment will seep into ground water and into the nearby Clark Fork River. How will the pump-back system prevent this unless the aquifer is pumped dry? Without estimates of evaporation rates, how is it possible to determine from the current plan the potential for surface overflows of contaminated water entering directly into the Clark Fork? This must be evaluated on a monthly basis, relevant to Sanders County climate records (precipitation and evaporation). (1288)

Response: The perimeter seepage collection system, which includes pump-back wells under Alternatives II-IV, would limit contamination to a permitted ground water mixing zone. Impacts to water resources outside the permitted ground water mixing zone are not predicted. Hydraulic containment systems that use pump-back wells work because they cause stagnation or reversal of the hydraulic gradient without causing excessive drawdown. Therefore, the aquifer should not become dewatered. Decant water in the tailings impoundment would be pumped back to the mill for reuse, or would be treated and discharged. The impoundment under Alternatives II-IV would be designed to temporarily store the largest storm events expected in Sanders County, and no direct discharge from the impoundment to the environment is proposed. To further reduce the possibility of leaching, the agencies have developed Alternative V that relies on the surface deposition of tailings as a paste-like material.

23. The way the seepage issue is addressed is vague. It would be helpful if explanation was given to how the ground water capture wells will be evaluated instead of leaving it up to the reader to figure it out. As the DEIS stands now, I do not feel the issues of seepage management are addressed to the extent they need to be to provide an accurate assessment the seepage related environmental impacts. (1673)

Response: Before mine development, additional observation wells would likely be installed within the ground water mixing zone and downgradient of the perimeter seepage collection system to monitor system performance. The exact number and location of the pump-back wells would be determined after more extensive on-site field data are collected. The plan would be reviewed by the agencies to ensure that seepage complies with MPDES limits.

24. RWMP (ASARCO 1995) Appendix. D. page 38, 7.0 para. 1. "The capture wells will serve as monitoring wells until significant water quality changes occur from impoundment seepage." This is akin to waiting until the horse is out of the barn to consider closing the door. All capture and monitoring wells must be in place before any constructural disturbances are allowed at the proposed tailings impoundment site. Only then can the capture wells be used initially as monitoring wells. Otherwise what vehicle is to be used to determine pollution if one day the capture wells are monitoring and the next they have to be used for their intended purpose? How long would it take to mobilize for the additional wells? (1780)

Response: Operational water quality data would be statistically analyzed using a trend analysis. Mobilization would only take several days to weeks. There would be additional downgradient monitoring wells.

25. RWMP (ASARCO 1995) page 38, 7.0 para. 2. Monitoring wells located 1000 ft. downgradient of the impoundment footprint for sub-basins 1 & 2. This amounts to a de-facto extension of the mixing zone by an additional 250 ft. By the time contamination is located by the wells it is already too late. This is NOT EVEN remediation, this is collusion!! At the minimum monitoring wells should be located at 700 ft. for sub-basins 1 & 2, and at whatever is the shortest distance 100ft. away from Rock Creek. This latter is critical because the mixing zone extends across Rock Creek in some instances. (1780)

Response: All pump-back (Alternatives II-IV) and monitoring wells (all action alternatives) would be installed and in place before construction. The number and locations of monitoring wells would be presented in a final monitoring plan that would require review and approval by the agencies.

26. How many wells are used to construct Figure 3-8, page 3-37? It appears that only 3 wells were used. If so, how accurate is the map? (1214)

Response: Three wells were used to construct a potentiometric surface map for the mill site. Water level measurements are accurate to 0.1 foot. This level of detail is adequate to calculate the hydraulic gradient and identify baseline water quality for the proposed mill site.

27. The pump-back plans do not show water treatment then discharge. This would be more favorable than recycling contaminants and continuously providing more liquids for leachate generation. Tailings should be de-watered, not continuously saturated. (2082)

Response: Under Alternatives II-IV seepage from the impoundment would either be returned to the surface of the impoundment or sent back up to the mill for reuse as process water. However, when mining and milling are completed there would be no need for additional water at the mill. The water stored on top of the impoundment would be sent to the waste water treatment plant for discharge to the river in order to facilitate dewatering of the tailings. That water, in addition to the mine discharge, would have to be treated to meet limits in the MPDES permit and the impacts to the Clark Fork River would be no different than was described in Chapter 4. The water would also be used for irrigating reclaimed sites and controlling dust on the impoundment. There would be no stored water on the tailings paste facility under Alternative V and this alternative was designed to reduce the amount of seepage from the tailings storage facility. If the pump-back wells were needed for mitigating impacts beyond the mixing zone then that water would be handled in the same fashion as the seepage water stored on the impoundment surface under Alternatives II-IV.

28. Tailings Impoundment Seepage: "If suitable," is unacceptable wording. Say something meaningful or delete. E.g. what alternatives will be used if the clay material is unsuitable? (1288)

Response: Soil material would not be used if the hydraulic conductivity was determined to be too high. Off-site clay material would be brought in and additional compaction could be used to help reduce infiltration and seepage.

29. RWMP (ASARCO 1995) Appendix D. pg. 19, # 3.1.(2) It is incongruous that we call the assumptive clay layers in the tails impoundment the "liner" for this facility and then go on to project that the liner will eventually leak at the rate of +351 gpm. Without knowing the exact geologic features beneath the impoundment that may be an extremely low rate to begin with. (1780)

Response: The estimate of seepage presented in the EIS was based on all available geologic and hydrogeologic data. Variations in hydrologic conditions beneath the impoundment may result in actual seepage rates and capture efficiencies that are different than predicted. To address public comments related to seepage, the Agencies developed Alternative V. Under this alternative, tailings would be deposited as a paste, thereby reducing seepage to 20-30 gpm.

30. RWMP (ASARCO 1995) Appendix. D. pg. 20, # 3.1 What exactly are the seepage loss control systems referred to? (1780)

Response: The systems include underdrains, perimeter trench drains, and the pumpback wells. Please see Alternatives II and IV descriptions in Chapter 2 for more information.

31. As pointed out by a hydrologist at the hearing, it is virtually impossible to place enough pumps, much less in the "right" positions to pump this seeping water. Not lining the pond only makes it more impossible. Suppose that the pond were lined and that there were enough pumps: what is the goal? To evaporate 1,000 gallons per minute?? Where will the contaminated water be discharged? Simply put, the full water plan must address proven and guaranteed (with the highest probability) techniques for avoiding any and all ground and surface water contamination. (1926)

Page 4-49: states that less than several hundred gpm of captured ground water would be treated. This statement is misleading. ASARCO does not propose to treat any of the water captured in the recovery system, they only propose

to pump it back in to the tailings impoundment where it will seep out again. This is an unacceptable scenario that will require perpetual bonding. (1223)

Efforts should be made to sample and treat the water captured in the underground leakage/seepage capture wells. Why pipe it back, contaminated, to the same source? Why not treat it and then release it? (2021)

The "Pump Back System" makes assumptions of contaminant capture efficiencies, impoundment capacity and mixing/dilution which are not borne out by adequate site specific analysis or risk assessment. It would appear the point at which the demand on the pump back system will be greatest is when the mine approaches closure and after. At its' point of highest capacity and concentration, with twenty years of recycling captured contaminants back into the impoundment, the plan appears to be relying on a form of perpetual motion. (2084)

Seepage from the tailings impoundment dam may alter ambient ground and surface water quality. (1595)

Response: The proposed water management plan has been determined to be feasible. Monitoring of the system would provide data that would evaluate whether additional pumpback wells are necessary to further contain contamination under Alternatives II-IV. The captured water could be held temporarily in the impoundment under Alternatives II-IV, but then would be recycled in to the mill water circuit or treated to remove contamination and then discharged. After closure, excess water would be routed to the treatment plant for treatment and discharge to the river to aid in dewatering the tailings. Also refer to the analysis of Alternative V in Chapter 4 - Hydrology.

32. Therefore, we request the Agencies develop an alternative that requires lining the tailings impoundment to prevent and/or minimize seepage and associated ground water degradation, and that they present this alternative in the revised DEIS. (1223)

We believe that construction of an unlined tailings impoundment (designed to seep) on top of unconsolidated alluvial, glacial or lacustrine deposits will have a high probability of tailings seepage entering and contaminating ground water. Reliance on a seepage collection system and capture wells to prevent ground water contamination is problematic in this type of hydrogeologic setting. We believe the Agencies should require ASARCO to complete a design option and cost for a lined impoundment for review. We agree with the approach identified for Alternatives III and IV that an agency technical panel should review the proposed design, and investigate use of a liner at the tailings impoundment. We are concerned, however, that ASARCO's response to EPA's comments on the Water Management Plan indicated that they do not consider a lined impoundment to be a viable alternative due to engineering and cost constraint related to the steep, irregular topography within the impoundment footprint.

There is a trade-off between risk of ground water contamination and costs to line the impoundment. We are concerned that it may be difficult for the Agencies technical review panel to carry out a meaningful investigation of lining the impoundment if ASARCO does not consider that to be viable. Will the Agencies give serious consideration to lining the impoundment if ASARCO does not consider that to be economically viable? (1214)

Line the tailings impoundment to reduce contamination of ground water, Rock Creek, the Clark Fork River and Lake Pend Oreille. (P1)(P2)(1220)(1223)(1255)(1280)(1290)(1298)(1309)(1327)(1331)(1330)(1346)(1304)(1301)(1371)(1373)(1384)(1401)(1418)(1423)(1426)(1429)(1433)(1439)(1443)(1446)(1447)(1461)(1481(1510)(1590)(1603)(1607)(1616)(1654)(1666)(1697)(1718)(1719)(1733)(1735)(1736)(1740)(1750)(1755)(1776)(1918)(1928)(1929)(1948)(1952)(1955)

A liner should cover at the very least the portion of the tailings area that is not covered by lacustrine clays. The number of ground water capture wells should be at least doubled. (1270)

ASARCO doesn't want to line the tailings impoundment or remove the tailings. When the project is finished these decisions, if approved, could lead to habitat loss and environmental damages to Rock Creek and to the Clark Fork River. (1714)

The small outside tailings storage should be lined with an impervious barrier, and provisions for water collection, sampling, and treatment of the outside storage specified. (1501)

Please ensure adequate lining fabric is placed under the slash on the entire project. (1500)

Tailings impoundment will always leak, no matter what sort of plastic shield they use for the ground. (1442)

Even if you line the tailing pond can you guarantee that there will be no contamination? (1510)

How completely bizarre is this scene of an unlined tailings pond with several pumps pumping the seeping water back on top of the pile! (1926)

Page 3-12. This eroded and fractured rock emphasizes the porous nature of areas within the proposed tailings pond, and the need for a lined facility. (1780)

A lined tailings impoundment with a leachate collection and treatment system is an alternative design that would significantly reduce the total volume of seepage to the underlying ground water system, and therefore must be considered. Forest Service regulations, 36 CFR 228.8, require the Agency to minimize adverse environmental impacts, and a double synthetic liner on the tailings impoundment will help fulfill this requirement.

The DEIS suggests numerous times that (1) reducing seepage from the tailings impoundment to ground water is needed, and 2) that a synthetic liner system is a way to achieve it. We believe designing the impoundment without a synthetic liner violates NEPA/MEPA and federal and state mining and environmental quality regulations. Synthetic liners for tailings impoundments and other mine waste facilities are commonly used in large-scale mining operations. While their effectiveness is far from of 100%, double-layered synthetic liners with a leachate collection system have been shown to reduce the rate and volume of contaminated water discharged from large mining facilities. Quite simply, a liner for this impoundment is justified by law and makes common sense. Therefore, we request that the Agencies (1) require ASARCO to collect comprehensive, site specific geochemical data now and to present it in the revised DEIS and 2) complete a detailed alternative analysis of a lined tailings impoundment in the revised DEIS. As noted above, the synthetic liner system is not only required to be fully analyzed in the DEIS, it must be a permit condition under agency laws and regulations, including the Forest Service's 1897 Organic Act. (1223)

The benefits of a synthetic lined tailings impoundment using best available and proven technology must be considered in the DEIS. (1638)

EPA recommends very strongly that the tailings impoundment be lined. We believe that construction of an unlined tailings impoundment (designed to seep) on top of unconsolidated alluvial, glacial or lacustrine deposits will have a high probability of tailings seepage entering and contaminating ground water. Reliance on a seepage collection system and capture wells to prevent ground-water contamination is problematic in this type of hydrogeologic setting. We believe the Agencies should require ASARCO to complete a design option and cost for a lined impoundment for review.

We agree with the approach identified for Alternatives III and IV that an agency technical panel should review the proposed design, and investigate use of a liner at the tailings impoundment. (Page 2-70). We are concerned, however, about the statement on page 4-64 that ground water quality impacts would be minor to moderate. EPA believes that the data in Tables 4-11, 4-12, and 4-13 evidence that the potential for ground water contamination exists (e.g., ammonia, nitrate, copper, zinc), and that, given that the unconsolidated alluvial, glacial or lacustrine deposits at the impoundment site, an engineering study to evaluate use of a liner should be carried out.

We are concerned about the inconsistency between the statement on page 2-70 that further investigations of lining the impoundment would be carried out if preliminary rock and tailings characterization data suggest that these materials would contribute to acid rock drainage, and the response to EPA's comments on the Water Management Plan that indicate ASARCO "does not consider a lined impoundment a viable alternative due to engineering and

cost constraint related to the steep, irregular topography within the impoundment footprint." We are concerned that it may be difficult for the Agencies technical review panel to carry out a meaningful investigation of lining the impoundment if ASARCO does not consider that to be viable.

There is a trade-off between risk of ground water contamination and costs to line the impoundment. We are concerned that it may be difficult for the Agencies technical review panel to carry out a meaningful investigation of lining the impoundment if ASARCO does not consider that to be viable. Will the Agencies give serious consideration to lining the impoundment if ASARCO does not consider that to be economically viable? (1214)

Page 2-24: states that residual waste from ore processing would be disposed above ground in the tailings impoundment. The expected amount and toxicity of these residual waste must be fully analyzed and presented in the revised DEIS. Because these wastes will be disposed of the tailings impoundment is another important reason to require a synthetic liner system.

Page 2-28: states that some chemical reagents would be disposed with the tailings. This is another reason to install a synthetic liner system. What effects will these reagents have on ground and surface water near the tailings impoundment? (1223)

Where is the data for determining that a tailings impoundment liner will not be satisfactory? How will stability be effected if a tailings impoundment liner is used? This has not been adequately addressed in the DEIS. (1438)

What if the tailings impoundment were lined? The reader can only raise questions here, again because the DEIS contains no data on evaporation rates, except combined with Dust sup, rendering the data useless. Judging from the inflows to the impoundment, seepage is vital to water-level stabilization, and evaporation could not balance inflow. It is, therefore, correct to say that a lined impoundment would not contain the massive quantities of waste material projected to result from the mine, and a lined impoundment would be subject to regular overflows? p. 2-130 states that tailings impoundment seepage to Rock Creek, Miller Gulch, and the Clark Fork River would be nearly eliminated. What does nearly mean? (1288)

We hear about a liner for a tailings impoundment. ASARCO says it's too expensive. Kathy Johnson from the Division of Environmental Quality says it won't work. It's not technically feasible. This has been discussed in the press. Why isn't it in the document where it's supposed to be? There is no discussion in the document about a tailings liner. We could have the facts and figures in there, in an alternative, that's -- that states this before the public, a disclosure. It should be part of the alternative. (1957)

My only objection to this mine is the fact that it seems to be based on let's deal with the problems later type of engineering. We're going to put in monitoring wells so that we can start addressing the problems that we have created underneath the ground, rather than protecting the ground from those problems. A liner -- and to me a liner is going to be something like many dozens -- or a lot of depth of impermeable clay, not a plastic liner of some sort, a few hundred miles of PVC. I'd like to see 50 or 100 feet of bentonite.

I'd also like to mention the lining of the tailings impoundment which has already been discussed thoroughly. But the cost they said is too high to line the tailings impoundment. In the EIS and under the National Environmental Protection Act, and nowhere in there do I see that you really have to consider the costs of requiring somebody to do something that is going to protect the water quality in an area. Frankly, I don't care what it costs to protect the water quality of the Rock Creek Area. Clear water is a need and copper and silver is a want. (1982)

Why is the location of the tailings pile so close to the river and why is there no impermeable liner underneath it? Obviously, many people get their drinking water from Lake Pend Oreille and surrounding waterways. We must not allow further degradation of our water quality. (3420)

The benefits of a lined impoundment not dependent on experimental pump back must be considered. (1196)

Even if the tailing pond were lined, the amount of water flowing through this system will eventually carry all the metals and chemicals into the river. (1242)

Where is the stewardship of the water resources? We cannot accept any impoundment within the project area that is not lined. It is imperative that lining of all impoundments be required to protect the water resources. Again, the protection of the ground water and surface water resources should be the primary concern with this project. (1991)

We strongly believe that any tailings impoundment approved for this mine should be lined, and wastewater pumped and treated using conventional treatment and source-reduction technologies. We also believe, as we stated in our comments on the DEIS, that if an impoundment must be sited in the lower Rock Creek area, that it use the "downstream" design. It's a far more stable engineering design for a wet climate and the foundation material present at Rock Creek. (2058)

The Kootenai Tribe of Idaho does not understand why it is not feasible for ASARCO to not construct a pond without a lining? Unlined ponds are specifically designed for seepage through the soils. (2026)

Paragraph 5 is inadequate. If there is any danger of acid drainage, which there clearly is, and any other chemical pollutants, the impoundment must be lined to prevent seepage. Otherwise, the ground water and the Clark Fork River will receive chemical pollutants whose level will eventually, if not immediately, exceed legal standards. These concerns for water quality maintenance must be met before permitting. It is not acceptable to adopt a permit, then wait and see, and maybe or maybe not have a contingency plan. (1288)

Response: Because of concerns about seepage, the Agencies evaluated a lined facility (see Chapter 2, Alternatives Considered but Dismissed) and developed Alternative V under which tailings would be deposited as a paste. Seepage rates for this alternative are estimated to be reduced to 20 to 30 gpm. Lining the tailings facility would not likely result in further reduction of the seepage rate. In addition, because the unlined facility would meet MPDES requirements (see Appendix D**),** there would be no significant advantage in constructing a lined facility.

A liner could not be used with the impoundment designs under Alternatives II-IV, hence the effect on stability is a moot point. A liner could be used with downslope construction which is inherently more stable. However, there is insufficient lack for that type of impoundment at this site.

The number of ground water capture wells portrayed in the Water Management Plan is conceptual, and the final number of wells that may be needed is unknown at this time. The final number of wells, well location, and required discharge rates are dependent on aquifer permeability and the results of the pump-tests from the initial wells that are drilled. These data would be used in a computerized flow model during the final stages of the design process. The final design must be reviewed and approved by the agencies.

33. The DEIS does not provide for lined tailings piles. In fact the DEIS provides for seepage at all locations with provisions for interception wells and trenches to catch any contaminated water. It does not appear there is any provision for a failure of the proposed system. (1991)

Response: Please see response to previous comment. To further reduce the possibility of leaching and respond to concern, the agencies have developed Alternative V that relies on the surface deposition of tailings as a paste-like material. In addition, a system of monitoring wells would be located downgradient of the interception wells. Appendix K of the final EIS provides for a Monitoring Alert and Contingency/Corrective Action plan to be developed. If concentrations of constituents are detected above pre-established alert levels, the corrective action plan would be put in place. Assuming the interceptor system is not effective, the likely corrective action would be to adjust the discharge rate of the system or to increase the number of pumping wells so that complete ground water capture is obtained.

34. Polluting the river and domestic wells with pollutants that seep from an unlined tailings impoundment and the cost of reclamation. (1220)

How does ASARCO plan to compensate for major ecosystem changes which may be caused by the lowering of the water table in the Rock Creek drainage? (1384)

Response: It is not anticipated that implementation of the Rock Creek project would lower the water table and effect the flow of water within Rock Creek and its tributaries. The make-up water well would not be constructed within the Rock Creek Alluvium but would rather be built near the confluence of Rock Creek and the Clark Fork River. There is a slight chance that capture and removal of mine water could affect springs and seeps below the mine, but there is no way to determine how much if any, water within the bedrock above and in the proposed mine reaches those water sources and also flow into Rock Creek. Most springs and seeps appear to flow in direct response to precipitation events and from shallow perched water tables rather than from deep bedrock water sources.

Impacts to Waters of the U.S. and Wetlands are discussed in Chapter 4, and a Wetlands Mitigation Plan (see Appendix L) has been developed to compensate for the loss of these regulated resources.

The risk of species loss due to the drying up of these resources would be mitigated by replacement of wetland functions and values in the mitigation sites. The ground water would eventually return after mine life and water treatment ceased. Water treatment would be bonded and could last up to several decades.

35. Figure 2-16 (page 2-38) does not show the estimated volume and flow of ground water that will be required from the proposed contingency make-up well at the confluence of Rock Creek and the Clark Fork River. This volume and flow should be shown to complete the water balance and allow estimation of the zone of depression around the make-up well and adjacent effects. We note from review of Figure 2-13 (page 2-32) that the mill make-up water well is located down-gradient from the tailings impoundment. Will the zone of depression from pumping the make-up water well draw contaminated water from the impoundment? (1214)

Response: Makeup water for the mill would likely only be required during the early stages of mining. As mining progresses, the water balance indicates the project will need to manage excess water. Makeup water for the mill would primarily come from the tailings impoundment under Alternatives II-IV and the underground water storage reservoir (all action alternatives). The makeup water well drilled in Clark Fork alluvium would likely not exhibit significant drawdown due to the high hydraulic conductivity and the hydraulic connection with the Clark Fork River which would act as a recharge boundary. Due to the intermittent nature of pumping at the early stages of mining and the hydraulic impact of the perimeter seepage collection system, it is not expected that the makeup well would draw contaminated water from the impoundment area under Alternatives II-IV.

36. The water budget, described in Table 2-2, implies that in years twenty-nine and thirty ASARCO will drain 234 gpm and 209 gpm respectively from the tailings impoundment pond into the water treatment facilities. If this is indeed true it has not been addressed as a part of the DEIS. (1594)

Response: The EIS discusses the water treatment facility in detail. This facility would be sized to handle the anticipated flows through year 30 of mining. The water budget has been revised for Alternative V.

37. The schematic (Fig 2-16) indicates that 241 gpm will seep into ground water and 241 gpm will be pumped back. Does this mean to imply that by precisely balancing the seepage and pump-back volumes, all contaminants added via seepage will be recovered? If this is the reasoning, this is unfounded nonsense. The pump-back system will not

prevent contamination of ground water. What is to be accomplished by the pump-back system? So, some ground water seepage is returned to the tailings impoundment; there is nothing accomplished except constant recycling. According to the schematic, no impoundment water receives further treatment. The system only recycles contaminated water, while constantly allowing some to seep through the ground to the Clark Fork River. (There is no evidence presented in the DEIS that would indicate otherwise.) The schematic also indicates that some of the impoundment water would be used in irrigation. How much is planned? Is this just for the surface of the impoundment after 30+ years (see p. 2-51)? If during mining years, where will irrigation occur? Potential effects on ground water of toxins in impoundment water? Where is this discussed in the DEIS? (1288)

Response: There is potential for excess water from the impoundment to go to the water treatment facility. This was made clearer under Alternative V where water removed from the tailings at the paste plant would be sent to the mill and excess water not needed in the mill circuit would be sent to the waste water treatment plant prior to discharge to the river. While pump and treat systems are proven technology, the pump-back wells would not be needed except as a contingency measure under Alternative V due to the decreased rate of seepage from the tailings paste (20-30 gpm) compared to that from the impoundment under Alternatives II-IV. No figure is provided for irrigation under Alternatives II-IV, but it would most likely come from the amount estimated for dust suppression and evaporation. Up to 5 gpm for irrigation are estimated under Alternative V.

38. Page 4-44 - impoundment seepage concern: The use of 241 gpm for the ground water loading analysis is not reasonable. In 1989, ASARCO estimated seepage from the Troy impoundment at 845 gpm. (Pfahl, 1989) This is still low. (1504)

Response: Seepage rates are calculated using the permeabilities of the geologic materials over which an impoundment is constructed. The geology at the tailings deposition sites is not comparable.

39. 3 million gallons per day will be pumped out. That is unreasonable for a pond to hold that. (1475)

Response: The 3 million gallons per day is the maximum anticipated mine discharge near the end of mine life that would be treated at the waste water treatment plant and discharge into the Clark Fork River. The mine discharge water was never proposed to be stored in the impoundment under Alternatives II-IV. The need for a large tailings impoundment has been eliminated under Alternative V. See Chapters 2 and 4 of the EIS.

40. Careful inspection should accompany ASARCO's stated plan to "seal" the colluvium layer and surface areas of weathered fractured bedrock before allowing tailings water to cover it. (1270)

Response: The Agencies developed Alternative V in which tailings would be deposited as a paste to address public comments related to the impoundment and the potential for seepage. See Chapter 4 - Hydrology.

41. Mining activities would intersect water-bearing joints and fractures during underground operations. The use of stored water would be an irreversible commitment of resources. (1389)

Withdrawal of makeup water from the Clark Fork River alluvium would be an irretrievable commitment of this resource. (1389)

Response: The text has been changed to indicate the use of mine water and make up water would an irretrievable use of ground water (see Chapter 4, Hydrology).

42. The discussion of ground-water occurrence and flow in the vicinity of the ore body should be improved (3-40). Data and information from exploration bore holes should be used to help characterize ground-water flow in and near the ore body, and if necessary, additional field work should be planned. What is the basis for the conclusion that a deeper, regional flow system occurs at a depth of 500 feet? What is the basis for the conclusion that ground-water above 200 feet is evidence of a perched water zone? How does this fit in a conceptual model of fracture controlled ground-water flow? (1214)

Response: The discussion of ground water hydrology has been revised based on additional data and information collected by DEQ (DEQ 2001a). In addition, additional mitigations have been developed which are related to these new data. See discussions in Chapters 3 and 4 regarding the potential impacts to wilderness lakes.

43. The Coeur d'Alene Tribal Hydrologist was a member of the original ASARCO Project Review Team and performed water quality monitoring of the exploration phase of the Rock Creek Project. After reviewing the DEIS he feels there has been poor use of the drilling information obtained from the Cabinet Mountain Wilderness Area. He stated that the core drilling encountered numerous sites of ground water and large fissures. At one location he stated the drilling fluid leaked into area lakes and came out 500 feet below the drill rigs. This indicated the interrelationship of the ground water to surface water. (1991)

Response: The Agencies have not seen any written record of field notes prepared by the Coeur d'Alene Tribal hydrologist. If this information, or technical reports based on this information are available, they should be provided to the Agencies for review and incorporation in the final EIS. The final EIS (ground water section under Chapter 3, Hydrology) acknowledges that ground water occurs in the vicinity of the ore body. Specifically, the text states that ground water movement is controlled by secondary permeability created by fractures, joints, and faults. Therefore, information presented in the final EIS corroborates the comment that "core drilling encountered numerous sites of ground water and large fissures." There is no information on record regarding leaks of drilling fluid into wilderness lakes. Therefore, statements regarding this release cannot be confirmed by the agencies. Additional hydrogeologic information would be collected near the ore body as the evaluation adit is advanced.

44. We are concerned that a safety factor of 1.5 to 2.0 (page 4-41) for estimating inflow may potentially underestimate mine inflow because the values for hydraulic properties of rocks (hydraulic conductivity, transmissivity) vary by and are measured by orders of magnitude. EPA notes that geological fracturing and hydrological conditions at Rock Creek could result in different mine inflow experiences than those encountered at Troy. (1214)

We also note that grouting to control water inflow could be difficult if the mine intersects the water table. The Agencies should develop contingencies should mine inflow exceed predicted quantities. (1214)

Given that the actual amount of water flow was grossly underestimated at the Troy mine at the time it was permitted, and given that there has been no site-specific hydrologic research at Rock Creek, what will be done to verify the accuracy of the estimates of ground water flow? (1248)

Response: The Agencies concur that hydraulic conductivity may vary locally by several orders of magnitude, particularly in fractured rock settings like Rock Creek. This local variation in hydraulic conductivity could possibly result in higher flow rates (short-term yields) when local fracture systems are encountered. Long-term yields however, are controlled by the bulk permeability of the rock. Available literature values suggest that bulk permeability of bedrock material would not be expected to vary by orders of magnitude. In addition, the estimates of mine inflow for the proposed Rock Creek mine are supported by field data collected at the Troy mine. The Troy mine makes 300 to 1,200 gallons per minute, with the highest flows during April, May, and June. The majority of water is made near the portal entrance.

Therefore, a factor of 1.5 to 2.0 in the sensitivity analysis is appropriate for disclosing the impacts of the reasonable worse case analysis. Monitoring of mine inflows would be conducted when mining commences, and the accuracy of the analyses can be determined at that point. If inflow to the mine is greater than anticipated, it is possible that the water could be used and make up water needs would be reduced during the life of mine. After mining ceases, and if the inflow rate to the mine is higher than predicted, additional treatment capacity would be required if the mine water does not meet MPDES

discharge requirements without treatment. The Troy Mine EIS predicted a range of 20 to 2,500 gpm. The actual flow rate is well within this range.

45. Page 4-51 - surface water quality: "the mine may at times discharge about 1,700 gpm..." concern: Currently at the Troy mine, 2000gpm is exiting the adit portal (Dave Young, Sept. 1995). The Rock Ck project will excavate twice as much ore as the Troy mine and the adits will be many times longer. The Rock Ck project will be at a higher elevation than the Troy mine. Higher elevations receive considerably more precipitation. Why is the estimated quantity of mine water for Rock Ck not considerably higher than what is found at Troy? Metals impacts to Rock Ck should be evaluated. Impacts from metals, nitrates, & reagents to Miller Gulch and E Fk Bull River should be evaluated. (1504)

Response: Maximum inflows at the Troy mine do not exceed 1,200 gpm (pers. comm. Dave Young, ASARCO, with Dan Buffalo, TtEMI, May 1996). The mine dewatering pump, which has a 1,200 gpm maximum capacity can successfully keep the mine dewatered during the wettest months of the year. During dry months, inflows are significantly less than this value. No discharges are proposed for Rock Creek, Miller Gulch, or East Fork Bull River.

46. With respect to volumes, it seems implausible that anyone at or on behalf of ASARCO has conducted drilling or in-depth (meaning along the represented underground route of a 15,000 foot long tunnel) field studies to determine the amount of water which will add to the volumes represented in the report. The point is that it just doesn't seem possible that the volume can be known at this time, when the volume might end up to be substantially more than is currently estimated. Should the volume outgrow the projections and the subsequent plans, then what? Does the excess run, or rather, overflow to the Clark Fork River untreated? It seems that the water would have nowhere to go - there would be no place large enough to store it. What consideration has been given to this question? (1729)

Response: The volume of outflow predicted is similar to that experienced at similar nearby projects (e.g. Troy, Montonore). The inflows would not reach maximum rates all at once, but would slowly increase over time as the mine develops. If inflows exceed predictions, storage and treatment facilities can be incrementally expanded to handle the flows. No discharge will be allowed to leave the proposed mine operation without treatment. All discharges will be required to meet effluent limitations in accordance with an MPDES permit.

47. The 1,500 gpm flow is estimated--it could be less, but it could be much larger during runoff, resulting in direct contamination, very much like when a sanitary sewer is over capacity. Is there a plan for excess flows that protects our watershed? (1926)

Response: Seasonally higher mine flows may be temporarily stored underground as is currently done at the Troy mine. The inflows would not reach maximum rates all at once, but would slowly increase over time as the mine develops. If inflows exceed predictions, storage and treatment facilities can be incrementally expanded to handle the flows. All discharge from the mine will be required to meet effluent limitations in accordance with an MPDES permit.

48. ASARCO plans to store 230 million gallons of water polluted from mine workings underground. How much of this contaminated water will seep through rock fractures into the ground water? (1248)

Water ASARCO intends to store in the mine cavity requires a discharge permit also. (1744)

Ground water associated with the underground mine workings: Seasonal storage of excess mine water in the underground mine workings will result in the uncontrolled discharge of contaminated mine water to the local ground water system below and adjacent to the ore deposit. The DEIS recognizes this on p. 4-44, stating that "assuming that underground fractures or fracture systems intercepted the reservoir, the potential for seepage from the reservoir to ground water exists. The rate of seepage cannot be determined." Seepage could possibly exit to the surface at undetermined locations in the forms of springs or seeps.

This seepage to the local ground water system will contain elevated concentrations of nitrate, ammonia, metals, and suspended solids. Consequently, this seepage/release to the regional ground water system must be authorized under a traditional MPDES permit as a point source. The potential environmental effects of these uncontrolled springs and seeps.

How much contaminated water moving through the underground workings will not be captured, and what will be the effects of this release to the environment? Will the captured contaminated water be adequately treated before discharge? How will the contamination that perpetually leaks from many underground working be managed over the long-term? (1223)

We are also very concerned about the likely seepage of wastewater of unknown toxicity from the underground excess mine water storage reservoir, which would migrate through fractures to surface waters through undetermined locations (4-44). (1220)

Please address the storage of water underground as a potential ground water pollutant. (1637)

The presence of the large multimillion gallon reservoir within the mine must be addressed, especially because of the opportunity for additional ground water contamination. (1991)

Response: The applicant plans to store excess ground water inflow in a underground reservoir that could approach 230 million gallons at year 30 of mining. Water storage would likely be seasonal, and stored water would be characteristically high in total suspended sediment and residual nitrogen compounds from blasting. Chapter 4 explains that while some seepage from the underground reservoir into subjacent bedrock fractures or fracture systems is expected, the actual rate of seepage cannot be quantified. Seepage flows from the base of the underground reservoir are controlled by the very low permeability bedrock and secondary porosity of bedrock systems, which are typically 5 percent or less. Because the applicant did not specifically request coverage for the underground reservoir in its application for an MPDES permit, and because there is not discrete conveyance from the reservoir to Waters of the U.S., the DEQ decided to address issues related to the underground reservoir in the hard rock operating permit.

49. As the mine will be underground near Copper Lake, has any baseline data been taken in the Copper Lake drainage flowing toward Bull River? Bull River has been under consideration for the wild and scenic river status. If Copper Lake and the ground water near Copper and Cliff Lakes drops in level, how will that affect the flow of the Bull River? (1371)

Response: As stated in Chapter 4, Hydrology, wilderness lakes in the Cabinet Mountain Wilderness overlying mined-out portions of the mineral deposit could potentially be affected if faults and fractures acted as ground water conduits, and the applicant's pilot hole testing and grouting programs were ineffective. As a result, water levels in lakes and surface outflow from lakes could be reduced. The potential for this to occur is remote. The agencies' requirement for additional rock mechanics studies in alternatives III, IV, and V would further reduce the risk of subsidence-related draining of

these lakes. Water occupying fractures in rock above the operating level of the mine could be lost to mine inflow. Under Alternative V, mining would not be permitted within a 1,000-ft buffer around Cliff Lake to mitigate the potential for possible impacts to water resources in the Cabinet Mountain Wilderness. A similar prohibition to mining in Moran Basin is also proposed under Alternative V.

To minimize the potential for impacts to surface water resources in wilderness as a result of subsidence, the applicant would maintain an adequate pillar size and spacing that would be based on rock mechanics data collected during construction of the evaluation adit. The applicant would also maintain a barrier pillar near the Copper Lake Fault to isolate the mine workings from water stored in the fault and to avoid the possibility of lowering the lake water levels.

Changes in flow to the Bull River resulting from mine-related activities would not be measurable.

50. Seepage into underground mine workings may affect water levels in wilderness lakes and flow rates of springs. (1595)

Possible catastrophic effects of the underlying hydrology of one of the nations last remaining Wilderness Area's. (1587)

Response: Catastrophic impacts to ground water in the Cabinet Mountain Wilderness are not expected under Alternative V. Impacts to water levels in wilderness lakes or to existing springs are not predicted because, in general, the proposed underground mine is located several hundred feet below land surface and a 1,000-ft buffer around Cliff Lake and the Cliff Lake fault are required under Alternative V. However, there is the potential for seepage from the water reservoir in the mine to exit downgradient as springs or seeps, if they are identified, if continuous fractures from the mine to the surface are present. Mine water could seep outward through the bedrock under sufficient hydraulic head creating or impacting springs or seeps. The location and amount of impact on these features cannot be fully, predicted, but could have effects in either the Rock Creek, Copper Gulch, or Bull River watersheds. The most likely discharge locations would be below the ore outcrops at the northeast and southeast ends of the deposit and in Copper Gulch (DEQ 2001a). Newly created seeps and small springs timber or heavy vegetation would be difficult, if not impossible to discover. Lake water levels and the discharge of springs will be monitored. Please see Chapter 4 of the final EIS.

51. The arguments made to conclude the Cliff and Copper Lakes are not connected hydrologically to the ore zone are brief and not compelling as presented (page 3-40). Based on information presented in the DEIS, ground water is deep in the ore zone flows through fractures. The ground water system is sufficiently permeable that considerable ground water is anticipated to flow into the mine workings (Table 4-10, page 4-43). Further, ground water is assumed to be recharged from surface infiltration of precipitation and snowmelt (page 3-40). Based on these assertions, the ground water system in the ore body is connected hydrologically to the ground surface. The conclusion in the DEIS that selected portions of the ground surface (for example, those areas near these lakes) are not connected to the deeper ground water system has no basis. The FEIS should address this inconsistency.

Ground water was encountered several hundred feet below the lakes. Ground water also was encountered at depths less than 200 feet deep and was assumed in the DEIS to be in a perched system, implying that an unsaturated zone exists between the shallow (<200 feet) and deep ground water (page 3-40). The nature of the postulated unsaturated zone between these two depths is not defined and is likely to be an artifact of substituting exploration holes for properly designed and installed ground water monitoring wells. No rationale is provided to explain why little or no recharge would occur from the area near the lakes while recharge would occur from other areas. The statement "The precise association between [Copper] Lake and the ground water regime is ill-defined at present, and any [hydrologic] conclusions would need to be further substantiated by additional subsurface data from the immediate area" (paragraph 4, page E-20) is probably a better summary of available information than "Lakes in the vicinity of the ore body do not appear to be connected to the underlying ground water system" (paragraph 2, 3-40). (1933)

Response: The EIS states that based on existing information, Cliff and Copper lakes are not recharged by deep ground water in the Cabinet Mountain Wilderness, and that it is unlikely that fractures created from mining the ore body would propagate to the surface and impact lake levels. In September 1996, the US Army Corps of Engineers, the U.S. Forest Service, and DEQ visited Cliff and Copper Lakes as part of a wetlands delineation investigation. Based on field observations made during this visit, it was confirmed that both lakes are perched on bedrock tarns and are not hydraulically connected to the deeper aquifer. Appendix G has been modified to reflect this information. More recent data and information (DEQ 2001a) provides additional information on the hydrogeology of wilderness lakes. These data suggest groundwater stored in the Cliff Flake fault may seep and provide flow to some lakes. Because of these findings, Alternative V now proposes a 1,000-ft mining buffer around Cliff Lake and the Cliff Lake fault, and Moran Basin.

52. The data and criteria used to evaluate potential mine impacts upon the wilderness Lakes (i.e., Copper and Cliff Lakes) should be presented in Chapter 3. Even though such impacts are not anticipated they are possible. Should this occur, what baseline information will be used to evaluate impact? It appears there is only intermittent, observational information. Baseline data and monitoring to detect such impacts should be developed. The water resources monitoring plan should include monitoring of wilderness water bodies (lakes, springs, etc.,) so that potential mine effects upon wilderness water resources particularly ground water hydrology (e.g., spring discharges, lake levels) may be detected. Bonding levels should include costs for corrective or restorative actions should wetlands, ponds or lakes in the wilderness area be drained or substantially affected. The Monitoring and Alert Levels Contingency Action plan should include a discussion of the requisite actions proposed by ASARCO and the Agencies if changes in the levels of Cliff or Copper Lakes occurs as a result of mining (page 4-50). (1214)

Response: Appendix G of the EIS provides a discussion relevant to geotechnical issues related to wilderness lakes. Baseline water quality data are presented in Chapter 3 of the EIS. Monitoring of water resources in the Cabinet Mountain Wilderness would be part of an agency-approved monitoring plan.

The level of bonding required would include the costs for all corrective or restorative actions, as deemed appropriate by the Agencies.

53. Where is the core drilling analysis from the original review team and how has this information been interpreted? Since the lakes are in the wilderness area, what steps have been taken to establish permanent benchmarks for future surveys measuring lake levels? Have permanent baseline studies been made to record the conditions present at these lakes in the event of adverse impacts due to mining activities? In the event that lake levels are lowered, what is planned to either repair the damage, or mitigate for losses. (1991)

Response: A summary analysis and interpretation of the results of drilling 120 exploration boreholes is presented in Sterling's permit application and in the final EIS (ground water section under Chapter 3, Hydrology). Photographic evidence, stage from fixed measuring points, and lake depth data have been collected from Cliff and Copper lakes on an annual basis since 1994. The preferred method of addressing the potential for adverse impacts to lakes in the Cabinet Mountain Wilderness under Alternative V is through a proposed mitigation that includes a 1,000-ft mining buffer around Cliff Lake and the Cliff Lake fault, and related prohibitions to mining near Moran Basin. This mitigation is intended to be preventative.

54. How will the pumping of ground water in the proposed mine affect the ecosystem above the mine and the watershed? It seems hard to believe that there would be no long term negative impacts from an operation of this magnitude. (1344)

Response: Under Alternative V, which includes a 1,000-ft buffer around the Cliff Lake fault and Cliff Lake, and Moran Basin, it is not anticipated that the mine would have an effect on water bodies located above the ore body and the ecosystems surrounding and supported by those water bodies as a result of mining. Additional data and information regarding the hydrology of wilderness lakes were recently collected by DEQ (DEQ 2001a), and are summarized in Chapters 3 and 4 of the final EIS. Based on these new data, Alternative V now includes a mitigation that establishes a 1,000-ft mining buffer around Cliff Lake and the Cliff Lake fault, as well as other prohibitions to mining in Moran Basin.

55. It's not mentioned in the DEIS, anything about the effect of wide variation in flows observed during the project baseline period and ground water lowering as a result of this process, if it goes through. I cannot believe that the volumes will not lower the water table in the affected areas. Significant changes in the water table would alter the patterns of vegetation in the wilderness. Studies of this potential problem by qualified geologists and botanists have to be done, because changes would constitute a large-scale, mine-related surface disturbance of the wilderness area. (1288)(1751)

What will be the effects of pumping the ground water from the mine on the springs and streams in the area, and the fauna and flora that are associated with them? (1751)

Response: The agencies have modified the proposed plan by Sterling to address potential effects to ground water levels in the wilderness. See Alternative III, Monitoring and Mitigation Plans, Water Resources Monitoring Plan sections in Chapter 2.

It is likely that mine water inflow would primarily be comprised of water-held fractures. If the mine was developed, this water could be released to the void created by mining. The applicant proposes to temporarily store this excess water in an underground sump. Water in the sump would be used in the milling circuit or would be treated as necessary to comply with the MPDES discharge permit prior to discharge. Under Alternative V, pumping from the mine is not expected to significantly affect flow or water quality in springs and streams.

If spring and stream water were to be reduced, some mesic locations may be converted into more xeric (dryer) environments. An example of this would be a wet meadow that supported Lincoln's sparrow and marsh wrens would be converted to a dry meadow supporting savannah sparrows instead. As long as the habitat otherwise remained unchanged, the complement of species that would use the areas would change to those more adapted to drier environments.

WTR-302 Surface Water Quality

1. What are the odds the state will fail to protect water quality. (1381)

Response: The statutes and regulations in place allow the agencies and EPA to adequately protect water quality.

2. The agencies have been sorely deficient in analyzing effects on water quality in the DEIS. (1526)

Effects to water quality must be better disclosed and the public assured the water quality will not be adversely degraded. There is a lot of uncertainty in the EIS and for such an important resource as water quality, the public should be assured that no adverse impacts would be tolerated, not matter what the economic cost of implementing sound, safety measures. (1713)

Response: Please refer to the Hydrology sections in Chapters 3 and 4, of the EIS for a complete discussion on the affected environment and how the proposed project affects water quality.

3. In regards to water quality, the pollution of Rock Creek and ultimately the Clark Fork and Lake Pend Oreille is unacceptable. Further analysis is necessary to ensure the best knowledge available is being used to protect the water from sedimentation, heavy metals, ammonia, nitrates, and other chemicals. Recently I heard Jack Stanford talk of his discovery of unknown microbiotic life in the ground water under running river systems. How much damage is the project capable of that your are not even aware of? (1645)

Response: The EIS discloses all environmental impacts that the Agencies are aware of. See Chapter 4, Hydrology regarding water quality. The macrobiotic life you refer to occurs in association with alluvial ground waters when certain conditions are met. These conditions do not occur here.

4. The Coeur d'Alene Tribe feels the DEIS does not do an adequate job in assessing the negative impacts of the proposed action. We feel that the proposed mitigation measures are not conservative enough in protecting the resources of the area. The cumulative effects of the reduction of quality of the Rock Creek drainage through mining and milling activities, road building, and clearing for buildings and other support facilities have not been adequately addressed. We feel the DEIS does not assess adequately the full effect to the Clark Fork River and Lake Pend Oreille in the event of a failure of the systems collecting contaminated ground water. (1991)

Response: Alternative V was developed to address concerns such as yours. Please see description of Alternative V and analysis of associated impacts. Features to protect water resources include double-walled pipes, paving of roads, depositing tailings as a paste rather than as a slurry in an impoundment, and identifying and repairing existing sediment sources.

5. Water quality must not be significantly lowered by development. State waters must not be degraded: ie, parameters which do not exceed water quality standards must not cause degradation of the state's waters. Chemical parameters of Rock Creek, Miller Gulch , and the Clark Fork River shall not worsen relative to the values collected by ASARCO in their Environmental Baseline Reports (EBR's). This means that during and after mine operation, for perpetuity, extreme values for chemical parameters in these bodies of water shall not exceed the extreme values found by ASARCO in their EBR's. (ASARCO needs to collect more baseline data on dissolved oxygen levels, as this information only appears occasionally in the EBR's). (1223)

Response: The project proponent was not required to collect baseline data for dissolved oxygen (DO), as there are no numeric water quality criteria for this constituent. DO is also not regulated under the MPDES permit, but is considered a supporting field parameter. DO data would be collected during project operation if so identified in the water monitoring Work Plan. However, biological oxygen demand (BOD) of the effluent is a regulated parameter in the MPDES permit, and would be measured.

6. The draft EIS addresses water degradation in the Clark Fork River but does not adequately describe the potential for water degradation in Rock Creek or Lake Pend Oreille. (1674)

At the mill site and mine all water should be treated to absolute purity before release. Only completely tested water treatment should be used. No dilution should have to occur. The water should be drinkable before release. (1485)

Polluted mine water will not adequately be cleansed before entering the Clark Fork River and Pend Oreille Lake. (2011)

Predicted water quality changes have many assumptions and uncertainties associated with them, due partially to inadequate baseline data on flows and water chemistry and detection limits. Predicted impacts do not adequately consider all portions of affected streams, likely durations of impacts, and cumulative effects, including accident conditions. Ammonia and pH changes were not adequately considered. (1595)

Response: Under the Water Quality Act, discharged water must meet the requirements of the proposed MPDES discharge permit (see Appendix D). The applicant must comply with the effluent limits set forth in the MPDES permit. As stated in the EIS, no discharges other than storm water discharges are proposed for Rock Creek. Discharge from the storm water retention pond (Outfall 004) would be allowed only during the period April 1 to July 1 when the measured precipitation at the mill site exceeds 2.8 inches in a 24-hour period, or equivalent snowmelt. For each discharge event, a grab sample would be required within the first 30 minutes. Surface water runoff in Miller Gulch would decrease during the life of the project, and would likely return to near normal after reclamation. An engineered perimeter drain and ground water extraction well system would pump seepage water back to the tailings impoundment, and would prevent discharge of tailings impoundment seepage to Rock Creek, Miller Gulch, and the Clark Fork River under Alternatives II-IV. An engineered seepage collection system would also be part of the paste facility design for Alternative V. Impacts to Rock Creek and Lake Pend Oreille including cumulative impacts and spills are discussed in Chapter 4 Hydrology of the EIS.

7. The water that is encountered is always contaminated by both the metals in the mine and by the nitrogen compounds of blasting. It is incumbent upon the Interdisciplinary Group to assure that the water discharged from the project will not be polluted by the process. (1242)

Take steps to make sure the tailings do not pollute ground water and the Clark Fork River. (2017)

Response: Please refer to the MPDES permit which places limitations on allowable concentrations of metals and nitrates in the discharge, such that exceedance of state and federal water quality criteria and standards would not occur. Analysis of the discharges is addressed in Chapter 4, Hydrology.

8. No mention at all of the effects of the watershed in general from 3500 gpm of polluted water entering the Clark Fork River for over 30 years this DEIS is incomplete and inadequate. (1482)

Response: The EIS addresses your concerns. Please note that Chapter 2 of the EIS provides a description of the proposed project alternatives and water balances. The estimated volume of water to be discharged starts with 4 gallons per minute (gpm) in year one, reaches nearly 1,000 gpm between years 13 and 18 and does not reach approximately 2,300 gpm until year 30 under Alternatives II-IV (See Table 2-3) Under Alternative V the flow would start with 550 gpm and would reach approximately 1,000 gpm between years 10 and 15 and then would reach slightly more than 2,000 gpm at year 30 (See Table 2-15). Chapter 3 discusses the existing potentially affected environment including air quality, soils, hydrology, fisheries, wildlife, etc. Chapter 4 provides a discussion of the potential environmental consequences and also includes headings for air quality, soils, ground water, surface water, fisheries, wildlife, and other resources. Also please note that in some areas where summary information is provided in the EIS, for example, the baseline monitoring data or the storm

water management plan, complete documents with this information are on file with DEQ and Kootenai National Forest.

9. In the summary of the D.E.I.S. I don't see where the contents of the water discharge into the Clark Fork River are addressed. (1263)

Response: Water quality tables for the proposed discharges are presented in Chapter 4, Hydrology. In addition, the MPDES permit printed in Appendix D establishes the upper limits for constituents in the discharge.

10. What will the content of the water discharged from the mine be composed of and will it harm water quality? (1416)

Response: Please refer to Table 4-24 titled "Estimated Untreated and Treated Discharge Water Quality" in Chapter 4 of the EIS for the applicant's estimate of untreated and treated discharge water quality. Impacts to water resources in the project area are discussed in Chapter 4 of the EIS. However, the discharge would have to meet the MPDES permit limits in Appendix D.

11. The water used in the operation should be properly tested and if there is any question of its quality it should be sprinkled or disposed of using some other means rather than dumping into the Clark Fork River. (1241)

Require ASARCO to figure out a better way to dispose of tailings drainage. (1740)

Will ASARCO produce another large nutrient discharge? (1381)

I am concerned about the risk of ingesting the highly concentrated nitrates. (1240

Response: Regular monitoring of all effluent from the proposed project would be required as part of the mine permit. Discharge from the proposed project would be required to meet effluent limitations in accordance with an MPDES permit from DEQ prior to discharge.

12. I did not find reference (maybe oversight) to an estimate of the nitrogen or any other element that might be released into the River. (1914)

Drilling and blasting activities will continue throughout mine operation; a room and pillar method of mining will be employed. Ground water inflow to the mine shaft is expected to be high quality water, low in metals and nutrients, according to Hydrometrics, Inc., in the Water Management Plan for ASARCO's Rock Creek Project (1993). Blasting activities are expected to be the biggest influence by the mine on water quality. If the Rock Creek mine produces 10,000 tons of rock per day, Hydrometrics estimates based on Troy mine figures indicate that 18,000 pounds per day of ammonia nitrate fuel oil (ANFO) explosives will be required. It is my recommendation, since the actual condition at the Rock Creek site cannot be assessed until mining has commenced, that a generous safety margin be used in extrapolating from Troy data. In the mine permit application's Water Management Plan, an alternate method of calculating nitrogen loading from mine discharge is presented. This method considers explosive utilization inefficiency, which includes spillage and combustion inefficiency, to leave a residue of 5 percent to dissolve in mine inflow water.

Based on this estimate, of the 18,000 pounds of ANFO to be used per day, 900 pounds per day, or 166 Kg/day total soluble inorganic nitrogen (TSIN) would be available to dissolve in mine inflow water. A load of 166 kg per day TSIN could potentially grow a great deal of algae. Using the ration of C:N:P from Malonely et al. 1972, 166 kg of TSIN per day would grow approximately 1600 kg of C, 8-20 kg of chlorophyll, and a total organic mass of 4000 kg. This could grow 100 mg of chlorophyll/m squared over a 10 m wide swath, for 8-20 km of river. This can certainly be considered to be a significant increase in organic matter, even if explosive utilization inefficiency really does leave a residue of only 5 percent ANFO. However, the basis for the 5 percent value is unclear. This value may only represent the maximum possible value for ANFO residue which will still yield results which do not violate water

quality standards. According to ASARCO, the entire daily load of TSIN could be discharged into the Clark Fork at an average flow of 21,200 cfs, and Clark Fork TSIN would increase by only .0032 mg/L. These estimates are for the Clark Fork River concentrations downstream of the mixing zone. ASARCO estimates that total ANFO used could triple, or the Clark Fork could drop to one-third its average flow of 21,200 cfs, before TSIN would increase measurably in the river. However, the time of major concern is the extreme low flow during summer, rather than the average year round flow of the river. During very low flow, the effects of nutrient-rich discharge to the Clark Fork would be greatly magnified. ASARCO's estimates also may not represent accurately the likely levels of TSIN released by blasting activities. If ASARCO's estimation of explosive utilization inefficiency is incorrect, the amount of ANFO residue would be greatly magnified. ASARCO's estimates also may not represent accurately the likely levels of TSIN released by blasting activities. If ASARCO's estimation of explosive utilization inefficiency is incorrect, the amount of ANFO residue would only need to triple to 15 percent, and TSIN below the mixing zone would be detectable at .01 mg/L.

If the ANFO residue left is approximately 60 percent, then the levels of TSIN below the mixing zone are not only detectable, but they approach the target level of 30 ppb N in the Clark Fork River. Target levels for nitrogen and phosphorus loading in the Clark Fork are intended to protect the system from undesirable conditions, such as nuisance algae growth. If the mine is permitted, clearly TSIN presents the potential to cause undesirable changes in state waters.

The model used to calculate the level of risk involved in using ANFO may not be accurate. Models by definition are characterized by high levels of uncertainty (Middlebrooks et al.1974). In order to carefully evaluate ASARCO's method of calculating total TSIN below the mixing zone of the receiving body (the Clark Fork River), seeing a demonstration of the specific model used and data used would be necessary. Until the Rock Creek mine is operational, it is impossible to predict exactly what the levels of ANFO available to dissolve in ground water inflow to the mine shaft will be.

Explosive utilization inefficiency could be much higher than ASARCO predicts, and even if ASARCO's estimation is correct, a water treatment plan must be prepared to cope with cleaning up high levels of soluble nitrogen compounds. Increased nitrogen loads can cause many undesirable changes in an aquatic ecosystem (Laws 1993, Rand and Petrocelli 1985). Additionally, it is important to consider the methods used in calculating a detection limit or TSIN (.01 ppm is standard). If the detection limit is higher than the level of N which would cause nuisance algal growth, then levels of TSIN may only be detected after serious impacts to water quality and aquatic biota have occurred. Furthermore, algae may take up N, so that N levels in the water column remain below detection limits even as nuisance levels of algae are grown. Simply stating that concentrations are below detection limits is not sufficient evidence that no degradation of water quality will occur (Tom Reid, MDHES, pers. comm. 1994). Furthermore, the current proposal for a water treatment facility has a number of problems, indicating that at this time, the proposed project could cause TSIN levels to exceed detection limits. (1223)

Response: Please note that the "5 percent" value comes from empirical data at other mines. Please refer to Tables 4-25A and B and 4-26A and B in Chapter 4 of the EIS. These tables compare estimated water quality in the Clark Fork River at average flow and low flow, resulting from proposed discharge. The effluent limitations for nitrogen in the mine's discharge are not dependent on blasting efficiency. Discharge from the proposed mine would be required to meet effluent limitations in accordance with an MPDES permit from DEQ (See Appendix D) which are based on Montana drinking water, aquatic live, and non-degradation standards.

13. Blasting is necessary to develop mine shafts, and ASARCO is planning to use ammonium nitrate based explosives which will result in soluble nitrogen compounds available to dissolve in ground water flowing into the mine. The drilling and blasting that will occur during this time will also cause an increase of suspended particulates in the mine inflow water. Data on levels of nitrogen compounds and suspended solids are available for the ASARCO Troy mine, and are being use to evaluate the potential water quality problems of the proposed Rock Creek project, due to similar geophysical properties of the two sites. Nitrogen compounds due to blasting activities are likely to be

one of the more serious problems the mine will produce during construction and operations (Peter Werner, Department of State Lands, per. comm. 1994; Ken Kapsi MDHES pers. comm. (1223)(1994)

Response: The Agencies agree that the use of explosives could have the potential to impact mine water quality. These impacts are fully disclosed in the EIS, and water treatment to remove nitrogen compounds has been proposed.

14. Runoff from the waste rock pile would contain suspended and dissolved sediments as well as residual nitrogen from the explosives used in the mining process. Although short-lived, the effects of these pollutants could impair trout habitat and cause degradation of this highly important stream. These compounds are erroneously labeled "non-toxic" on page 4-56 of the DEIS. Since waste rock leachate will contain ammonia which has been shown to be toxic to fish at low concentrations (Rand and Petrocelli, 1985) this statement must be changed in the Final EIS. The ammonia entering the system could cause significant damage to the fauna of Rock Creek. Total suspended solids could significantly alter water quality by decreasing the amount of dissolved oxygen in the stream. The level of sediment produced, estimated at 20 ppm, is still too high because of the accompanying decrease in dissolved oxygen. Ammonia is much more toxic at low concentrations of dissolved oxygen and would further impair Rock Creek's beneficial uses by creating a very toxic situation the DEIS calls "non-toxic" (Thruston et al., 1981). The DEIS does not address this issue and it needs to be addressed in the final EIS. (1594)

Page 4-56, Alternative II, Water Treatment, paragraph 5: The phrase "violations of water quality regulations" is unclear and potentially misleading. Tables 4-19 and 4-20 show that no water quality standards are exceeded. Only the nondegradation trigger value for ammonia is exceeded as shown in Table 4-20. However, resultant instream concentrations must also be considered in determining whether a change in water quality is "significant" and would result in degradation. For toxic parameters and nutrients, ARM 16.20.712(1)(c) states " Whenever the change exceeds the trigger value, the change is not significant if the resulting concentrations outside of a mixing zone designated by the department does not exceed 15% of the lowest applicable standard." Ammonia is listed as a "toxin" in Circular WQB-7. The standard for ammonia (see Table 4-20) is 1.3 mg/L. The resultant river water ammonia concentration of 0.029 mg/L is less than 15% of the standard (i.e. 0.195 mg/L) meaning that the resultant change calculated based on maximum ammonia concentrations in effluent is not significant. Therefore, "violations of water quality regulations" would not occur even based on maximum concentrations.
(1589)

Page 4-60, Alternative II, Water Treatment, paragraph 1: See above comment regarding pg. 4-56, para. 5 and exceedance of trigger values. Note that resultant water quality does not exceed nonsignificance limit of 15% of standard for ammonia even based on maximum concentration in discharge. [refer to Page 4-56, Alternative II, Water Treatment, paragraph 5] (1589)

Response: To address your concerns, please refer to the revised Chapter 4 - Hydrology in the EIS.

15. Why is virtually no consideration given in any of the Rock Creek documentation to phosphorus compounds as potential nutrient sources in mine effluents? DEIS p. 3-61: "Algae [in Lake Pend Oreille] may currently be limited by a phosphorus and /or nitrogen deficiency (Priscu, 1989). Why does the DEIS not include analyses of the Rock Creek project demonstrating that mine effluents have little or no potential to produce harmful algal blooms in the Cabinet Gorge Reservoir and Lake Pend Oreille? The DEQ fact sheet merely dismisses phosphorous with the statement, "No change in phosphorous is predicted." In order to make this statement, you must demonstrate that there are no potential sources from the mining activities. This would include rock analyses and potential for leaching of phosphates from the waste rock and ore. Where are these data? Are your uses of the terms phosphorus (= P) and phosphorous (= containing trivalent P) to be taken literally here and in all Rock Creek documents? Or are there some misspellings, typos, oversights? Your statement quoted above using "phosphorous" follows two references to total P. Do you mean P or phosphorous compounds? If, as seems likely, there is an error here, the statements and data recorded in tables for phosphorus (-ous) cannot be evaluated. Another point about phosphorus--does the absence of this element in Table 4-17 in the DEIS mean you failed to test for phosphorus (or -ous cpds)? It is hard to believe that there are none in the Troy or Rock Creek materials. Where are the data showing that the milling process removed all the phosphorus contained in the processed materials, leaving none that

are leachable in the tailings? Where is a Table that documents all the major elemental constituents of the mined rocks (ore body et al)? Without such a table, how can the reader evaluate what is there, what is removed, what remains in the tailings and waste rock, how much will dissolve and pass into surface and/or ground water, eventually into the Clark Fork and Lake Pend Oreille? (1288)

Response: The typographical error for phosphorus has been corrected. Please refer to Chapter 4 of the EIS and the MPDES Statement of Basis in Appendix D for discussions of phosphorus loading, impacts, and untreated and treated water quality. Phosphorus data from the Troy facility was used to predict surface and groundwater impacts for the proposed project. Table 4-23 contains the chemical characteristics of waste rock and tailings.

16. In reviewing the draft EIS for the ASARCO project, we find missing any analysis of the potential discharge of heavy metals or phosphates into the Clark Fork River. (1405)(1457)

Response: Please see the revisions to Chapter 4 – Hydrology and the MPDES permit Statement of Basis in Appendix D. DEQ determined that there was no reasonable potential for phosphorus to exceed nondegradation based water quality standards Phosphorus is not subject to federal effluent limit guidelines but technology-based limits may be developed. Sufficient data would be collected from the proposed water treatment system during the first 5 years so that a technology-based limit could be developed at time of permit renewal. Until that time a numeric limit for phosphorus has been included in the MPDES permit.

17. Page 3-29: states that the concentration of cadmium, copper, lead, and zinc at times exceeded numeric water quality standards during the baseline period of measurement. This is due to the extremely low hardness in Rock Creek. What implications does this low hardness have on additional metals loading to Rock Creek from project development? (1223)

Response: Due to the low hardness of Rock Creek waters, treated water from the mine is proposed to be discharged into the Clark Fork River rather than directly to Rock Creek.

18. All characterizing of the water quality, both from the mine and after treatment, is based on VERY LIMITED INFORMATION from ASARCO's Troy Mine near the Bull River which has no discharge and sits in a different geological setting--one cannot assume they will be the same. The Rock Creek water is very soft, which tends to make metals more toxic; also ammonia from the explosives can make metals more toxic than either ammonia or metals alone. (1351)

Response: Additional information has been collected by the Agencies and is provided in the final EIS. Specifically, 17 post-operational water quality samples from the Troy Mine adit were collected and analyzed for total recoverable constituents. Because the dissolved fraction is contained in the total recoverable analysis, it is considered a worst-case analysis. These data were collected over a five-year period between 1993 and 1998, and are summarized in Chapter 4, Hydrology. Please note that water quality characterization for Rock Creek is based on numerous data available from individual monitoring stations within and adjacent to the proposed project area. These data were collected over several years (1984-1993) and at varying times of year. Comparison of mine water and tailings water quality data from the Troy project is a very valuable methodology for estimating water quality at the Rock Creek project. No mine water or tailings seepage discharges into Rock Creek are proposed. The standards for both metals and ammonia take into account hardness and other receiving water characteristics and the standards for Rock Creek would therefore be lower to account for the differences in toxicity.

19. We note that the water quality standards for metals that are shown in Table 4-6 are for a hardness level of 85.7 mg/l, which is the estimated hardness in the Clark Fork River. Since toxicity varies with hardness for a number of metals (toxicity increases as hardness decreases), we recommend that standards for heavy metals also be shown for a hardness of 25 mg/l. This would be representative of the lower hardness levels found in Rock Creek. We note that

metal concentrations in Rock Creek may potentially increase as a result of mining due to seepage effects, leakage/spills from the slurry line or river discharge line, leaching of metals from waste rock, etc. (1214)

Response: Table 4-13 (Table 4-6 in the draft EIS) lists the standards as they are published in WQB-7, the state's water quality standards bulletin. The limits in the MPDES permit are for four proposed outfalls and are based on water quality standards, technology-based standards, and the quality of the receiving body of water. It would not be in line with the law to set standards for a discharge in one body of water based on a different body of water. The storm water discharge limits for Outfall 004 into Rock Creek (the only outfall into Rock Creek) have timing and storm intensity restrictions as well as appropriate limits for that stream. Spills of tailings, ore concentrate, mill reagents, or fuel would be handled on a case-by-case basis and water quality violations would only occur if the spill reached the stream. The applicant's spill response contingency plan contains measures for dealing with spills. Additional mitigations have been added to the Acid Rock Drainage and Metals Leaching Plan under Alternative V to ensure that only non-acid generating and non-metals leaching waste rock was used in constructing the mill pad and tailings facility embankments (see Appendix D for more details). The analysis in Chapter 4 regarding spills is covered in Hydrology and Aquatics/Fisheries and the geochemical analysis is discussed in Geology.

20. I am concerned about arsenic pooling just below the Cabinet Gorge Dam. (1240)

Response: The concern regarding metals enrichment in sediments behind the Noxon and Cabinet Gorge Dams is not relevant to the proposed Rock Creek Mine project. Mine water would be filtered before discharge. Metal-enriched sediments would not be added to the Clark Fork system by the project.

Water quality concerns about effects on water in the Cabinet Gorge Reservoir were considered when establishing MPDES requirements.

21. Page 2-83 - Alt IV: waste rock: 1 million tons of waste rock used to construct mill site pad. concern: In 1987 ASARCO was served with a Notice of Violation for elevated metals (Cu, Pb, Zn) in Upper Stanley Ck. Copper levels exceeded criteria for protection of aquatic life by up to 250 times. It was concluded that the metals were coming from erosion of the waste rock used for fill material at the mill site. (Mine Site visit, EPA, May 1992, App A) This conclusion was only partially correct, but never-the-less demonstrates what is likely to also be found below the proposed mill patio at Rock Ck. (1504)

Furthermore as discussed above, considerable erosion from the mill patio at Troy has occurred with very high metals discharges to Upper Stanley Ck. Whatever this is called, it is a problem that needs to be recognized and addressed. (1504)

Response: Unlike the portal and mill patios at the Troy mine, the slopes of the Rock Creek patios are proposed to be revegetated immediately after construction. This will greatly help to minimize erosion problems.

For the Rock Creek project interim revegetation of the mill patio slopes is proposed as is a storm water retention system surrounding the mill patio. Under Alternative V the mine portal is contained within the mill site and all runoff is collected and either used in the mill circuit or sent to the waste water treatment plant prior to discharge in the Clark Fork River. Therefore, these concerns are addressed for the Rock Creek project.

22. Page 3-56: par 3: Of what significance are the comparisons with Libby Creek? Where is the analysis of the projected changes in Rock Cr and the Clark Fork R. relevant to Montana and federal standards. Data in Table 3-19 indicate that Rock Creek already has relatively high levels of some metals. How does this factor in to the

surface-water changes proposed? What are the combined future projected surface-water loads for Cd, Pb, Hg, Cu, As, Zn? Others? How do these projections compare with legal standards? (1288)

Response: Please note that the Table 3-26 (Table 3-19 in the draft EIS) is related to fish tissue, not water chemistry. The table discusses baseline conditions for metals concentrations in fish tissue in Rock Creek and other streams in the area; such as Libby Creek, Stanley Creek, and Lake Creek. Please note that no effluent discharges are proposed for Rock Creek. Please refer to the Tables 4-25A and B and 4-26A and in Chapter 4 of the EIS compare estimated water quality in the Clark Fork River at average flow and low flow, resulting from proposed discharge. Also please note that discharge from the proposed mine would be required to meet effluent limitations in accordance with an MPDES permit from DEQ (See Appendix D).

23. Page 2-129 - construction of mill pad, roads and waste rock dumps would increase concentrations of suspended sediment and nitrogen loads of Rock Ck. concern: But not metals? This absurd. Take a look at Upper Stanley Ck. just below the mill site at Troy. (1504)

Response: Upper Stanley Creek flows over and through an unreclaimed fill slope composed of both ore and waste. A similar placement of materials is not proposed at Rock Creek.

24. The DEIS for Rock Creek, the mine and mill site act as if there will be no release of metal into the west fork of Rock Creek. The corresponding creek at Troy is up at Stanley Creek. It runs just around the Troy mill site. Upper Stanley Creek is trashed and biologically dead. It's clogged with crushed rock that is laden with metals. It is also dewatered. (1504)

Response: A tributary to Upper Stanley Creek does flow across the Troy Mine's portal-patio. Note that the mine plans for above ground facilities between Troy and Rock Creek are dissimilar. The Rock Creek project disturbances would avoid streams by a considerable distance, particularly the Alternatives IV and V mill site and most of the pipeline corridor. Troy disturbances are adjacent to or in streams.

25. It does not contain guarantees that violations of the clean water act will be included in the Rock Creek Plan. Baseline and hydrogeologic data were not adequate at the Troy mine & now cleanups are necessary only 16 years later. What about 16, 30 and 70 years later on the Clark Fork. (1527)

Response: Please refer to Chapter 4 - Hydrology for a summary of potential impacts. Violations of the law and the MPDES permit would be handled as directed by the law and its regulations.

26. Using Troy mine data explain how the Rock Creek mine will not be a source of contamination even though the Troy mine, 1/3 as big and with no surface water discharge, has had 4 water quality violations. (1730)

Response: Recent and ongoing investigations of the macroinvertebrate populations in Lake Creek suggest there have been no long-term impacts to water quality from the Troy Mine.

27. Page 2-19 & 24 - exploration adit: 59,000 tons waste rock and 119,000 tons ore rock piled up outside of adit. Concern that erosion of nitrates and metals from waste rock and ore processing will get into waters of U.S. (1504)

Response: No ore processing would occur at the exploration adit site, which is located nearly 10 miles from any waters of the U.S. Proper erosion and sedimentation controls would be required and included around any stockpiles located at the exploration adit site. The ore would be hauled back through the evaluation adit into the mine once they intersect and then to the mill via the conveyor system. If operations ceased prior to that point, the ore would be hauled back into the evaluation adit prior to plugging and sealing.

28. Mineralized material from the proposed exploration adit would be placed in a stockpile near the portal for later processing when the mill is in operation. There is no discussion of how these stockpiled, mineralized materials will

affect surface and ground water quality in the West fork of Rock Creek. In fact, the DEIS suggest that impacts to the West Fork will be eliminated under Alternative IV. (1223)

Response: Evaluation adit water would be treated prior to discharge. The evaluation adit and mineralized stockpile would be located a considerable distance from the west fork, and impacts from this small disturbance are not anticipated. Diversions and lined ponds proposed for the evaluation portal site would capture runoff from the ore stockpile, so that impacts to the west fork and to ground water would be avoided. Impacts to the west fork would result primarily from upgrading of roads to access the evaluation adit and any trucking to the mill site but the use of Best Management Practices (BMP) and of construction would minimize these impacts.

29. I found no real mention of how the heavy metals were to be handled only a plan for handling nitrates. (1865)

Will heavy metals and nitrates enter the Clark Fork River under normal operations or under a worse case accident scenario? In what amounts will they enter the river and what impact will they have on aquatic life, recreational values, water quality and aesthetics? (1936)

It will most likely silt Rock Creek and contaminate it with heavy metals, nitrates, and acids. This would not only damage Rock Creek but also the Clark Fork and Lake Pend Oreille. (2042)

What effect will the heavy metals have on Rock Creek, the Clark Fork River and Lake Pend Oreille? (1991)(1457) (1405)

Response: The majority of the metals in the mine water would be contained within the suspended sediments. Sediments would be removed via settling ponds and various mechanical filters prior to running the mine water through the waste water treatment system to remove nitrates and any metals necessary to comply with the MPDES discharge limits. Table 4-30 provides an estimate of the difference between untreated and treated discharge. In addition, Tables 4-25A and B and 4-26A and B provide estimates of the water quality of the Clark Fork River resulting from the proposed discharge. No impacts to these surface waters are expected from the project except from the remote possibility of a tailings facility failure. Please refer to Chapter 4 - Hydrology of the EIS for more details. Chapter 4 of the EIS also discusses environmental consequences related to aquatic life, recreation, water quality, and scenic resources.

30. Page 2-117: Issue 1 summarizes effects on quantity and quality of Montana and Idaho surface and ground water resources. This list fails to disclose impacts from metals and acid mine drainage from waste rock, tailings impoundment, and mine adit discharge water. (1223)

Response: Please see Chapter 4 - Hydrology in the final EIS for this analysis. Additional items have been added to the issue summarizations in Chapter 2, Part V: Comparison of Alternatives.

31. The combination of some added nitrates, increased phosphorus (ous)(not addressed in any Rock Creek documents), and increased organics will increase the BOD in the treated effluent. On what bases have you determined that BOD levels in the effluent will be legally acceptable for discharging into the Clark Fork River? Where are the data, calculations, meaningful predictions, based on meaningful estimates of organic increases from the biotreatment system? (1288)

Response: The water treatment plant design has been modified to address issues related to Biological Oxygen Demand. The effluent from the proposed water treatment plant must meet all requirements in the MPDES discharge permit.

32. Is there a possibility that toxic materials could reach Bull River? (1371)

Response: No impacts to the Bull River Drainage are predicted in the EIS, however a water monitoring station would be included in this drainage as part of the Agency's approved Monitoring Plan.

33. It was acknowledged (top p 4-44) that mine reservoir water would be polluted and could be discharged to the surface, so where is discussion of the impacts to W Fk Rock Ck, E Fk Bull River? (1504)

Response: Excess water from the mill site plus mine and adit discharges would be routed to the waste water treatment plant via a pipeline. Therefore, ground water quality impacts in these areas are not predicted. Nonetheless, there is a potential for springs and seeps to be affected by the underground reservoir. It is not possible to determine to what extent this would occur although they would most likely occur along the north and south ore outcrops. Under Alternative V, 1,000-foot horizontal and 450-foot vertical buffer zones would be required to minimize these impacts. Data collected from the evaluation adit would be used to modify mitigation plans to further minimize this potential. The Ground Water Quantity section of Chapter 4, Hydrology, has been revised in the final EIS to discuss potential impacts from the underground reservoir.

34. A spill into the Clark Fork River will totally devastate the Denton Slew and the area near the Green Monarch Mountains.

Response: The impact of any spill into the Clark Fork River is difficult to estimate due to uncertainties as to the quantity and quality of the material spilled, the quantity of flow in the Clark Fork River at the time of the spill, and many other variables that can effect the impact. A final spill contingency plan would be in place before start of mine. The plan will help ensure that the impact of any spill within the permit area was minimized to the greatest extent possible.

35. Your agencies must analyze and disclose the effects of pollution of Rock Creek with various contaminants as happened at the Troy mine when the tailings pipeline broke. (1739)

The Rock Creek Project will most definitely degrade both Rock Creek and the Clark Fork River. Rock Creek is a pristine stream that provides a spawning ground for bull trout. At its Troy Mine, ASARCO was cited 4 times for water quality violations, as well as receiving a separate complaint and penalty for a tailings line break that discharged wastes directly into nearby Lake Creek in 1984. ASARCO proposed a similar tailings line to run four and one half miles along Rock Creek to the tailings impoundment. How can ASARCO promise that this won't happen at Rock Creek? (1371)

Broken pipes and accidents can seep chemicals into the ground water and into the creeks, and all the promises to do other wise never seem to work! (1329)

I am concerned about polluting Rock Creek with sediments during construction and with heavy metals and ammonia if the tailings pipeline ruptures, and the cost of reclamation. (1220)

Page 2-33: states that tailings slurry would be transported above ground via twin 10-inch, urethane lined, steel pipelines about 30,700' (5.8 miles) to the impoundment for disposal. All lines would be encased in a larger steel pipe at creek crossings to guard against spillage.

Page 2-78: states that mitigation plans for chemical spills and tailings pipeline rupture would be developed, prior to mine operations. The DEIS has failed to disclose any of the potential impacts caused by a slurry line rupture in sections that are not encased in the larger steel pipe. It is inappropriate to assume that if a rupture does not occur at a creek crossing, there will be no impacts. We request that the revised DEIS disclose the potential impacts of a rupture in areas not encased by a steel pipe.

In addition, we ask that the Agencies present an alternative that includes a double encased pipe for the entire 5.8 miles. Experience at the Troy mine clearly demonstrates that a slurry line rupture can be expected during the life of the mine. The environmental impacts this will cause must be disclosed. In addition, the mitigation plan-including double encased slurry pipes-should also be presented in the revised DEIS. (1223)

Response: The tailings pipeline for Alternative V would be double-walled, electronically monitored for spills, and buried to avoid potential impacts to surface water resources. The Troy tailings pipeline is single-walled with an interior coating, has no leak detection sensors, and is located primarily above the ground.

As stated in Chapter 4 of the EIS impacts to aquatics and fisheries from spills and/or pipelines ruptures could be potentially significant for all of the action alternatives considered. However, it should be noted that the proposed project (Alternative II) would include both construction and operation features which are designed to reduce the potential for and the impact of such spills or accidents. Alternatives III and IV include additional mitigations which have been proposed to further reduce the potential impacts of such spills or accidents. Alternative V includes mitigation beyond those for Alternatives III and IV as described in Chapter 4 of the EIS including dual-walled pipelines with a leak detection system. For a full discussion of potential impacts, see "Accidental Spills and Ruptures" and "Tailings Paste Facility Failure" sections in Hydrology, and Spills and Impoundment Failure in Aquatics/Fisheries in Chapter 4.

The proposed mine must also comply with existing laws and regulations governing transport or conveyance of hazardous chemicals or contaminated water.

36. How can spills of hazardous wastes be minimized at this large industrial operation? (1223)

Response: Accidents and spills of hazardous wastes can be minimized through compliance with State and Federal laws and regulations which govern handling, storage, and transport of hazardous waste.

37. How will the potential effect on Clark Fork waters of spillage and dusting from the rail siding be determined? (1288)

If these reagents are to be shipped by rail, what happens if a spill occurs along the Clark Fork River? Who will be responsible for the clean-up, who will decide the best method for cleaning up the spill, and who will monitor the progress of the clean up of any spills or pipeline ruptures? (1674)

Response: A program of water quality monitoring would be implemented to assess the long-term impact of all mine activities on the Clark Fork River. As part of Alternatives III, IV, and V, this monitoring program would include a Monitoring Alert Levels and Corrective Action Plan to ensure early detection and correction of potential environmental degradation. It should also be noted that the applicant would implement dust control measures including the addition of a binding chemical at the railroad siding to reduce dust losses. Under Alternative V the rail loading of concentrate would be done within a building and use enclosed railcars for transport to the refinery.

Appendix I of the EIS lists the proposed reagents to be used in the milling process and describes the toxicity of these reagents. A final spill contingency plan for mine-related spills within the permit boundary would be in place before start of mine operations. Spills from rail cars would be handled according to Montana Rail Link's (MRL) spill contingency plan and MRL would be responsible for the cleanup.

38. What will be done to ensure that a derailment of an ore car will not pollute the Clark Fork River? (1248)

Response: Sterling and Montana Railroad Link would take customary and reasonable care to prevent spillage of ore into the Clark Fork River. The concentrated ore is not considered a hazardous material under current hazardous material classification. The potential impacts of an ore spill are discussed in Chapter 4 of the EIS.

39. Spill cleanup for spills within the mill are outlined in appendix F of the DEIS but, there are no preventative measures discussed except that no drains to the outside will be in the mill. Chemical spills outside the mill are addressed on page 4-74 and 4-75. The possibility of a truck transporting reagents to the mill having an accident which release reagents into Rock Creek is discussed: "It is possible that such an event could cause a fish kill and eliminate the aquatic macroinvertebrate and algae community in the vicinity of the spill." The discussion goes on to say that such an accident would be rare and the impacts relatively short term. Regardless of whether the impacts are short term and rare, efforts should still be made to try and prevent them. No preventative measures are discussed in the DEIS. Would building guard rails along the mill road decrease the threat of such a spill? What would ASARCO and the agencies do if such an event did occur? It would seem prudent to at least have an emergency plan that would contact an environmental crisis consulting team to provide consultation and remedial action to help improve the situation. Why is there no mention of emergency action plans to solve problems of this sort?

Spills from ruptures in the slurry pipeline and mill reclaim water are also discussed on page 4-74 as well as on page 4-60. ASARCO proposed to encase the pipelines in larger pipes at stream crossings and build capture ponds at the crossings to contain any spill material resulting from a rupture. In addition to the backup piping and capture ponds, the pipelines would be monitored in order to detect ruptures. These proposals are a step in the right direction but, they do not go far enough. Due to the proximity of the pipeline to Rock Creek a rupture at any point along the pipeline, whether at a stream crossing or not. would result in spill material being dumped into the Creek. It would be more prudent to encase the entire pipeline in a back-up pipe, and line the entire pipeline and the capture ponds. Why hasn't ASARCO proposed these measures already? Is ASARCO using the most rupture resistant piping available on the market? (1673)

Page 2-78 - Alt III: Mitigation plans for chemical spills and pipeline rupture to be developed. concern: not presented to public for public review. (1504)

I do not believe that ASARCO will be able to handle an emergency situation like the storms and tailings spill.... (1681)

Page 4-56: states that an accidental spill from a supply or tanker truck is considered to be an unlikely event. In the event of an accidental spill, ASARCO would implement a spill contingency plan. This spill contingency plan must be put in place now and be available for review. Once the spill has occurred, it's too late to begin developing a plan. Also, once the project is approved, it is too late for meaningful public comment on the contingency plan.

Elaborate on the exact emergency procedures for all possible toxic spills: diesel spills, delivery truck spills of process reagents or toxic solvents, ANFO spills, trucking spills of mine concentrate during transportation, slurry line rupture, etc.

Give a better description of storage facilities for toxic substances, and in process/in mill procedures for spills. (1223)

In all alternatives pipes carrying tailings slimes or untreated adit water will run along Rock Creek. Failure of these lines would put water loaded with nitrogen compounds and metals, or worse, tailings slurry containing even higher concentrations of metals directly into the creek. This stream contains habitat for bull trout and westslope cutthroat trout, and spills would certainly damage these populations. Spills would cause degradation and violate Montana's nondegradation policy. To minimize the risk of such an event ASARCO should be required to maintain the water line as long as the water it carries does not meet water quality standards. A monitoring and maintenance plan

should be one of the added mitigations of alternative four. This plan would entail daily visual checks of pipeline integrity near streams and full monthly examinations complete with maintenance to correct any problems. (1594)

What if the pipeline ruptures? Where do all the heavy metals and ammonia go? (2205)

What if some unforeseen overflow takes place? How quickly can such a problem be contained without injury to the surrounding environment and people? (1707)

There is no analysis of what will occur to local ground water and Rock Creek should the tailings pipeline rupture. (1526)

Is there a plan for treatment of the water in Rock Creek and the Clark Fork River if there is accidental pollution? (1525)

Response: A final spill mitigation plan would be in place before start of mine operations and would be public information. The plan details would be developed in consultation with the State.

A preliminary spill response plan was submitted by the applicant in response to comments on the draft EIS in March 1997 (Attachment 4 in Hydrometrics 1997). The plan provides descriptions of what would be in the final plan as well as some detailed descriptions for more standard actions that do not depend on site-specific designs and information. The plan provides for responding of spills of processing reagents, fuel, and tailings. This preliminary plan is available at agency offices for public review.

The most likely places for a spill would be at the mill site, the water treatment facility, the paste facility, or along FDR No. 150. Large spills outside a building would report to the site's storm water collection pond where the material would be removed and disposed of according to the type of material spilled. Small spills would be contained in the area of the spill and similarly disposed. Buildings, such as the mill facility would be constructed such that areas where reagents were used would have either no drains or self-contained drains that would not connect to storm water ponds or septic systems and would facilitate collection and disposal of the spilled material and prevent contamination outside the building. Initial containment along FDR No. 150 would occur within the road ditches and emergency dump ponds along the pipeline corridor. Tailings would be collected and taken to the tailings storage facility. Other spilled materials would be contained with appropriate material typically used for spill containment, collected, stored in containers, and then disposed according to the disposal requirements for the type of material spilled. The main goal of response and containment would be to prevent or minimize the amount of spilled material reaching Rock Creek.

Sterling would work to prevent spills from happening by requiring drivers of all vehicles carrying fuel or chemicals to notify the mine prior to entering the permit area. Drivers would also be required to visually inspect vehicles to determine that there were no leaks prior to entering the permit area. All full-time, permanent employees who work with hazardous materials would receive first responder training and emergency response team members would receive annual training. And team supervisors and managers would be trained and knowledgeable about the plan and how to implement it. Joint training and exercises would be help to ensure that mine management and workers knew how to work together to implement the plan. Spill containment equipment would be maintained at the mill, paste plant and waste water treatment facility.

40. Your agency must disclose and analyze the effects of pollution to the Clark Fork River and Lake Pend Oreille if the walls of the tailings impoundment should collapse due to storm water, earthquake or other natural or man made disasters (1730)

Why build a tailings impoundment 1,500 feet from a major freshwater river that feeds into one of the last few major unpolluted bodies of water? (1951)

If the tailings impoundment collapses, as the Impoundment at ASARCO's Galena mine did in the 60's, what would be released into the Clark Fork River? (1248)

The DEIS goes on to discuss the possibility of a slurry or return water line failure, and indicates short term water quality impacts would result and that the effect on overall water quality in Rock Creek cannot be predicted with certainty. We believe impacts to the aquatic community, and particularly sensitive fish such as bull trout, could be long term if multiple year classes are eliminated. Perhaps our biggest concern with the entire project is the risk of failure of the tailings impoundment and the negative impacts such a failure could have on water quality downstream in Idaho. The lower Clark Fork River currently supports spawning bull trout and other game fish. Studies on the upper Clark Fork River by the U.S. Fish and Wildlife Service showed that heavy metals loading could impair reproduction and recruitment of salmonids at a chronic level without being overly toxic to adult fish. As the DEIS indicates the impacts of such a failure at the Rock Creek Mine site cannot be predicted, information such as this needs to be taken into account. The risk to fishery resources downstream in Idaho needs to be considered and thoroughly examined and disclosed. (1445)

This impoundment would be about a quarter mile from the river, and the impact statement offers no meaningful analyses of consequences if the impoundment should fail. (1740)

Response: Should the tailings impoundment under Alternatives II-IV fail, there is potential for tailings and water stored behind the embankment to be released into Rock Creek and/or the Clark Fork River. The magnitude, severity, and duration of the impacts could very greatly depending on the weather, the time of year, the size of the impoundment at the time of failure, and the cause of the failure. The primary impacts to water quality and aquatic/fishery habitat would result from suspended sediments rather than metals or nutrients. The risk of tailings paste facility failure under Alternative V is much less than for a traditional impoundment due in large part to a lesser amount of stored water. The chance of tailings reaching surface waters is minimal under Alternative V. Generalized impacts from impoundment failure are described for Alternatives II-V in Chapter 4, Hydrology and Aquatics/Fisheries.

The tailings impoundment design for Alternatives III and IV has been reviewed and environmental consequences addressed in Chapter 4 of the final EIS. Geotechnical review and analysis indicate that a tailings impoundment structure could be safely constructed on the proposed site. The “modified centerline” design does provide adequate assurance of safety in the event of an earthquake. The impoundment was replaced with a tailings paste facility under Alternative V and its conceptual design underwent similar geotechnical review and analysis. See Chapter 4, Geotechnical Engineering for more information on the various potential means and risk of tailings impoundment (Alternatives II-IV) or paste facility failure (Alternative V). See also comments in GEO102 discussing the potential for tailings storage facility failure.

Under Alternatives III-IV, the probably maximum precipitation (PMP) event and its associated probably maximum flood (PMF) were used for impoundment design purposes. This was necessary because of the large volume of water retained in the tailings impoundment under these alternatives. The PMP event is in excess of 15 inches of precipitation in a 24-hour period and is estimated in accordance with procedures outlined by the National Oceanic and Atmospheric Administration. However, under Alternative V, the 100-year/24-hour storm event (2.8 inches of precipitation) or the equivalent snowmelt was used for design criteria because there would be considerably less water retained in the tailings in the paste facility. All diversions and all storm water ponds except the mill

underdrain containment pond would be sized to convey or hold the 100-year/24-hour event under Alternative V.

The proposed tailings storage facility site under all action alternatives would be one half mile from the Clark Fork River at its closest point. See Chapter 2, Alternatives Considered but Dismissed for more information about other locations that were considered but eliminated from further discussion.

41. Sedimentation of Rock Creek during the construction phase--what happens when the proposed tailings pipeline ruptures, ie. levels and consequences of heavy metal and ammonia pollution of Rock Creek, the Clark Fork River and Lake Pend Oreille--what concentrations of heavy metals will pollute not only the river and lake but people's wells as a result of seepage from the proposed tailings impoundment, (both unlined, as is now proposed, and in the event a lining is required, it tears or breaks down)--what heavy metals and chemicals and in what concentrations will pollute the rivers, lake and well water as a result of tailings impoundment failure during normal flooding and severe rain-on-snow conditions--the potential for acid mine drainage due to the sulfides in the ore--the potential for pollution to the river and lake when truck or rail measures such as contained cars can be implemented to prevent or minimize the harmful effects of these inevitable accidents--what happens to the mine and water in the creek, river, lake and ground when earthquakes of various magnitudes occur on local faults.--the relicensing of Noxon and Cabinet Gorge Dams--how the impacts of the proposed mine do and do not comply with the Tri-State Council's nutrient reduction plan and in cases where they do not, how to get them to--all of the above using site-specific data rather than data from the Troy mine. (1732)(1737)(1738)(1741 - 1744)(1746)(1747)(1913)

Response: Please see the discussion of impacts presented in Chapter 4 - Hydrology and the MPDES permit. Due to the similarities between the two ore bodies and mine plans, it is appropriate to use the data from the Troy Mine in the analyses. Please see other comments and responses in this section pertaining to spills, pipeline ruptures, and surface water quality. Please see NEPA901 for discussion of cumulative impacts relative to the Tri-State Implementation Council and WTR307 for ground water quality. Comments and responses relating to storm water can be found in WTR302 and 310.

42. Page 4-64 paragraph 2 - The proposed mitigation plan for sediment reduction appears to be arbitrarily based; there is no quantification of impacts or expected results. In fact it is not even clear that the mitigation would occur in the impacted drainage. What is the statutory requirement for mitigation of sediment impacts; there is no call for punitive mitigation or mitigation for its own sake. (4502)

Response: There is a requirement under the Metal Mine Reclamation Act (MMRA) to control erosion and comply with water quality standards. Non-compliance of permit conditions related to erosion control would be considered a violation and the company would be fined and required to abate the condition. See Chapter 1, Agency Roles and Responsibilities.

43. Timber will be harvested to clear the site. Also, ASARCO already cleared several parcels at least to some extent. The Cumulative effects of this increased water & sediment yield with the mine proposal, Forest Service & private logging, & the already poor condition of Rock Creek should be assessed. WATSED model or an equal should be run & combined with field data to discuss impacts to Rock Creek. This creek is already in bad shape, due to historic logging & roading, historic removal of woody debris, & sediment from erosion & in-channel instability. ASARCO should have to show improvement of the situation, as this is a water quality limited segment (Montana WQB and INFISH priority bull trout stream. It already does not meet INFISH riparian objectives for pools. (1637)

There is little technical foundation for acre per acre mitigation since sediment loads vary significantly depending on the nature of the disturbance. Potentially, a 1/2 acre disturbance can have a much larger impact than a 100-acre disturbance. ASARCO has stipulated that they will implement BMPs to minimize sediment transport from all disturbed areas. Actual sediment loads from these sources are likely to be minor and will primarily be present as suspended solids. In contrast, reconnaissance of sediment sources in the Rock Creek drainage suggests large volumes of sediment may be discharging directly to the creek from relatively small source areas where stream erosion has resulted in slope and channel instability. Other sources of sediment to Rock Creek also appear to be

present such as road crossings in the West Fork Drainage, that may prove significant in load but are localized in extent.

Page 4-81, Alternative III, Sediment, paragraph 4 (see comments for page 4-65, regarding acreage requirement for sediment mitigation): ASARCO questions the technical basis for the 130 acre requirement for sediment mitigation based simply on disturbance areas. The proposed mitigation would be more technically sound if the statement "equivalent to 130 acres of disturbed land" was revised to read "equivalent to or greater than anticipated sediment load from 130 acres of project disturbance". (1589)

Response: WATSED was used and has been incorporated into Chapter 4 and Appendix N. The sediment source reduction plan was revised under Alternative V to require Sterling to reduce fine sediment by 400 tons per year rather than reduce sediment on a set number of acres of National Forest Service lands. The rationale for this number can be found in Appendix N. The plan is still conceptual as a survey to identify sediment sources has not been conducted but is another requirement under Alternative V. This survey would need to be completed during construction of the evaluation adit (year 1) and sediment sources mitigated prior to the end of mine construction and the beginning of mine operation. A brief description of this plan is contained in the Alternative V description in Chapter 2 under Erosion and Sediment Control. The analysis of the sediment mitigation plan is included in Chapter 4, Hydrology and Aquatic/Fisheries.

44. In regard to the 4th item under Site Grading (page 2-49) we suggest that it would be more appropriate to say, "Surface drainage from unpaved roads will be routed to assure that sediment is filtered or settled out prior to delivery to streams", to make it clear that site grading will ensure that sediment in runoff from unpaved roads will not be indirectly channeled to streams. We note that Rock Creek already has close to critical levels of fine sediment in spawning gravels (page 2-133), and increased sedimentation would reduce spawning success and significantly impact Cabinet Gorge bull trout. In regard to the 3rd, 4th, and 7th items listed under hydrologic measures regarding diversions (page 2-50) we suggest that it can be made clear that diversions and engineered channels be stabilized to assure that erosion of the beds and banks does not occur during runoff events. We suggest that the following language (underlined) be inserted, "...engineered channels stabilized to assure that erosion of the channel beds and banks does not occur to avoid conflicts..." This language helps to focus attention on the need to assure that diversions are stabilized to protect them from eroding and delivering sediment to surface waters. At the very least such erosion control measures should be made a part of the additional mitigation added with Alternative III and IV. This is particularly important to avoid channel bed and bank erosion that could contribute sediment to Rock Creek that could adversely affect Bull trout habitat. (1214)

Response: Thank you for your comment. The EIS reflects an appropriate editorial modification.

45. Page 2-77 There is a great need to reduce existing sediment sources in the Rock Creek drainage. This need is emphasized by the statements on page 2-133 that existing Rock Creek fine sediment levels are close to critical levels in available spawning gravel, and that Rock Creek is one of two major bull trout spawning areas for Cabinet Gorge bull trout populations. All possible efforts to avoid sediment delivery to Rock Creek should be implemented. The large eroding bank on Engle Creek that is stated to be a "major source" of sediment (page 3-47) to Rock Creek should certainly be included within the existing sediment sources to be mitigated. (1214)

Response: Thank you for your comment. Please see Chapter 4 - Hydrology. Other sites would be identified during a sediment source survey prior to mine construction. The mitigation of the eroding stream bank on Engle Creek has been added as a requirement of the sediment mitigation plan and is included in the Alternative V description in Chapter 2 under Erosion and Sediment Control. The analysis of the sediment mitigation plan is included in Chapter 4, Hydrology and Aquatic/Fisheries.

46. A Water Yield Analysis should be done, due to the amount of logging that is currently going on, and the additional logging that will be required to develop the site. (1347)

Response: While the volume of water may increase, the increase in sediment is considered to be the more important issue. R1-WATSED (a sediment and water yield model) was completed for this analysis. Please see Chapter 4 - Hydrology.

47. What are the hydrologic effects of increased roading and associated timber harvest that will occur as:
- surface erosion from the road surface and ditches - disruptions to the hydrologic flow of water in the drainage due to drainage structures (or lack of) in the road (1751)

What about Clogging Rock Creek with sediment during the construction process. (1613)(1635)(1923)(2205)

Since sediment levels are already at a critical threshold, additional controls are needed to prevent any further sediment loading to the Rock Creek system. This is especially true since settling alone is an inadequate treatment plan for sediments. This could result in repeated direct discharges of sediments, storm water, and mine drainage to the W. Fork and mainstem of Rock Creek. (1223)

We insist that your agencies disclose and analyze the effects of the following: Clogging of Rock Creek by sediment during construction of the mill site and mine adits. It is our understanding that Rock Creek is already at excessively high sediment levels. (1730)

Response: As detailed in Chapter 2 of the EIS, water erosion control measures are described in detail in Sterling's permit application in operation and reclamation plans. Agency Sediment Mitigations are described in Alternative III and V descriptions in Chapter 2. In addition, as part of the mining permit requirements, Sterling would be required to mitigate potential sediment impacts to Rock Creek. As part of Sterling's water management plan, a drainage plan has been devised to intercept, convey, and treat all runoff from the proposed facility. In addition, no discharges of effluent are proposed for the Rock Creek drainage other than storm water discharges. Please see Chapter 4 - Hydrology and Aquatics/Fisheries for a complete discussion of sediment impacts.

48. Page 4-65. The entire second paragraph. Is this some sort of mea culpa sedimentation mitigation? As a result of recent heavy rains in the East Fork of the Bull River an area in the current Lost Girl timber sale has suffered just such a scenario after tree (pump) removal. BMP's would do little or no good in the restoration of this new slump/mass wasting. So what is being alluded to in this proposal is unknown, unclear. (1780)

The DEIS says that a mitigation plan would be developed to maintain these populations of sensitive fish (bull and westslope cutthroat trout) and to reduce sediment in their spawning gravels. However, it offers the reader no specifics of the plan, and consequently, no opportunity to evaluate it.

Page 2-133: states that under Alternative III and IV, the identification and reduction of 130 acres of existing sediment sources in the Rock Creek and Bull River drainage would help offset short term increases in sediment due to facility construction.

Page 2-77: states The plan would include a survey to identify sediment sources, and methods of reducing them both within and outside of the permit area, upstream of spawning areas, during or prior to mine construction. Sediment source reduction activities would be completed during the construction period, if possible.

The vague discussion of this sediment mitigation plan in the DEIS is completely unacceptable. The effectiveness of this mitigation plan will directly effect the viability of bull and westslope cutthroat trout populations in the Rock Creek/Cabinet Gorge drainage. Therefore, this plan must be presented for public review in the second draft, and ASARCO must commit to implementing and evaluating it prior to any mine related activities to assure it is working as expected. (1223)

Response: There are many existing sediment sources into the Rock Creek and Bull River system. The Agencies developed a mitigation that would reduce the sediment load from uncontrolled

sediment sources on an equivalent amount of Kootenai National Forest land in those watersheds under Alternatives III and IV. This acreage is the sum of land associated with the tailings pond, the soil stockpile, the access road, the tailings corridor, emergency impoundments, and the exploration mine entry patio, and waste rock dump under Alternatives III and V. Under Alternative V the sediment mitigations would be limited to the Rock Creek drainage and would be based on tons per year under Alternative V.

As discussed in Chapter 4, the applicant would be required to search for, identify, and provide mitigation measures to sediment sources in the facility of the project. These sediment source reduction activities would be completed during the construction period under Alternatives III and IV but during evaluation adit construction (year 1) under Alternative V.

This is a reasonable mitigation identified by the agencies trying to arrive at a balance between resource use and impact mitigation. The text has been corrected in the final EIS to clarify the intent of the mitigation. See Chapter 2, Alternative III and V. Please see Chapter 4, Hydrology and Aquatics/Fisheries for discussion on sediment-related impacts. The final sediment mitigation plan would be available for public review once it is finalized. The conceptual plan is included in Chapter 2 under Alternatives III and V.

49. Construction of the mine shaft, mill site, slurry line, tailings impoundment, and road alterations all pose direct threats to water quality in Rock Creek, Miller Gulch, and possibly the Clark Fork River as well. Water quality concerns include disturbance of the ground during construction of the mine buildings, access roads, associated deforestation, and rerouting the existing roads, including building one new bridge and reconstructing another (Paul Kaiser, USFS, pers. comm. 1994). There is a strong possibility that sediments exposed during construction will be washed into Rock Creek, and possibly into the Clark Fork. ASARCO will be following Best Management Practices (BMP's) during construction and operation of the mine. However, BMP's are voluntary, and typically different companies comply with different degrees of care (Peter Werner, DSL, pers. comm. 1994). Therefore, it would be advisable to require ASARCO to submit a plan regarding their proposal to use BMP's to reduce sedimentation in the drainage under the Storm water BMP's. Additionally, ASARCO will require state permits to operate heavy machinery in Rock Creek, and should be required to draft a plan to reduce stream damage and sedimentation during construction. Sedimentation is a critical concern from the standpoint of protecting aquatic health. Rock Creek and Miller Gulch, the two streams most likely to be affected by sedimentation, are high quality oligotrophic systems. Characterization of these systems in ASARCO's Environmental Baseline Reports shows that Miller Gulch and Rock Creek waters are extremely soft, with an average hardness reported to be 10 mg/L (EPA's comments on draft chapter II of the ASARCO Rock Creek EIS 1993). In extremely soft water, metal toxicity occurs at much lower concentrations than in hard water (Laws 1993; Rand and Petrocelli 1985). Even if sediments which enter these streams do not contain toxic metals or reagents, the sediments themselves can be harmful to freshwater life (Redding and Schreck 1987; Servizi and Martens 1987). Heavy forest in the Rock Creek drainage is one reason why sediment levels are low, and the creek is such a valuable fisheries resource (Westech 1993). (1223)

Response: The applicant has committed to following specific erosion and sediment control measures as outlined in the Alternative II description under Erosion and Sediment Control. They also would follow Forest Service soil and water conservation practices and would be required to comply with state water quality regulations regarding storm water management. These types of best management practices are not voluntary and would become part of the approved permit should it be approved. Under Alternatives III-IV construction of a new bridge over Rock Creek was eliminated although reconstruction of two bridges over Rock Creek and one culvert over the west fork of Rock Creek would be required.

Under Alternative V the lower bridge over Rock Creek would not be reconstructed because it would not get the traffic load anticipated under the other alternatives and would not be used except for

maintenance during mine operation. Construction and reconstruction of portions of FDR No. 150 would need to be timed such that it did no impact harlequin ducks and would most likely coincide with the timing restriction for hauling waste rock down to the tailings facility which could only occur between August 1 and March 31 under Alternative V. Reconstruction of bridges and culverts would need to be done during low water flow to minimize transport of sediment. The realignment of FDR No. 150 away from Rock Creek as much as possible also helps to reduce the opportunity for sediment generated by road construction/reconstruction activities to reach the creek. The impacts of sediment are analyzed in Chapter 4, Hydrology and Aquatic/Fisheries.

50. Rock Cr. hydrological cycle is one that is extremely fragile. This system has a great potential for reduced flows due to the drainage channel cutting through alluvial soils. The use of wells for water supply could drastically reduce the amount of spring-fed water into the drainage. The system already has low/no-flow events that currently and historically have occurred. The Northwest recently has suffered from an eight-year drought period. The culmination of the event occurring during the summer of 1994. No precipitation was collected for three months and record highs for duration were set. This in itself poses a greater than average chance that siltation and contamination to occur. With low to no water being added into the system, the discharge of waste water into Rock Cr. could have a lethal effect due to siltation and contamination of the stream and its sediments. There is also a greater chance of contamination to Rock Cr. due to alluvial soils composition. The porosity in alluvial and lacustrine soils is extremely high. There are no bonding particles within that soil composition to tie up any contamination which could occur. The DEIS stated on 3-20 that Rock Cr. sinks into alluvium soils at times. This in itself could lead to ground water contamination or contamination to Rock Cr. from the ground water. (2026)

Response: As a result of public and Agency comment, the applicant has moved the location of their proposed production well away from the west fork and east fork confluence in Rock Creek to Clark Fork alluvium. There still remains one proposed drinking water supply well near Rock Creek. This however is not projected to impact flows in Rock Creek. As stated in the EIS, the applicant does not propose discharging of treated mine water to Rock Creek. As part of the applicant's water management plan and storm water discharge permit application, storm water runoff would be captured, isolated from mine water if possible, and collected in storm water detention ponds. As part of the storm water permit, the detained water must meet requirements for acceptable discharge to Rock Creek. If this water does not meet requirements set forth in the storm water discharge permit, it must be routed to and mixed with mine water where it would undergo additional treatment prior to discharge in the Clark Fork River.

51. Page 4-61, Sedimentation, paragraph 3: "..Table 4-21 suggests that proposed mining and logging activities may temporarily increase TSS in Rock Creek 30% to 140% over the baseline period of measurement." This statement is both misleading and incorrect since the numbers cited reflect estimated increases in sediment load without the use of BMPs. Both logging activities and mine development will utilize BMPs to minimize sediment transport. Estimated increases in sediment load from Table 4-21 are substantially lower for development with BMPs (7% to 33%). Since baseline conditions were "generally reported to be less than 1 mg/L and typically did not exceed 7 mg/L of TSS" the resulting increase during the construction phase of the project would range from 0.07 mg/L to 2.1 mg/L. It should be noted that only a portion of these loading effects are attributable to mine development since the values presented in Table 4-21 do not distinguish between the effects of Forest Service timber activity and mine development.

Page 4-61, Table 4-21: Sediment loads from Forest Service timber activity should be separated from project related impacts and discussed under Cumulative Impacts.

Page 4-81, Alternative III, Sediment, paragraph 3: Based on the DEIS observation that "This program should reduce the existing sediment sources in the drainage as well as reducing the impacts of new sediment sources...", it should be stated that beneficial impacts of Alternative III on sediment loadings to Rock Creek would be potentially significant.

Page 4-81, Alternative III, paragraph 5: This paragraph indicates that an increase in sediment in Rock Creek associated with this alternative will impact fisheries. There should be a net reduction in streambed sediment under this alternative if it is implemented with mitigation recommended in the EIS. (1589)

Response: Please see Chapter 4, Hydrology and Aquatic/Fisheries for a complete description of sediment loading issues.

52. Page 2-119,2-122 Table 2-13 implies that sediment inputs to Rock Creek would be reduced under the action alternative, because timber sale activity would be reduced during the life of the mine. It is our understanding the Clean Water Act and the National Forest Management Act provide direction to prevent timber sale activity from impairing the beneficial uses in surface waters. The no-action alternative should assume that timber sales in the drainage will not go forward unless they will have no impact, either singularly or cumulatively, on aquatic resources, for the purposes of this analysis. As indicated in the DEIS, should state clearly water quality will decline as a result of the action alternatives, unless the Kootenai National Forest is stating that it plans to put up timber sales in the future which will impair water quality if the mine is not constructed. (1445)

Response: All road construction and clearing can result in increased sedimentation. Both types of activities require that controls be put in place to minimize sedimentation.

53. The riparian borrow pit shown in the plan as "wetland mitigation" will undoubtedly increase bedload material in Rock Creek. This will likely lead to pool filling, channel widening and migration, and decreased surface flows. Rock Creek is already at a threshold level of bedload - mine will seriously degrade this beautiful stream. (1753)

Response: The proposed wetland would not be located in the stream channel. Sedimentation from the borrow area would not be allowed to erode or contribute sediment to Rock Creek. This borrow pit would not be used under Alternative V although there would an alternate wetlands mitigation site in the area.

54. Page 2-77 - Alt III: sediment reduction plan to include S. and E. Forks Bull River. concern: Why? What is planned? (1504)

Response: The goal of mitigating sediment production in areas not proposed for mining disturbance was to improve trout habitat throughout the basin, as opposed to Rock Creek alone.

Under Alternatives III, IV, and V a mitigation plan would be required to address maintaining populations of threatened or sensitive aquatic species in Rock Creek (bull and westslope cutthroat trout, respectively) and to reduce sediment in spawning gravels. The plan would include a survey to identify sediment sources, and methods of reducing them both within and outside of the permit area, upstream of spawning areas, during or prior to mine construction. Under Alternatives III and IV the applicant would be responsible for mitigating sediment sources within the Rock Creek watershed and potentially in the Bull River drainages as well on National Forest Service lands equivalent to 130 acres. The plan was modified under Alternative V to base the sediment mitigation on reducing 400 tons of sediment per year in the Rock Creek drainage rather than defining a set number of acres. See more detail for this rationale in Appendix N.

55. Page 3-49 - Table 3-10: Sediment sample sites concern: site are indicated but disclosure of methods and results and discussion of such cannot be found. (1504)

Response: The information provided on sediment is strictly related to fisheries and habitat. Sampling methodologies are not detailed as they were performed using standard sampling technologies as related to fisheries investigations. Recent information has indicated that sedimentation may be occurring from an area outside of the proposed permit boundary and is being transported through the project area. This information has prompted two independent sediment investigations. The U.S. Forest Service ran the WATSED model which estimates the change in sediment loading and

composition and is summarized in Appendix N and analyzed in Aquatic/Fisheries in Chapter 4. The second investigation, an instream sediment sampling survey was conducted by the applicant (as ASARCO) in 1996 (Watershed Consulting 1997). Information from these investigations as well as modifications to pertinent sections of the EIS have been included in the final EIS.

56. Page C-13, Section 2.2.5 This section discusses impacts of the discharge of fill materials and sedimentation on the aquatic ecosystem, but fails to come to any conclusion regarding the significance of the impacts. (1912)

Response: Please see Chapter 4 – Aquatics/Fisheries.

57. I also believe that the general public should be provided a comprehensive and clear picture of what toxic substances are likely to reach the Clark Fork River, and Rock Creek and in what quantities. Should a worse-case scenario be realized, long-term leakage of toxins into these water sources and their potential damage to the environment must be accurately anticipated even if a worst-case scenario is not realized. How widespread will be the affects of dust-carried toxins? What will be the cost of a worst-case scenario cleanup? Who will pay for this? (1608)

Response: The section in Chapter 4, Hydrology titled Surface Water Quality, discusses potential surface water quality impacts and provides information on the substances likely to be present as a result of the proposed mining activities.

The Air Quality section in Chapter 4 discusses potential air quality impacts, the lack of dust related concerns, mitigation plans, and the air quality permit. No health issues were anticipated for dust. See AIR 1400 for more related comments and responses.

The EIS discloses potential impacts to the proposed project. In developing a reclamation bond, an engineering analysis would be performed that addresses cost issues related to closure of the site in an environmentally sound manner under the applicable state and federal statutes. See GEN 1502 for more related comments and responses.

58. Where is the comprehensive data that discusses the toxicity of the chemicals used in the project? What effect do these chemicals have on humans, animals, plant life? (1333)

Page 4-56 - reagents concern: This is a rather cryptic discussion of impacts from the use of reagents. (1504)

Scientific data are seriously lacking in the DEIS concerning the toxicity of chemicals used in mining operations, and the risks to humans, wildlife, mammals, birds, etc., exposed to these chemicals. A rather crucial chapter to barely acknowledge. (1529)

Furthermore the draft EIS does not describe the toxicity of the many reagents that will be used in the mining process? Do these agents have the potential for causing illness in humans? (1674)

What is the detailed toxicity of the reagents being used and their effects on humans, fish, wildlife, and native flora? (1438)

Page 4-75. "The toxicity to aquatic life of the other reagents (AM CY Superfloc S-5S95 and Ozana A) to be used in the mill are unknown." We had better look into this situation. (1780)

Response: The Agencies have materials data safety sheets on file for the reagents proposed to the used at the proposed project and have incorporated copies into Appendix I. The effects of the chemicals on humans, animals and plant life are discussed in the materials data safety sheets. Please see Appendix I for a discussion of the toxicity of all reagents proposed to be used in the milling

process. These reagents are common compounds routinely used in many industrial processes. Additional discussion on impacts is included in Chapter 4, Aquatics/Fisheries.

59. Several reagents will be used in the milling process. Potassium Amyl (Xanthate) will be used as a flotation collector. Hercules Yarmor-F Pine Oil will be used as a frother, as will Dow 250. American Cyanamid Superfloc S-5595 will be used as a flocculant, and Orzana A will be used as binder. Nalco 84DC225 will also be used in the milling process; it contains 20-40 percent aluminum hydroxychloride an 1-10 percent aluminum sulphate, which are considered hazardous. These reagents must be evaluated, less toxic alternatives explored, and spill and storage procedures clearly delineated. A rudimentary description of spill procedures can be found in Volume 2 of the Application for a Hard-Rock Operating Permit. However, in the case of a delivery truck spill, there is no emergency plan outline. Reagents which will be stored to await permanent disposal are a concern, because no safe storage strategy is delineated. It is stated in the Application that "no drains in the reagent mixing and storage areas will permit release of spills outside the complex." How exactly will ASARCO prevent this from happening? And exactly how are the reagent storage areas set up? The mine will be operational year-round, and therefore reagents stored in the winter may present the danger of freezing, causing storage containers to burst and spill. ASARCO should clearly outline a year-long safe strategy for reagent storage. (1223)

Response: Spill and storage procedures for mill reagents are described in Appendix I of the EIS.

60. How can ASARCO guarantee that the water dumped in the Clark Fork river or any other waste water will be free of hazardous chemicals, heavy metals & other blasting debris? Who's to determine what's hazardous. (1333)

The issues of sedimentation, hydrocarbons, and organic solvents and degreasers will continue to be a concern during mine operation. Flotation and process reagents used in milling will be a concern during the operating life of the mine. The issue of soluble nitrogen compounds form blasting activities will be a primary concern during mine operation. (1223)

Response: The chemicals to be used by this project are standard in the mining industry and have been studied extensively. Material Safety Data Sheets are available for the reagents to be used. Metal and nutrient (blasting residue) concentrations are limited in the MPDES permit. Please see Appendix I for a discussion of the toxicity of all reagents proposed to be used in the milling process. Chapter 2 summarizes the processes the applicant would use to limit the presence of chemical, metals, nutrients and sediments in order to meet these standards. The Agencies are responsible in determining what chemicals are considered hazardous.

Sedimentation and the impacts from spills are addressed in Chapter 4, Hydrology and Aquatics/Fisheries. The primary concern about fuels, solvents, and degreasers centers around potential spills and that risk would be reduced by implementation of the applicant's spill response contingency plan (Hydrometrics 1997). Spills of milling reagents are also covered in this plan and other mitigations such as double-walled pipelines with leak detection sensors, burial of pipelines, and pipeline transport of ore concentrate rather than hauling it to the rail loadout facility reduces risk of pipeline leaks and thus reduces the risk of tailings and/or ore concentrate which would contain decomposed remnants of the milling reagents from reaching Rock Creek (see Alternative V description in Chapter 2 for more details on the pipeline). The waste water treatment system would remove sufficient amounts of nitrogen from the mine water so that it could be discharged according to MPDES limits into the Clark Fork River. Residual nitrogen on waste rocks used for constructing the mill pad and tailing facility embankment would leach out over 1-5 years and would present neither a short- nor a long-term problem. See Chapter 4, Hydrology, for more information.

61. Page F-3 states that xanthates attach to sulfide particles and remain with the concentrates in the millings process (The process is stated to be approx 75% efficient). Is xanthate flotation dependent on its attaching to sulfide

particles? Are the sulfides associated with silver and copper in the ore body? Is this association the basis of xanthate processing? (1288)

Response: Xanthates are used as collectors in the flotation process, and would leave the proposed project area in the ore concentrate. Negligible quantities of xanthate would go to the tailings areas and would not be expected in leachate at concentrations that would be toxic. The 75 percent efficiency of the milling process refers to the amount of ore removed from the tailings and is not a factor in the amount of reagents remaining in either the concentrate or the tailings.

62. Adequate analyses would also include detailed documentation of all the processing chemicals used in the milling process. There is a listing of the process reagents in Appendix F Volume 2 of the DEIS. But the precise chemical formulae of several of these compounds are not provided. What does "Mostly a mixture of..." mean? What chemical elements are in the mixture? What are their half-lives in the environmental conditions of the mine, tailings impoundment, and environs? DEIS p. F-3 implies that pine oil and Dow 250 would "degrade in the process circuit." What does this mean? What circuit? What are their breakdown products? Are the breakdown products toxic? What exactly are "negligible quantities" of the reagents that will enter the tailings impoundment? What exactly (chemical formulae) are the so-called "highly sheared (decomposed) hydrocarbon(s?)" resulting from Am Cy Superfloc S-5595 that will go to the impoundment (DEIS F-4)? What are their toxicities? Are any of them reactive compounds? Will they combine with other chemicals to form toxins? Do they or any other reagents contain phosphorus? If so, how much and what amounts will be added to mine effluents (ground water and surface water).

What exactly (chemical formula) is Orzana A (Ammonium lignosulfonate), the "glue" to be applied at railroad sidings? Where are the analyses of its chemical stability? Railroad cars leak and derailments produce spills. Given that the rail line closely parallels, and periodically crosses, the Clark Fork River, mine shipments pose a serious threat to water quality in the river. What are the breakdown products of the glue? What happens to the glue/ore complex when it is hydrated (when inevitable spillages into the river occur) and when it is exposed to sunlight and weathering on the track and river bridges? What provisions will be made to prevent leakage from ore cars? (1288)

There are five reagents listed on page F-1 of the DEIS. Each of these chemicals has a "Material Safety Data Sheet" which outlines human toxicity and safe methods of use and exposure limits. Two of the five chemicals are known to be toxic to rainbow trout at concentrations ranging form 10 ppm to 56 ppm. The threats to aquatic life are not known, however, for two of the five chemicals according to page 4-75. There is a potential that four of the five chemicals being used are toxic to aquatic life at low concentrations. The toxicity to aquatic life of Am Cy superfloc S-5S95 and Orzanan A are unknown. On page 2-28 and F-4 it is stated that "some" reagents would be disposed with the tailings. If these chemicals are going to be released to the environment is the DEQ going to allow the untested chemicals to remain that way? Are there any efforts underway by the EPA or the DEQ to test the toxicity of these reagents since they will be released to the tailings impoundment with the tailings slurry? The additive effects of the chemical mixtures used during processing could be even more toxic than the Xanthate and a-Terpinal. Are there any studies planned to determine the reagents additive toxicity?

The concentrations of reagents that would be contained in the slurry discharge line to the impoundment is unclear. As stated above, according to page 2-28 there will be "some" reagent discharge to the impoundment facility. On page F-3 and F-4 the amount going to the impoundment are "negligible" for the xanthate, a-Terpinal, and Dow 250 while the Am Cy Superfolc S-5595 would go as a decomposed hydrocarbon and Orzana A would not be used at the mill but instead at the railroad siding. That leaves four reagents being deposited in the impoundment at unknown concentrations. Since a-Terpinal has an LC50 value for rainbow trout of 10 ppm I would think that the DEQ would be interested in the concentrations that would be present at the facility. Are there any efforts by ASARCO to provide the concentrations of these chemicals in the impoundment pond and the treated water discharge? Are there any other less toxic than xanthate and a-Terpinal that could be used instead? (1673)

Response: Ponded water associated with the tailings facility may exhibit acute whole effluent toxicity (WET), assuming the Troy Mine is a model for the proposed Rock Creek Project. The DEQ does not have an ongoing chemical testing program. The EPA may have a chemical testing program

that tests the toxicity of reagents, but the DEQ is not aware of ongoing testing with the chemicals proposed to be used at the Rock Creek project. To address public concerns related to leaching from the tailings impoundment, a new alternative that relies on paste deposition of tailings is being considered under Alternative V. The covered rail loadout and railcars would help contain ore concentrate under Alternative V. Please refer to Chapter 2 for a complete description of this alternative and Chapter 4 for a discussion of the associated environmental consequences insofar as discharge of toxic substances to the environment, all discharges would be required to meet effluent limitations set forth in the MPDES permit.

63. Water quality in Rock Creek should not be degraded below current levels. The required baseline data should be collected prior to issuing permits for the construction. (1347)

We are concerned that baseline water quality data and information inadequacies impairs proper assessment of water quality impacts.

The DEIS states (page 3-21) that there is potential for water quality degradation in Rock Creek, and the scoping identified water quality as a concern, and at least four metals are known to have exceeded standards during the period of sampling (page 3-29). Water quality data should be analyzed and presented in a form that lends itself to assessing flow and seasonal changes as the basis for a baseline.

Baseline water quality data should serve the functions of: 1) a basis for evaluating the existing conditions within each waterbody, considering monthly and annual variations; 2) provide the quantitative basis for predicting potential changes in water quality as a result of the mining-related activities; 3) provide a basis for determining whether numeric, narrative, and anti-degradation water quality standards will be met; and 4) provide a reliable, quantitative base for measuring changes in water quality during and post mine life.

Based upon a review of the presented material, EPA believes that the database and/or analysis of data does not allow the achievement of these basic functions. We are concerned about the assessment of the data base with respect to the adequacy of sample sizes, seasonal and spatial representation within a drainage, adequacy of detection limits in relation to water quality standards (including nondegradation) .... as these factors may influence the usefulness of the data to perform the functions of baseline information. As an example, water quality data are presented for 3 locations within the drainage (Table 3-8). It is not possible to assess the adequacy of this data without knowing the number of samples and the flows at the time of sampling. Low flow values should be summarized and analyzed separately from moderate to high flows, since there are 3 orders of magnitude differences in flow levels reported. (1214)

The DEIS failed to provide sufficient base line data upon which to measure mining operation impacts. ASARCO needs to scientifically establish current conditions in Rock Creek and the Clark Fork watershed downstream from Rock Creek. (1936)

The baseline data collected for Rock Creek and the Clark Fork is incomplete. In fact, there are few metals data from the Clark Fork and Lake Pend Oreille to establish a genuine baseline for reference. (1526)

There is a lack of adequate water quality data for the Clark Fork drainage, which makes it difficult to assess current conditions and project the future metals loading into the river and lake. (1991)

Response: Please note that the information provided in the draft EIS are summaries for the general public. We can provide the EPA with the complete database.

Please note that there are up to 56 water chemistry datapoints available for individual monitoring stations (Table 3-3). These data were collected over several years at varying times of the year, yet the standard deviations are typically less than detection limits for the parameters of concern."

64. I would like to point out data on page 4-54. Post-operational added water quality for all the metals. What's there? No data. On page 3-23, 3-25. Water quality data from Rock Creek, water quality data for the Clark Fork River, metals data, no data, no data, no data. This is the information that's being provided for us to give comment on.

There is inadequate baseline data in the document. What we need is three, four, five years of good data collected regularly in order to establish trends. We need this in the final Environmental Impact Statement in order to avoid the problems we have seen at the Troy Mine where there is no adequate baseline data in order to go back and look at violations. (1957)

Page 3-23 - Table 3-4: ASARCO's baseline data for Rock Ck. concern: metals TRC values missing. Table lists ND = no data. This is a lie! Table 3-1 from ASARCO's 1990 Petition for Modification of Ambient Water Quality shows average concentrations for metals in Rock Ck at Highway 200 (RC-1). These average concentrations exceed their corresponding criteria for protection of aquatic life for Ag, Cd, Hg, Pb with Cu on the verge. It is to be noted that the agencies chose to also not present the standards for Rock Ck along with not presenting the baseline data for Rock Ck. Could it be that concealment of the fact that these metals already exceed criteria was the motive? Could it also be that this is directly related to the preposterous assertion in Ch 4 that no metals will be released to Rock Ck by the project? The agencies are placing themselves in a very precarious position. Furthermore, baseline data and standards for Miller Gulch and E Fk Bull River should be presented. (1504)(1780)

Page 3-23 and 25. These tables and the innumerable ND's present speak realms about the agencies allowing the permittee to gather and collate its own information. This lack of complete data represents negligence and is possibly characteristic of the oversight the agencies will exhibit if the project is permitted.

Page 3-34 table 3-11. The ND's are unacceptable. pg. 3-38 table 3-12. The ND's are unacceptable. pg. 3-39 table 3-13. The ND's are unacceptable. (1780)

The baseline information presented on water quality has been used in the DEIS to describe existing conditions and (in conjunction with "interim" data) as a predictive base to evaluate project effects. This information is inadequate in quantity and quality to reliably accomplish either objective. (1595)

No Data is presented for a number of critical water quality parameters, including arsenic, chromium, copper, lead, mercury, and selenium. In addition, the operational and post-operational adit discharge data from the Troy mine presented on pages 4-52 and 4-54 is inadequate. Again, too few sampling events have occurred and too many No Datas are presented.

The Agencies must require ASARCO to collect several years of comprehensive water quality data (preferably on a quarterly basis) at the Rock Creek project, and to present that data as part of the NEPA/MEPA process. In addition, they must require ASARCO to present updated precipitation data for the project area, including data from 1991-1995. (1223)

Response: The water quality standards are listed in Chapter 4 in Table 4-13.

Appendix K has been revised but the monitoring plans are still conceptual and provide a framework around which a final plan must be developed should the mine be permitted. These are the minimum requirements not the maximum. The agencies have the authority to increase future monitoring is results from past monitoring showed trends towards potential violations or problems in order to better develop new mitigations to resolve or prevent the problem or violation. The final monitoring plans would be subject to agency review and approval and would be available to the public for the cost of copying from the agencies.

The database has been augmented with additional data in the final EIS and tables in Chapters 3 and 4 have been revised accordingly. Data has been collected at varying times of the year between 1984 and 1992 for all locations and up through 1996 at a few locations. The complete water quality baseline record is on file at the agency offices. Sampling and analytical methods have changed through time. Thus the use of data in an analysis must be carefully considered to ensure the validity of the analysis. The number of samples tested per parameter is listed in the hydrology tables in Chapter 3. Table 3-9 has been added to show the range of concentrations at surface water monitoring stations at the west and east forks of Rock Creek, mainstem Rock Creek, Miller Gulch, and the Clark Fork River below Noxon Dam. Water quality monitoring stations would be considered for East Fork Bull River during development of the final water resources monitoring plan. Where there was no data either zero or one half the detection limit was used in the statistical calculations depending upon whether the data had been collected by the state or Sterling respectively. The standard deviations are typically less than detection limits for the parameters of concern. It is the Agencies' position that sufficient water quality data are available for the purposes of the EIS analysis and public disclosure.

Please refer to NEPA 900 for more comments and responses relating to concerns about insufficient or incomplete data.

65. Page 3-22 - Table 3-3: DEQ's baseline data for Rock Ck. concern: This is questionable data due to the minimum values being much higher than the listed average values for the metals shown. Detection limits used should be listed. (1504)

Response: The final EIS describes how different detection limits were handled in the statistical analysis. In an attempt to provide a numerical value for comparison purposes, Sterling submitted the statistical summaries in two formats. The two different formats differ only in the way that parameter values are reported when they are below the laboratory detection limit. A value falling below the detection limit can range anywhere from zero to the detection limit. One methodology to handle less than detection limit data is to assign a value of zero. This methodology causes an artificial reduction in the actual average of the data. Two additional methodologies are to assign values of either one-half of the detection limit or the value of the detection limit. In most cases, a value equal to one-half the detection limit, or the detection limit value was used in statistical analyses related to preparation of hydrology baseline for this EIS. The reason for the higher minimum values for arsenic and lead is that laboratory detection limits may have varied with time, or varied with dilution effects during analyses in the laboratory. The minimum value is uncertain, but is less than the number reported. As a result "minimum values," which are detection limits, are sometimes greater than "maximum values," which are measured concentrations.

66. The Coeur d'Alene Tribe feels there is a lack of baseline data shown in the DEIS, little water quality information related to the Clark Fork River, a lack of nutrient loading records for the Clark Fork River at the Idaho/Montana state line, and no long-term information as to the flow rates, sedimentation, and structure of Rock Creek. (1991)

Response: Please see Chapter 4 - Hydrology. Impacts to the Clark Fork River below Noxon Dam are representative of the impacts expected downstream at the state line. The limits in the MPDES permit were developed such that there would be no measurable increases in nutrients at the state line from the Rock Creek Mine.

The project would not affect the flow or the structure of Rock Creek, although Alternative II has a diversion around the upper mill site. The potential for increased sedimentation was considered to be the greatest potential impact. WATSED was run to show the differences between the alternatives. See Appendix N for a discussion on the modeling and Chapter 4, Hydrology, Aquatics/Fisheries, and Threatened and Endangered Species for discussion on impacts from sedimentation.

67. Page 3-30 - Table 3-9: water quality data concern: data missing. Also data for Pb and Ag missing (1504)
Response: Under NEPA and MEPA, the level of detail on the existing environment should be commensurate with the impacts anticipated. As there is no potential for mine water to leach into the lakes, there are no water quality impacts predicted to wilderness lakes and springs located above the orebody. Therefore, the lack of water quality data or specific water chemistry for lead or silver is not crucial in this case. Additional water quality data collected by DEQ are provided in Chapter 3, Hydrology.

68. Page 3-40. 1st sentence 4th para. Please identify the period of record. (1780)
Response: As reported by the applicant, the period of record for baseline surface and ground water monitoring is 1984 - 1993. Additional data have been collected through 1999 and will continue to be collected annually as per the 1995 Supplemental Baseline Water Resources Monitoring Plan.

69. Page 3-41 table 3-14. Have water samples been taken from these appropriations during the period of record?

Page 3-48. "Baseline data were collected...." "However not every station was sampled every year due to inaccessibility, excessive streamflow, no streamflow or other reasons." This is unacceptable baseline from which to design any kind of effective monitoring or corrective action plan. (1780)
Response: It is not necessary to complete a statistically valid database for every location from which a sample has ever been collected; only for those which are to be designated compliance points. In addition, samples cannot be collected when a stream is dry.

70. Page 4-36, Hydrology, Summary, paragraph 3: Excess water would have to meet "state discharge standards" both during mining and after cessation of mining. Last sentence of this paragraph should read "After cessation of mining, excess mine water would continue to be treated until treatment is no longer necessary to meet state discharge standards". (1589)
Response: The quality of waste water discharges must meet the MPDES discharge permit limits both during and after mine operation. The mine discharge would continue to be treated prior to discharge into the Clark Fork River until it met MPDES permit limits or the mine was sealed, eliminating the direct discharge to surface waters.

71. Where does the 23,500 ppm of potassium in the Troy tailings (Table 4-17) come from? Also, for Table 4-17 it is a simple matter to convert a percent value to ppm. All values should be in ppm. (1504)
Response: Potassium may be present due to the presence of feldspar, and is not a regulated constituent in the MPDES permit. Results of analyses are reported in consistent units in the final EIS.

72. We also question evaporation as a means to reduce the contamination. For 8 months per year there is negligible evaporation and when it takes place, it results in a higher concentration of contaminants on the surface layer. These will be dissolved by the next rain and go back into the tailing water. Pumping water from perimeter seepage retention back into the pond is not going to eliminate any water. The only way to catch all the water is to line the whole tailing pond. To drain the tailings, install a lined sump. NO water shall be discharged which is not proven to be as clean as the water presently being discharged for the same area. Seepage from the tailings is likely to channel. It is therefore questionable whether test wells will adequately monitor what goes into the ground water. By the time pollution is found the damage is done. (1296)

Response: Seepage impacts under Alternative II have substantially been mitigated under the Alternative V paste storage facility. Under this alternative, there is no tailings impoundment, and no potential for "effluent channeling." The MPDES permit Fact Sheet/Statement of Basis establishes action levels for certain constituents to provide early detection of adverse ground water quality conditions. The exceedence of these trigger levels, while not a violation of the MPDES permit or Montana ground water standards, may require additional action by the mining company. These actions could include, but are not limited to: additional monitoring, installation of recovery wells, improvements or modification to the existing seepage collection system.

73. #4: Why are these statements made here and not under Alternatives II-IV? Will there not be increased water temp, increased sedimentation, and a reconstructed stream in Alternative IV? The answer is yes, as described in the DEIS. #5: Why does MCA section 75-5 etc apply to McKay but not to Rock Creek? Isn't it illegal in either case to place or cause to be placed any waste...likely to cause pollution of state waters?" (1288)

Response: There would not be a long-term diversion of a perennial stream under Alternatives II-V. That was the key factor in the McKay Creek alternative that would have created the increased water temperatures and sedimentation. There would only be diversions of small ephemeral streams and drainages which very somewhat between the four action alternatives. Under the action alternatives, including Alternative V, there are no plans which would place tailings or waste rock within a perennial streambed as would be required by depositing the tailings in the McKay Creek draining, although there would be a small permanent diversion of the west fork of Rock Creek around the upper mill site under Alternatives II and III. The agencies believe there are sufficient mitigations, Best Management Practices, and monitoring requirements incorporated into Alternative V to prevent pollution of state waters. Additionally, the MPDES permit provides limits to prevent degradation of state waters at the four proposed points of discharge.

WTR-303 Ground Water Quality

1. One of the greatest concerns to them and myself is the water qualities and the tailings impoundment. We have to remind ourselves that the tailings material is mainly silicon sand and not the terribly toxic materials as found in the Silver Valley or in the Butte areas. (1411)

Response: The chemical characteristics of the tailings material and tailings leachate are disclosed in Chapter 4 of the EIS in Tables 4-23 and 4-21 respectively.

2. How are seepages to ground water from the tailings pond that are not recaptured factored into water quality changes in the river shown in Table 4-20, page 4-59, where they may enter near shore waters? (1214)

Response: It was assumed that the tailings facility seepage collection system would be designed to capture sufficient seepage such that there would be no exceedance beyond the approved ground water mixing zone. In addition, Alternative V, using paste technology, has been developed and would significantly reduce the potential for seepage compared to the impoundments in Alternatives II-IV.

3. Once any contaminant reaches a point where it can seep or flow, won't it be out of the control of ASARCO - loose in the ground water and geologic structures. Then what? Doesn't it eventually find its way to Lake Pend Oreille? Should the heavy metal elements, elements, and elemental compounds which are in the process of treatment become overrun by unplanned flows, of what value is it to pump the effluent in the wells back into the pile? Isn't it realistic to expect that the microbes will cease either to perform their work or to be wiped out? Effluent to the Clark Fork River.... Doesn't water seek its own level and in all cases, doesn't that mean the river and Lake Pend Oreille? What protection is provided for these important assets of this region? Of what magnitude is the protection? Who is going to provide it? Who will monitor it? Will the public have access to the reports? If so, how? What will happen when pollution enters the river? What will the agencies do? Will hearings be required? If not, will the agency or agencies be able to close down the mining operations? If damage occurs, is it not going to be of such magnitude to effect all life downstream in the river and in Lake Pend Oreille? (1729)

Response: Please see Alternative V for the elements of the Agencies preferred alternative designed to eliminate or mitigate potential project impacts. The agencies and Sterling would be responsible for monitoring. Copies of the reports can be obtained for the cost of copying from the agencies once they are completed or are filed by Sterling. If monitoring indicates a problem, the agencies would implement the appropriate compliance and enforcement procedures including penalties and abatement of the violation.

4. Discharge and activities associated with the Rock Creek Project may change the ambient surface water quality of Rock Creek, the Clark Fork River, and Lake Pend Oreille, and will most likely affect ground water quality. (1595)

Response: No discharges to Rock Creek are proposed. It is predicted that no detectable changes in ambient water quality in the Clark Fork River or Lake Pend Oreille would occur. The most likely effects are to ground water quality within the mixing zone. No impacts to water quality are predicted outside of the mixing zone. In addition, to reduce the potential for seepage, the Agencies and Sterling have developed a tailings disposal method described in Chapter 2 as Alternative V that will deposit a paste material.

5. Page 2-11: Water Treatment Systems. Tailings impoundment seepage with perimeter recovery system of drains and pump-back wells; why is this system considered adequate and acceptable? As described, it provides no assurance that ground water or surface waters will be protected. (1288)

Page 4-63: Reducing the total volume of seepage before it mixed with ground water would be more protective than capturing diluted seepage in the perimeter collection system. An alternative design could potentially eliminate

seepage to the underlying ground water system, and the need to pump seepage for a lengthy period of time after mine closure. (1223)

Page 2-130 - seepage collection: perimeter drain and ground water extraction well system would prevent changes in ground water quality for water leaving the tailings impoundment area. Concern: You would have to virtually suck the aquifer dry beneath the tailings pond to expect to capture all of the pollutants mixing with ground water there. And how could you possibly believe only 241 gpm will discharge as seepage to the ground from the impoundment? Furthermore, channeling or 'piping' will surely occur as it has at ASARCO/Troy and will likely convey polluted water outside of the mixing zone in significant amounts, and this in colloidal particle size greater than .45 microns making the proposed system of only using dissolved analysis for monitoring ground water also a faulty one. (1504)(1655)(1925)

"The Agencies are confident that a perimeter seepage collection system can be properly engineered to prevent degradation to ground water outside an established mixing zone. Where is the mixing zone boundary? (1504)

The size of the mixing zone and its proximity to these appropriators is another consideration. Where do the rights of ASARCO begin and more importantly where do the rights of the appropriators begin? The agencies acknowledge this concern on (pg. 4-63) "Reducing the total volume of seepage before it mixed with ground water would be more protective than capturing diluted seepage in the perimeter collection system." The capture wells are just dressing on the problem. The water from this tailings facility must go somewhere and unless ASARCO is willing or forced to line the tails facility, their pockets are not deep enough or reliable enough to address this issue for the thirty year project life span, much less the decades it takes the tails pond to stabilize (pg. 4-37, 4-44). (1780)

Impoundment is designed to seep 350 gallons per minute...Where is all this water going to go? Is it going just directly into the Clark Fork River, into the lake? Is it going into the ground water, into the aquifer which I drink? I think these questions need to be addressed seriously before this mine and this impoundment is allowed to happen. (1731)

I live about 20 miles or less downstream from where this impoundment is going to be...Is there any guarantee that the waters from this impoundment would not pollute this aquifer? Is there any guarantee that they are going to be completely coming out of impoundment so none of these heavy metals get into this aquifer and we're going to end up drinking them? (1731)

I did not believe in the efficiency of the pumpback system under the tailings pile and saw no way such a system could intercept the heavy metals flowing towards the Clark Fork. (Will ASARCO provide new uncontaminated and uncontaminable water systems to neighboring residents? (1459)

Response: It has been calculated that, under Alternative II, on the average, 241 gpm would seep out of the impoundment. Of that, 168 gpm would report to the toe ponds. Pump-back wells would reclaim much of the remainder, along with an estimated 131 gpm of ambient ground water. Should seepage be greater than anticipated, pump-back well spacing or discharge rates could be adjusted accordingly. To reduce the possibility of leaching, the agencies have developed a tailings disposal alternative that relies on the surface deposition of a paste-like material. According to the MPDES permit, not all of the potential contaminants would need to be removed by the downgradient seepage collection system. Allowable concentrations at the end of the mixing zone are listed in the MPDES permit.

Under Alternative V, seepage is reduced to 20-30 gpm. Pollution outside of the mixing zone would be a violation of the MPDES permit. Pumpback wells would also be required as a contingency measure under Alternative V should levels be exceeded. Sterling would be required to replace water supplies damaged or contaminated by its activities.

The mixing zone boundary is between 500 and 750 feet downgradient of the proposed tailings facility. Please see Section F of the MPDES statement of basis for further information.

6. If all of the safeguards set up by ASARCO fail in say five years what backup is available to reclaim the polluted water? (1414)

Response: The project would assess an appropriate reclamation bond. If necessary, the bond would be used to reclaim portions of the project that do not meet applicable standards including removal of buildings and reclaiming the waste water treatment facility site once treatment was no longer needed. The water treatment bond would be held until project discharges met MPDES permit limitations without treatment.

7. Seepage from the tailings impoundment dam me alter ambient ground and surface water quality (1595)

The tailings impoundment water is projected to have high concentrations of these dissolved metals, especially copper, iron and lead (Table 4-11 and 4-12). The resulting river quality for this effluent is not assessed in Tables 4-19 and 4-20 or anywhere else in Chapter four and should be calculated in the final EIS to thoroughly examine the possible environmental degradation. (1594)

Seepage from the tailings impoundment is a source of heavy metals and other harmful substances, which could impact ground water, and subsequently surface waters such as Miller Gulch and the Clark Fork River, due to hydrologic connectivity. this seepage is intended to be captured and returned to the impoundment via a system of pump-back wells situated downgradient of the tailings. There is documentation on this technique that supports its efficiency (Peter Werner, DSL, pers. comm. 1994), but a failure of a mechanical system must always be considered a possibility.

Additionally, in ASARCO's Water Management Plan, it is stated that 9.7 percent of the contaminated seepage will escape a fully operating pump-back well system. This corresponds to 22.5 gallons per minute seepage which will reach the ground water in the tailing impoundment area, and the plume of contamination will spread eventually downgradient. This means that over the operating life of the mine, excluding post-closure seepage, a total of 354,780,000 gallons of tailings water will percolate into the area's aquifer. This is only a prediction, based on models which are uncertain by definition, and the actual seepage could exceed what is predicted. Considering the amount of contaminated water likely to percolate from this impoundment design, ASARCO should demonstrate why they have not proposed to build a more structurally stable, lined impoundment. Despite the fact that no liner will contain 100 percent of the tailings water, and that the performance of such a liner will deteriorate over time, it is still better to minimize seepage as much as possible (Rob Walline, EPA, pers comm. 1994). This seepage will require a discharge permit from the state under Section 402 of the Clean Water Act. The main concern here is that we are discounting the future, allowing development which will reap monetary benefits in our generation, but cause the worst problems to be dealt with by future generations. Apparently ASARCO may be required to revise the pump-back well system to make it more efficient, as it is possible to design the wells to capture up to 100 percent of the seepage (Tom Reed, MDHES, Pers. comm. 1994). However, if too much water is pumped back, this system could cause other problems, such as drawing water from the Clark Fork alluvial aquifer (Tom Reed, MDHES, pers. comm. 1994).

It would be expensive to maintain a pump-back well system in perpetuity, so all such tailings impoundments present a long-term problem for water quality. Furthermore, this system is not designed to operate indefinitely (Tom Reed, DHES, pers. comm. 1994). If this system is the preferred option for ASARCO, they must post a bond which is adequate enough to generate interest which could pay for maintaining or replacing this system as needed forever.

The plan to build an unlined, upstream impoundment was based on the assumption that no degradation of water quality will occur from the tailings of the proposed Rock Creek project. This assumption is based on data gathered from ASARCO's Troy mine. However, there apparently are water quality problems associated with Stanley and Lake Creeks near the Troy mine in Libby, Montana (Hansen 1988). In 1985, a new technique was used to test creeks near

Troy for metals contamination, and serious violations of state standards were discovered (Hansen 1988): these violations are discussed in the following section. (1223)

Response: An estimate of the quantity and quality of seepage that could leach from the proposed tailings impoundment is discussed in Chapter 4. It has been calculated, that on the average, 241 gpm would seep through the impoundment under Alternatives II-IV.

In response to issues raised regarding seepage from the proposed tailings impoundment, the Agencies developed Alternative V. Alternative V relies on the surface deposition of tailings as a paste. Seepage impacts under Alternative II have substantially been mitigated under the Alternative V paste storage facility. Under Alternative V, there is no tailings impoundment, no decant pond, and significant reduction in potential seepage. For example, the maximum rate of seepage at year 30 is estimated to be approximately 20 to 30 gpm for Alternative V. The MPDES permit Fact Sheet/Statement of Basis also establishes monitoring well action levels for certain constituents to provide early detection of adverse ground water quality conditions outside the permitted ground water mixing zone. The exceedence of these trigger levels, while not a violation of the MPDES permit or Montana ground water standards, may require additional action by the mining company. These actions could include, but are not limited to: additional monitoring, installation of additional recovery wells, and improvements or modifications to the existing seepage collection system.

8. To essentially suggest that if potential acids, associated heavy metals, nitrates, ammonia, etc. in the impoundment seep into ground water the problem will be dealt with is irresponsible. (1638)

Response: Under Alternative V, addition geochemical sampling and testing of waste rock and tailings from ore samples would be required to determine if our analysis based on Troy geochemistry was correct with regards to acid rock drainage and near neutral release of metals. If the additional testing showed potential in either of these areas, then modifications to the tailings facility, mill site, mine plan and/or water treatment systems would be required to keep the impacts below the level of the alternative that had been approved. If that could not be achieved during the final design stage, then the modified design would be subject to additional MEPA/NEPA analysis and public review as a major permit revision. Nitrates and ammonia are not anticipated to be a ground water problem.

9. The tailings impoundment is the other serious long-term environmental liability (Andrews 1975). Tailings disposal from the mineral extraction industry is a significant source of heavy metal contamination of the environment (Andrews 1975; Greber et al. 1979). The impacts of mine tailings has been widely documented (Andrews 1975). There are numerous pathways for escape of metals from tailings as described in the previous section. However, the two major concerns over the long-term are: metals leaching from the impoundment, and the possibility of a structural failure of the impoundment structure. Clearly, structural failure is much less likely to occur than metal leaching. (1223)

Response: The consequences of a catastrophic failure of the tailings impoundment are disclosed in the EIS in Chapter 4, Hydrology and Aquatics/Fisheries.

See the discussion of Ground Water Quality in Chapter 4, in the Alternative III, Hydrology discussion of impacts. Seepage impacts have been evaluated. In addition, to reduce these impacts the tailings could be deposited as a paste under Alternative V.

Additional monitoring and studies are recommended as part of Alternatives III-V mitigations. Costs of handling tailings seepage would be included in the water treatment plant reclamation bond until water treatment standards can be met. The agencies would require deeper soil salvage and replacement to the reclamation plan for the tailings facility in Alternatives III-V which would

increase plant growth and evapotranspiration, helping reduce seepage quantities through the tailings to acceptable limits.

10. Apparently a loading analysis was done for impoundment seepage water, but a disclosure of all values used in such analysis is not given. The reader is referred to Table 4-13 but is not given the amounts of water used. Furthermore, as in the Montanore EIS, the analysis used only dissolved values to represent the polluted water. This eliminates 98% of the metals in the tailings water. This assumes that the ground will attenuate the colloidal metals the same as a .45 micron filter does, and that the ground will hold the metals in that state for all time. This is a wild and unproven assumption. I have submitted published papers to the agencies in the past which refute this assumption (Hazardous Waste & Hazardous Materials, Vol 6, No 4, p385) and I now reference one of these and also my comments on the Montanore SDEIS, dated Dec. 20, 1991, for a more detailed discussion of this topic.

In addition, the dissolved values from Table 4-12 were used in the loading analysis for seepage quality and as the footnote indicates, this sampling of the Troy tailings impoundment water was done by the DHES in 1995. But the ASARCO/Troy mine shut down in 1993. What water was used? It couldn't have been tailings water. (1504)

Response: A summarized loading analysis is provided in the EIS in Chapter 4, Hydrology. More detail of the loading analysis can be found on file with the DEQ. Water quality was analyzed from samples collected on October 22, 1992. By law, ground water standards are based on dissolved concentrations only.

11. Page 3-34, Table 3-11, Ground Water Quality at Proposed Tailings Impoundment Site Sand and Gravel Wells: This table is based on data from three wells (MW-84-17, MW-84-18, and MW-84-19). As described in Evaluation of Tailing Impoundment Seepage Impacts to Ground water and Surface Water (Hydrometrics, Inc., 1994), data is also available from three additional wells (MW-7, MW-12, and MW-21) completed in the basal gravel/shallow bedrock aquifer. Water tables in these additional wells are within the basal gravel unit. Data from these additional wells are within the basal gravel unit. Data from these additional wells are also representative of sand and gravel wells and should be included in Table 3-11. (1589)

Response: Summary information from the DataMan database provided by the applicant was used to construct Table 3-11 in the draft EIS. Table 3-12 is revised in the final EIS.

12. RWMPC (ASARCO 1995) Apndx.D. pg. 28-29, 5.1. (a). Where was the data for the C/gw used in the ground water mixing zone calculation derived from? It is interesting to note that the tables 3-10 & 3-11 on pages 3-33 and 3-34 of the DEIS show the ND (no data) designation under copper for water quality in the lacustrine and sand and gravel wells located at the Rock Creek project tailings impoundment. Estimating a mixing zone with non-existent data that would characterize the area in question is questionable itself if not downright negligent or criminal in intent. Again, this appears to be a violation of the intent of both policies cited in the last notation # 48. (1780)

Response: Data tables have been updated and revised in the final EIS.

13. RWMPC (ASARCO 1995) Apndx.D. pg. 28-29, 5.1. (e), para.3. Where are the mean values used for TSIN and dissolved copper representing ambient ground water derived from?? The only apparent values found were the ones indicated on page 3-33 of the DEIS table 3-10 lacustrine wells, and there were NO DATA (ND) for the sand and gravel wells. It would seem that there is some inherent copper moving through the ground water below the proposed tailings impoundment. If it is in the lacustrine layer it will probably be in the underlying sand and gravel layer. As this document so readily admits, it will be the underlying sand/gravel layer that reports this effluent to the Clark Fork River. The calculations shown only demonstrate the copper in the lacustrine layer and must also account for copper found in the ambient waters of the sand/gravel layer. This will influence the calculations made. (1780)

Response: Data tables have been updated and revised in the final EIS.

14. Page 2-28: DEIS fails to give amounts of reagents left in tailings. What is the potential for seepage of reagent-contaminated tailings water into ground water and water leaving impoundment site. (1504)

Response: The toxicity and rate of application of reagents used in the milling process were disclosed in the EIS. In the process of ore beneficiation, reagents would be diluted, degrade, or transformed, or be bound to the ore. The toxicity of the reagents remaining in the tailings pond can be assessed by comparison with the toxicity of the tailings pond decant water at the Troy facility. Using the freshwater invertebrate, *Daphnia magna*, the tailings impoundment bioassay program at the Troy mine determined, through acute toxicity bioassays, that water entering the tailings impoundment was acutely toxic to aquatic life (that is, *Daphnia magna* could not live directly in the tailings pond decant water). The results of the investigation also indicated that biological and chemical monitoring over a nine-year period of record supported the conclusion that no adverse impacts or degradation in Stanley and Lake creeks downstream of the mine facilities has occurred. Statistical differences between the control and potentially impacted stations appeared to be random or were attributable to changes in microhabitat quality. (That is, the leaching of tailings pond seepage into ground water, and ground water migration to Lake Creek is not toxic to Lake Creek.) Based on this information, and (unlike the Troy facility) the fact that a perimeter seepage collection including pump-back wells under Alternatives III and IV would be in place, decant water at the Rock Creek facility would likely be acutely toxic to *Daphnia magna*, but unlike the Troy facility, would be contained in a permitted mixing zone. Impacts to Rock Creek or the Clark Fork River from residual reagents are therefore not predicted in the EIS. In addition, to further reduce the possibility of leaching, the agencies have developed a tailings disposal alternative that relies on the surface deposition of a paste-like material with minimal seepage.

15. Page 2-130. Ground water quality under the impoundment will never be returned to pre-mine water quality levels. (1504)

Response: Montana nondegradation rules allow changes in water quality that are nonsignificant. Compliance is based on Montana ground water standards and protection of beneficial uses (ARM 17.30.1006). Ground water standards may be exceeded within the mixing zone, provided all existing and future beneficial uses of the state waters are protected. Nondegradation-based water quality standards for the unconsolidated aquifer below the impoundment is provided in the Fact Sheet/Statement of Basis. Ground water quality, while it may never return to pre-mining levels, must comply with these standards. In order to meet these standards, and in response to issues raised regarding seepage from the proposed tailings impoundment, the Agencies developed Alternative V. Alternative V relies on the surface deposition of tailings as a paste. Under Alternative V there is no tailings impoundment, no decant pond, and a significant reduction in potential seepage.

16. I want to see that some part of their profits are spent to protect the lake, specifically by lining the tailings impoundment and using proven technology for cleaning the discharge, the water that's discharged and for adequate monitoring of the water. (1460)

Response: The agencies cannot require that some of Sterling's profits from the Rock Creek mine are used for specific purposes. The agencies do have the authority to require that standards be met using appropriate means and methodologies. The water treatment system has been modified under Alternative V and tailings seepage would be reduced using paste technology. Monitoring would be required under the MPDES and hardrock mining permits, if the mine is approved. Lining the impoundment was not determined to be necessary to meet MPDES permit limits. See other related comments in the WTR300 series.

17. The statement is made (page 2-34) that water from the impoundment ground water capture wells would be used for revegetation irrigation. We note that if this water is contaminated it may not be appropriate to use this water for irrigation since that may result in putting contaminated water into the aquifer. (1214)

Response: Irrigating revegetated tailings impoundments surfaces with water from the perimeter seepage pump-back wells results in flow paths that are identical to flow paths during mine operations under Alternatives II-IV. However, the volume of water returned to the impoundment area would be significantly reduced. Regardless of the volume, all water would be returned upgradient of the perimeter seepage collection system, and this system would continue to be operated until all water quality discharge requirements could be met.

18. Under the "Outflow" section of the impoundment balance section, evaporation and dust suppression are listed as removing 123 gpm in year 28 of operation. Using contaminated impoundment water for dust suppression will introduce untreated water to the environment defeating the purpose of the ground water capture wells. The only purpose the ground water capture wells serve is to show a token effort to maintain ground water quality. How will this oversight be corrected? The only solution I can think of is to build another water treatment facility to treat the seepage collected by the ground water capture wells and the water used for dust suppression. (1673)

Response: Dust suppression is necessary on the surface of the tailings impoundment to prevent dust from blowing off dry portions of the impoundment, which would impair air quality. Under this scenario, the tailings impoundment water would be used for dust suppression on the impoundment surface itself, not releasing untreated water to the environment. Please see response to other comments regarding the perimeter seepage collection system and pump-back wells. In addition, this method of capturing seepage has successfully been used at other mines in Montana. An example is the Golden Sunlight Mine near Whitehall.

19. Does Table 1.1 (page 1-6, 7) include adequate information on the permit or approval that will be required for the planned discharge to ground water from the tailings impoundment and other potential ground water discharges (e.g., from mine sumps and the underground storage reservoir)? (1214)

Response: Table 1-1 is simply a list of the major permits, licenses, or approvals that Sterling must obtain before mining could begin. The information required for analyzing water discharges from the proposed facility is contained in the EIS (see Chapter 2, Alternatives Description, and Chapter 3, Affected Environment) and in greater detail in the hardrock permit application, MPDES permit application, and several other related documents on file at agency offices and available for public review. The analysis of water quality impacts can be found in Chapter 4, Hydrology.

20. Page 4-45 - ground water quality concern: only discharge from the tailings impoundment is discussed here. Where is discussion of discharge of polluted water from the mill site, adits, mine and mine water storage reservoir? (1504)

Response: Water from the mill site plus mine adit discharges would be routed to the waste water treatment facility via a pipeline. Changes in the concentration of nitrate in ground water below the proposed mill site would not likely be measurable, and it not expected to be significant. Recharge through the mill patio is not expected to be significant because much of the mill site would be paved and most of the unpaved portions would be topsoiled and revegetated. In addition, there would be preferential flow through the more permeable waste rock, and recharge would like exit as surface water seeps at the waste rock natural land surface interface. These seeps could contain nitrates from blasting residue for a short period of time, 3 to 5 years.

21. Page 2-85 plate 2-25. Will clarification and mill ponds be lined? (1780)

Response: Yes, these ponds would be lined under Alternative V as would the underdrain containment pond at the toe of the mill pad.

22. Page 2-36: states that sewage from the lavatory in the adit shop, and from lavatories in the office and the mine dry at the support facility would drain to conventional septic tanks and drainfield systems. Where is the analysis of impacts associated with excess nutrient loading to Rock Creek from these drainfields? Increased nutrients leads to

increased algae growth, decreased dissolved oxygen, and destruction of habitat. The impacts from septic tank leachate must be disclosed in the revised DEIS. (1223)

Response: If the applicant proposes them, drainfields must meet the requirements of both the Public Water Supply Act and the Water Quality Act. It is not anticipated that nutrients would reach Rock Creek or the Clark Fork from these sources. These facilities would only in use during evaluation adit construction and the first few years of mine development and then removed or decommissioned once the mill had been constructed. The evaluation support facilities have been moved away from Rock Creek under Alternative V and would be located within the tailings paste facility footprint.

23. What will be the leaching impacts of the waste rock sites? Will the agencies consider requiring the waste rock to be returned to the interior of the mine? (1438)

Response: The waste rock material is unmineralized. Therefore, the potential for leaching would be limited to nitrogen compounds from blasting. However, the waste rock would be tested to ensure it was suitable. See the Acid Rock Drainage and Metals Leaching Plan in Appendix K. There would be no ponding of water, and little leaching is expected. Waste rock would not be returned to the mine.

24. We note (page 2-54) that some waste materials and would be buried in on-site waste disposal areas and buried pipelines will remain in place. Chapter 4 should discuss potential impacts to ground water from burial of waste materials, pipelines, etc., in on-site disposal areas. Will the tailings pipeline be left in place? Will burial be above the water table or below? If below, how will water quality impacts be avoided? (1214)

Response: The waste materials proposed to be buried on site would be inert. If possible, Sterling would recycle those materials. The tailings pipeline would be above ground and would be removed under Alternatives II, III, and IV. For Alternative V, pipelines would be buried, but capped on either side by stream crossings above the water table. These pipes would be equipped with high sensitivity leak detection design during operation. The pipelines are not proposed to be removed after mining ceases. See the discussion under Pipeline Corridor Reclamation in the Alternative V description in Chapter 2 for more details. No impacts to ground water are predicted for the buried pipelines.

25. Pollution will enter the ground water and find its way into the Clark Fork and Pend Oreille Lake from the unlined tailings seepage pond. What impact will this seepage have on domestic wells in the watershed? What impact will it have on the Clark Fork River and how long will these impacts be present? What will be the impact of a worse case accident at the seepage pond involving total release at maximum capacity? (1936)

It will, in all likelihood, eventually pollute the ground water of the area and any wells in the area. Need better assurances concerning minimizing the risks of pollution. (1363)(1607)(1720)(1719)(1731)(1764-1766)(1780)

What happens when my well becomes contaminated? (1510)

Polluting domestic wells (mine & others) when the Clark Fork River is polluted with heavy metals, nitrates, ammonia, and processing chemicals from an unlined tailings impoundment seeping 850 gpm into ground water & that will a pumpback system that cannot detect or intercept all the seepage. (1635)

The tailings impoundment of 340 acres and 300 feet high within a quarter mile of the Clark Fork River all represent a clear and present danger to the environment on numerous fronts, as does the plan to discharge up to 1500 gallons per minute of contaminated water into the same river. This, combined with a 350 gallon per minute seepage into the local ground water, places in jeopardy all downstream wells and water supplies. (1935)

I don't believe enough safeguards are being planned to protect their water supply. This is grossly unfair to these landowners. (1735)(1736)

Contamination of individual wells and watercourses, as well as public waters should not be allowed. (1196)

Response: See "Tailings Impoundment Seepage and Storm Water Control" in the Alternative III description in Chapter 2 for a description of the three systems which would be in place to ensure containment of ground water seepage from the tailings impoundment under Alternatives III and IV. These systems would be used to prevent exceedances in water quality standards beyond the ground water mixing zone and preventing seepage from reaching downgradient domestic wells and the Clark Fork River. Seepage from the tailings storage facility under Alternative V would be greatly reduced from that under Alternatives II-IV, further reducing the potential for seepage contaminating downgradient ground water. The pumpback wells are retained under Alternative V only as a contingency measure. Pumpback wells are a well known technology used to create hydraulic barriers to prevent contaminated water from migrating downgradient of an approved mixing zone or area of contamination. The water that would be captured by the pumpback wells under any action alternative would eventually be treated at the waste water treatment plant and discharged into the river and is included in the various water balance calculations.

While the MPDES permit would allow for some changes in ground water quality within an approved mixing zone, the permit would not allow for water quality impairment outside of the mixing zone. Ground water monitoring wells would be installed outside of the mixing zone to ensure compliance with the permit. Ground water quality and quantity would be monitored to prevent off-site migration of constituents that exceeded the proposed MPDES permit requirements in Appendix D. If contamination were detected in the monitoring wells, additional pumpback wells would be installed to eliminate contaminant migration. In addition, Montana state law requires that mining companies repair or replace water supplies affected by their mines.

The mined out sections of the mine would be capable of storing a vast volume of water in the event that flows to the waste water treatment plant needed to be reduced or even temporarily halted (1) so that the discharges to the Clark Fork River would continue to meet standards, (2) to allow for maintenance on the mine water pipelines, or (3) to allow for maintenance or repairs to the waste water treatment system. Very conservative engineering design criteria and evaluations have been used to ensure that total failure of the impoundment at maximum capacity under Alternatives III-IV and the paste facility under Alternative V would not occur. See the Geotechnical Engineering section in Chapter 4 and GEO102 comments and responses section for more information on tailings storage facility stability.

26. No baseline data has been collected on my spring and without this data no scientific decision can be made. I request 5 years of seasonal data collection before any work is initiated on this project. This is for my protection. (1271)

I came across a significant error concerning my domestic spring (WR#001737). The document lists the source of my water as Noxon Reservoir. This is untrue. When the Noxon Rapids Dam Project was ongoing a hydro/geologic study was conducted to see what impacts the rerouting of the BN railroad would have on this spring. It was found that the source of the spring is Miller Gulch. Any waters flowing from Noxon Reservoir to the spring would first have to pass through Miller Gulch before reaching the spring, anyhow. The location of the spring on the EIS map is also inaccurate. The map shows the spring is located just above HWY 200, behind the Exxon station, in the Miller Gulch Watershed. No baseline water quality data has been collected for the spring. My upgradient neighbor's wells and springs have been sampled repeatedly. My spring and theirs are 1300 ft apart essentially the same elevation, which leads me to believe they are being fed by the same clay seam originating from Miller Gulch. Your mistakes need to be rectified in the final EIS document and my spring needs a complete 4/season baseline established, which will verify its quality. (1271)

Response: Thank you for bringing this to our attention. Water rights information presented in the EIS is identical to the information on file at DNRC. Owners of water rights who have reason to believe the database requires revision should contact DNRC. The location of water rights presented in the EIS are based on quarter section information provided by DNRC and are therefore only approximations.

Sterling would need to verify the location of downgradient domestic wells and water supplies with DNRC prior to mine construction to determine if any new wells or water sources had been filed with DNRC. Any new wells or misidentified well would need to be sampled to provide baseline data. DEQ would periodically sample monitoring and domestic wells. Split samples from domestic wells would be offered to owners for testing. The agencies would consider the actual facility water balance data, estimates of seepage, and results of the ongoing ground water monitoring program in determining how long monitoring of private domestic water supply wells should continue. At a minimum, ground water quality sampling and analysis would continue at least until bond release.

27. Polluting the river and lake from the pipeline or tailings compound by some natural disaster. polluting the ground water and domestic wells with the tailings water run off. I don't believe ASARCO can stop it in 400 yards! (1923)

Response: The design of the tailings storage facility and pipelines take into account potential seismic events. The tailings storage facility would be located beyond the 500-year flood plain for the Clark Fork River. Burial of the pipelines under Alternative V would reduce the effect of flooding of Rock Creek on the pipeline although the stream crossings would still be above ground. The paste facility under Alternative V would be inherently more stable than an impoundment under Alternatives III-IV because less water would be stored in the structure. The paste facility would also reduce the amount of tailings seepage from over 200 gpm to between 20 and 30 gpm. This is the maximum amount of seepage expected once the entire facility was constructed and so the seepage would be less during preceding years as the structure was built. Any seepage through the impoundment would to comply with the limits set forth in the MPDES permit in Appendix D.

28. Page C-19. Subpart F- Potential Effect. I submit to you that 230.5 and 230.52 are way off the mark, being wrong or totally off base. The project will have an impact on private water supplies. (1196)

Response: No additional information has been provided which would change the conclusions reached in the EIS. The permit is designed to prevent impacts to private water supplies or to Rock Creek.

29. Table 3-14, page 3-41, should also indicate which geologic unit the well is developed in. (1214)

Response: Table 3-15 was compiled from information in the DNRC water rights database. The geologic unit and screened intervals are not contained in this database. It is possible that original drillers well logs contain this information, and that these logs could be located. It was not necessary to expend this effort for the EIS because all ground water analyses assume that the Clark Fork alluvium is continuous between the permit boundary and the river. If it is not, then impacts would be less then predicted.

30. Page 2-129. "The concentrations would be unmeasurable after dilution with Clark Fork River". This dilution solution does not take into account the numerous wells and springs that are utilized by people residing between the tailings pond and the Clark Fork River. (1780)

Response: The text refers to the direct discharge of water to the Clark Fork River. In addition, the MPDES permit requires treatment of mine discharge to meet specific discharge requirements. Refer to Chapter 4 of the EIS for additional information on the loading analysis.

31. A major cause for concern is percolation of mine waste into ground water which is hydrologically connected to surface waters (Andrews 1975). The end result can be contamination of surface waters, in violation of the Clean Water Act. Considering the past and present problems at the Troy mine, it seems unreasonable to assume that water quality will not be degraded at Rock Creek with the proposed tailings impoundment design. Certainly it seems appropriate to further investigate the exact situation at the Troy mine, since all the predictions for the Rock Creek site are based on Troy's history and geophysical properties. (1223)

Response: A hydrologic and hydrogeologic assessment of the Troy mine was completed by consultants for the Cabinet Resource Group in conjunction with consultants for ASARCO. A joint report was prepared that represented a composite of the individual opinions of the consulting firms (Summit Envirosolutions & McCulley Frick & Gilman, Inc. 1996). The study focused on the area of the tailings impoundment because mine water is currently discharged there and because of the concern that tailings disposal may impact Lake Creek. The report concluded that based on the potential impacts of dissolved parameters on water quality of the creek and toxicity to the native aquatic community, it did not appear that acutely toxic concentrations of dissolved metals were being mobilized by ground water from the impoundment into Lake Creek. However, to further reduce the possibility of leaching at Rock Creek and respond to concern, the agencies have developed Alternative V that relies on the surface deposition of tailings as a paste-like material.

32. We are concerned that the Agencies are relying heavily upon the assumption that seepage from the Rock Creek tailings impoundment would have similar water quality to that experienced at Troy (page 4-37), 5th paragraph). If tailings impoundment water quality is estimated to be similar to that shown in Table 4-11, page 4-46), there would be potential concerns with ammonia, copper, lead, and zinc toxicity, and with undesirable aquatic impacts associated with elevated nitrogen levels, particularly if tailings impoundment seepage were inadequately diluted. For example, the maximum reported level of 3.3 mg/L of copper (TRC) would need to be diluted by a factor of 275 to bring the copper level within the chronic aquatic life criteria of 0.012 mg/L at a hardness of 100 mg/L; and the maximum reported level of 2.2 mg/L of lead (TRC) would need to be diluted by a factor of 687 to bring the lead concentration within the chronic aquatic life criteria of 0.0032 mg/L at a hardness of 100 mg/L. We realize these metals levels are expressed as total recoverable rather than dissolved metals. However, apparently there is very little dissolved metals data from the Troy impoundment. We also note elevated levels of copper (i.e., 0.075 mg/L dissolved Cu, and 30.9 mg/L TRC Cu) greatly exceed surface water quality criteria in the operational Troy adit (Table 4-15, page 4-52). Removal of copper from the adit discharge would be needed at Rock Creek if such elevated levels as that found at Troy are encountered at Rock Creek. We are also concerned about the lack of, or minimal, impoundment seepage data regarding arsenic, chromium, mercury, and selenium. We are concerned that impacts on water quality and aquatic life cannot be adequately evaluated without data on these potential contaminants. (1214)

Response: Under Alternatives II, III, and IV, seepage from the proposed tailings impoundment to ground water within the ground water mixing zone could approach several hundred gpm by the end of the 30-year mine life. Seepage water would likely contain elevated concentrations of nitrate, metals, and total dissolved solids. Seepage water quality from the impoundment would likely be similar to impoundment seepage water quality at the Troy Mine, and would affect ground water quality within a ground water mixing zone permitted by DEQ (see ARM § 17.30.502(6) for the definition of a mixing zone). To reduce the possibility of leaching, the agencies have developed Alternative V that relies on the surface deposition of tailings as a paste-like material. Under Alternative V, seepage from the proposed paste facility would be approximately 20-30 gpm. An underdrain, seepage collection system and an approved mixing zone would be required. Table 4-20 of the final EIS presents a comparative analysis of groundwater impacts for each of the alternatives. Data for arsenic, chromium, and mercury have been added to the revised table. No seepage data are available for selenium. Pumpback wells would be installed under Alternative V if data from monitoring wells showed a trend towards contamination that could go beyond the approved mixing zones.

33. We are concerned that there is inadequate ground water quality data at Troy to provide the proper basis for concluding that there have been no ground water contamination problems at Troy and there will be no ground contamination problems at Rock Creek. There must be a realization that the uncertainty around the baseline information directly affects the conclusions that will be reached. The baseline needs to be adequate in size and temporal distribution to account for variation within and between months and between years, and be related to the degree of precision needed in the impact evaluation. This lack of adequate data and information upon which to base a conclusion is a significant "flaw" in the Rock Creek hydrological analysis. We note that Troy tailings water was found to be acutely toxic (page 4-76). It appears that research and evaluations of Lake Creek impacts below the Troy tailings impoundment are confounded by the 1984 tailings spill that made it difficult to separate the effects of tailings seepage from the tailings spill. Where uncertainty about water quality protection exists EPA believes a conservative approach that is protective of water quality should be employed. (1214)

Response: Troy ground water quality was not used to draw conclusions regarding ground water quality impacts at the proposed Rock Creek Mine. The analysis uses on-site baseline ground water quality data collected for the proposed Rock Creek project tailings facility site and water quality data for Troy decant water was used for estimating mine discharge water quality. Comparison of decant water is valid due to similarities in ore mineralogy and ore processing methodology. Therefore, there is no flaw in the analyses as suggested.

A study was conducted of the origin and potential impacts of ground water seeps in the vicinity of the Troy Unit tailings impoundment. Seeps in the area were monitored for flow and water quality for almost one year. Water quality data were also collected from the tailings, toe ponds below the tailings, and nearby streams. A statistical analysis suggested that the quality of water from seeps was more similar to natural seeps unassociated with the project than water from the tailings pond. The report concluded that the seeps below the tailings impoundment were to a large extent due to natural causes rather than as a result of being a conduit for tailings pond wastewater.

34. Page 4-51: states that during the latter stages of mining, the mine may at times discharge about 1,700 gpm of water as a result of seepage from ground water into the mine workings. It is assumed that mine adit water quality for the proposed project would be similar to mine adit water quality for the ASARCO Troy mine (ie. elevated levels of TSS, nitrate, and total metals). The discussion of Troy mine adit water is insufficient. The Troy adit discharge data (Table 4-15, p. 4-52) is based on only four samples taken over a period of several years. This data is inadequate to make any conclusions about the Troy adit water itself, much less projections of adit water quality at Rock Creek. Overall, the Rock Creek DEIS cannot rely on data from a different locality as a basis for its site-specific conclusions. NEPA/MEPA do not allow for such generalities. (1223)

Response: Additional post-operational mine adit water quality data appear in Table 4-22A entitiled "Sterling Data: Postoperational Adit Water Quality for Troy Mine" in Chapter 4 of the EIS. Confirmational samples were collected from the Troy adit in 1996. Water quality data for the Heidelberg adit in the East Fork of Rock Creek are also on file at DEQ. The Agencies believe these data are adequate to draw valid conclusions about operational and post-operational mine water quality. Existing data indicate that the ore bodies at the Troy Mine and at the proposed Rock Mine are very similar. Therefore, the Agencies believe that the Troy model serves as a useful tool in estimating impacts at Rock Creek.

35. The post-mining quality of water that will discharge from the Rock Creek adit is predicted, by analogy, from the post-operational quality of water discharging from the Troy mine adit (Table 4-16). No data on dissolved-metal concentrations in post-operational discharge are provided, but dissolved-copper concentrations in samples collected during mine operation were elevated (0.07-0.09 ug/L, Table 4-15). The dissolved copper probably is coming from oxidation of copper-sulfide minerals, and concentrations may be controlled by the solubility of copper-carbonate minerals. If this is the case, dissolved-copper concentrations may not decrease after mining because of the large

amount of copper-sulfide minerals that will remain within the mine and continue to oxidize. This hypothesis and associated impacts should be evaluated in the FEIS (could use a geochemical speciation code such as WATEQF4 if sufficient water quality data were available). (1933)

Response: Additional information for dissolved constituents are provided in the final EIS. Specifically, 17 post-operational water quality samples from the Troy Mine adit were collected by the Agencies and analyzed for dissolved metals. These data were collected over a five-year period between 1993 and 1998, and are summarized in Chapter 4, Hydrology. The data indicate that between 1993 and 1998, the concentration of dissolved copper in adit water consistently decreased from 0.34 and 0.05 ppm.

36. What will be the affects and what will be done to eliminate or reduce the impacts on ground water, by the extensive use of explosives during the initial construction faze. High levels of nitrates, and assorted compounds from the explosions will be released into the water prior to any filtering or pollution control systems are in place. (1340)

Response: Water treatment systems are required to be in place before the initiation of activities that could possible impact water quality. Water discharged from the evaluation adit as well as the operating mine would undergo water treatment prior to discharge. The mine would also be grouted as it was expanded to minimize both the amount of water entering the mine as well as water seeping beneath the mine.

37. Millions of gallons of water will escape treatment by seeping through rock fractures and into ground water headed for Rock Creek. (1781)

Response: Although such a scenario is not anticipated, Rock Creek and springs and seeps in the vicinity of the mine, would be monitored. If contamination were detected it could be remediated. Possible mechanisms during mine operation include grouting of rock fractures within the mine and installation of recovery wells. If contamination were detected after the mine was sealed, it might be necessary to reopen the mine, pump and treat the stored water, and regrout the workings or install recovery wells and treat the collected water. Other contingencies may be developed depending upon the type and location of the contamination and what new technologies had become available.

38. The Metal Mine Act mandates that a mining/reclamation permit cannot be granted unless the applicant submits a reclamation plan that will "prevent the pollution of air or water and the degradation of adjacent lands." 82-4-336 (8). See also, "Reasons for Denial of Permit." 82-4-351 (1). However, the applicant admits that contaminated water may be released from the site for decades, if not forever. Thus, "reclamation" will never truly occur at the site since contaminated water discharges will continue, with no plan to stop such releases.

If an operator cannot "reclaim" the site (i.e., leave the site with no releases of contaminated water), then it cannot be granted a permit in the first place. For the Rock Creek project, the long-term discharges from the tailings impoundment, the perpetual releases of contaminated water from the mine itself (into the ground water as well as through seeps and springs into the Rock Creek system), as well as potential adit discharges for an indefinite time period, all lead to the fact that the site can never be fully "reclaimed" - as required by Montana law.

It should be noted that long-term treatment of adit discharges cannot serve to avoid this strict requirement. For example, unless the water treatment system is bonded for in perpetuity, there is no assurance that the treatment will continue. On a side note, the financial assurance needed to cover perpetual treatment (i.e., construction, operation, maintenance, monitoring, eventual retrofitting/reconstruction) would be very large.

On the other hand, if the company's proposal to plug the adits was implemented as planned (to supposedly obviate the need to operate the treatment systems in perpetuity), the seeps and springs discharges that the company admits will occur would also represent an "unreclaimed" condition - mandating permit rejection.

In addition, the seepage from the waste rock piles into the Rock Creek system, something which will occur under all the mentioned alternatives, is also the type of persistent, post-mining water quality problem that cannot be allowed under the Metal Mining Act. Similarly, the seepage from the tailings impoundment that will reach surface waters (and ground waters) and continue for an indefinite time period also would preclude the DEQ from issuing a mining/reclamation permit.

This overall analysis also applies to the Forest Service's Plan of Operations approval since the Forest Service also cannot approve a Plan that would result in an unreclaimed water quality problem. 36 CFR Part 228.

At a minimum, the DEQ must be assured that all such discharges will not exist after the close of mining (or very shortly thereafter). This finding has not been made in any documents released to date, let alone fully analyzed in the DEIS, draft permit, or other materials.

If such a finding cannot be made, and the project record indicates that is the case here, then the mining/reclamation permit must be rejected as a matter of law. (1223)

Response: A separate component of the reclamation bond would be required to cover water treatment for as long as needed. The estimated amount for water treatment was increased to between $14 and $44 million and is disclosed in Chapter 1 under Agency Roles and Responsibilities for DEQ. The actual reclamation bond amount would not be calculated until and if a decision were made to permit the mine.

The primary pollutants added to the mine water would be the nitrates from blasting. The water flowing through bedrock and orebody naturally comes in contact with the metals in the rock. The mine would provide a more oxidizing environment that did not exist naturally and would allow releases of some metals that might otherwise not occur. (Please keep in mind that most of the metals in the mine water would be in the suspended sediments and not dissolved in the water). Once the mine was sealed and allowed to fill up with water, a more reducing environment should return possibly allowing the metals content to approach pre-mine levels. As long as the mine water is being discharged to the Clark Fork River it must be treated until it could meet discharge limits without treatment. However, that would not be the primary criterion for determining closure of the mine adits. Adit closure plans would also be based in part on what impacts might need to be alleviated (impacts to wilderness lakes) by plugging the adits or avoided post-closure development of new springs and seeps from water seeping out of an underground body of water by not plugging the adits. The preferred closure plan would be to plug the adits, but that may not be the best methods based on data collected during mine operation.

Background levels would be obtained from water entering the mine after mining commenced. There is no way to accurately obtain this information before the mine is developed given the random nature of the fracturing system through which the majority of the ground water moves through the bedrock and orebody. Once the nitrate level reached pre-mine levels and the mine water met ground water standards, it would be reasonable to allow the adits to be sealed to allow the mine to fill with water and eliminate the oxidizing environment as long as other factors did not dictate otherwise. Monitoring of the mine water would still be required to determine that this occurred. Monitoring of the Troy Mine after its closure, should that occur during operation of the Rock Creek Mine, would provide additional information to be used when finalizing the mine closure plan. Nevertheless, the mine could possibly open new pathways of fractures not currently connected and so water could reach the surface at places it currently cannot get to. It is, however, impossible to accurately determine how much water, if any, would reach the surface and where it might surface, but it is reasonable to expect it to eventually (after decades or centuries) reach the Clark Fork River alluvium.

Some general concepts of ground water flow have been included in Chapter 4, but cannot be confirmed until additional hydrogeologic monitoring is done from within the evaluation adit and mine workings as described in Appendix K.

Contaminants in runoff from waste rock piles (at the evaluation adit under all alternatives or at the mine portal under Alternatives II and III) or through the mill pad (under Alternatives IV and V) would primarily be limited to nitrates from blasting residues and would be gone within a couple of years after placement. The waste rock is not anticipated to generate acid drainage, but additional monitoring and contingency plans for this unlikely situation would be required as described in Appendix K under Alternative V. No long-term water quality problems have been identified with runoff from waste rock. Capture of seepage beneath the tailings facility would not stop until the seepage met ground water discharge limits without the need for capture and treatment. If discharges that can be identified as coming from the mine or mine facilities continue in some fashion after the site has been reclaimed by all other standards and the discharges comply with all water quality standards, then the site would be considered fully reclaimed.

39. Page 2-28. First paragraph. A proposed 207.7 million gallon, 64 acre reservoir within the mine deserves more discussion than the slim paragraph provided. This reservoir appears to hold more water than Cliff and Copper Lakes combined, and the water quality will be poor, contaminated with blasting residues and rock dust. Where is a discussion of this reservoir's potential for leakage into fractures resulting in ground water contamination and other possible side effects? In the text, reference the diagram on page 2-41. And provide a better schematic, cross section, whatever of the proposed reservoir. The one provided is a seriously inadequate depiction of the proposal. (1196)

Does the first sentence of the first complete paragraph on page 2-130 apply to ground-water discharges from the mine sumps and underground storage reservoir? There are likely to be ground-water discharges from mine sumps and the underground reservoir and ground waters in Montana are subject to non-degradation requirements. (1214)

Response: The mine plan is only at a conceptual and schematic stage and is based on the mine plan at the Troy Mine. It would not be finalized until after the evaluation adit had been constructed and would continue to be refined as mining occurred. This is a common practice at all underground mines. The referenced diagrams are the best that can be provided at this time. The reservoir would likely contain relatively high nitrate concentrations and low concentrations of dissolved metals, similar to the data provided for the Troy mine. Despite grouting of fractures in the underground reservoir walls and floor, some seepage would be expected. The water monitoring program would allow for detection of impacts from such seepage. If water quality problems occur, the reservoir could be drained and either improved or use would be discontinued. In addition, sulfate concentrations in the underground reservoir at the Troy mine have been measured by DEQ in 1995 and 1996, and are in the 10 to 20 ppm range. This indicates that sulfide oxidation within the mine workings is not a concern.

40. Page 2-28. states seasonal storage of mine water within the underground mine workings is proposed to regulate outflow through the water treatment system. By year 27, a 207.7 million gallon reservoir would be established in worked out portions of the mine to handle maximum water storage requirements. How will storing the water in the mine workings effect the quality of the water delivered to the water treatment system? We believe that prolonged storage in the underground workings will increase concentrations of nitrates, suspended solid and associated metals. Yet no discussion of these potential impacts are presented in the DEIS. (1223)

Response: Underground storage allows for settling which should reduce the concentration of total suspended solids. It is anticipated that the concentration would not be substantially impacted by seasonal storage requirements.

41. The contamination of thousands of gallons of water per minute by toxic metals and blasting residue cannot be mitigated. The uncertainty of what would happen to the polluted water that fills up the mine after the mining is complete gives rise to an even worse scenario than Butte's Berkeley pit. (1670)

Response: Mine water would likely contain nitrogen (from blasting) and suspended sediment, which would carry metals with it. The metals contained in the sediments could be removed by settling and filtration. The proposed water treatment systems under Alternative V for nitrate use proven technologies. Shortly after closure of the mine, nitrates and suspended sediment would drop out of the mine discharge, leaving only low levels of dissolved copper in the water. Keep in mind that the mine discharge would not reach 1,000 gpm until year 10 and 2,000 gpm until nearly year 30 under Alternative V.

42. Page 4-44 - Mine water storage concern: This could seep to ground water and discharge nitrates and metals to W Fk Rock Ck and to E Fk Bull River. (1504)

Storage of excess mine water in the underground working is likely to result in the uncontrolled discharges of contaminated mine water to local ground and surface water supplies through the creation of spring and seeps.

Page 4-44 states that assuming that underground fractures or fracture systems intercepted the reservoir, the potential for seepage from the reservoir to ground water exist. The rate of seepage cannot be determined. Seepage could possibly exit to the surface at undetermined locations in the form of springs or seeps.

The potential environmental effects of these uncontrolled springs and seeps--with their elevated concentrations of nitrate, ammonia, metals, and suspended solids - have not been discussed in the DEIS. These impacts must be disclosed in the revised DEIS. It is also important to remember that these seeps and springs will require discharge permits and treatment, just like mine water going to the treatment system. (1223)

Potential contamination of ground water and unwanted alteration of the ground-water flow system should be carefully considered for the proposed use of a 64 acre, 10 foot deep, 207 million gallon underground reservoir to store mine and adit water (page 2-36). There should be analysis of potential leakage from this reservoir and subsequent impacts to the underlying ground water. This also applies to the two proposed 100,000 gallon mine sumps (see comment 3 on Chapter 4, Hydrology). (1214)

If water discharging from adits after cessation of mining does not meet applicable water quality standards, ASARCO proposed to seal the adits (paragraph 6, page 4-44). Ground water levels are expected to rise after adit sealing, and ground water is expected to discharge to streams and springs around the mine zone. Adit sealing is expected to have little effect on the quality of water discharging from the mine. Therefore, the diffuse ground water discharge likely will not meet applicable standards either. This potential problem is not discussed in the DEIS; it should be addressed in the FEIS. (1933)(1223)

A final concern with mine water handling has to do with discharge of mine water after the active mining is complete. The DEIS is confusing because it states on several occasions that mine water will [be] treated in the water treatment system until it meets standards. Yet other sections of the DEIS say that if the water does not meet standards, the adits will be plugged.

Page 2-54: states that mine and exploration adit portals would be permanently closed by a bulkhead leaving a near-vertical face.

Page 4-36: states that when mining is complete and the adits are sealed, the mine would fill with water until steady state conditions were reached. It is uncertain where outflow from the mine would discharge.

Page 4-44: states that if the mine water discharge did not meet permit requirements, ASARCO proposed to seal the adits following cessation of operations. Adit sealing is a technique used to control and redirect mine water flow; it

does not prevent mine water discharge. Instead of the one or two point source discharges at the mine adits, mine water discharge would be more diffuse, occurring as springs and seeps, discharge to valley fill ground water systems and/or baseflow in streams.

The DEIS has offered no discussion of the potential environmental impacts associated with the uncontrolled discharges that will be caused by sealing the mine adits. As the last statement says, adit sealing does not prevent mine water discharge, it simply spreads it out over a larger area. Consequently, we request that the Agencies reject adit sealing as an option for post mining water handling, or that they present a full discussion of where these seeps are likely to occur, and what their effects on water quality, soil stability and wildlife populations will be. The Agencies must recognize that these newly created seeps will require discharge permits and treatment, just like all other mine water discharged form the Rock Creek project. EPA policy specifically requires that seeps and springs associated with mine working must be covered by conventional NPDES point source discharge permits. (1223)

If adits are sealed after a mine closure, and mine water discharges into bedrock, what guarantees are there that springs will not be charged with toxic chemicals and metals? (1207)

It is stated (page 4-44) that the potential for seepage from the underground reservoir to ground water exists. EPA is concerned about the potential effects of seepage (possibly contaminated with elevated nitrogen levels, TDS, and metals) from the 207 million gallon underground storage reservoir. Uncertainty about the hydrologic impacts is acknowledged in the DEIS (page 4-36). The FEIS should discuss the need for a ground water discharge permit, and describe how compliance with Montana's Nondegradation policy will be achieved for the water proposed to be stored in the mine.

As noted earlier in regard to mine closure EPA is concerned about the potential for nitrogen (from blasting residue) and metals (from reaction of oxygenated water along mineralized mine walls) to contaminate the underground mine water (pages 4-44, 45). Uncontrolled and/or diffuse discharge of such contaminated water to springs, seeps, ground water, or adit leaks or adit plug failures should be addressed in greater detail. The Monitoring Alert Levels and Contingency/Corrective Action Plan should address how such concerns will be addressed. (1214)

The 207.7 million gallons of water (page 2-36) stored underground in mined out areas will cause problems. This water according to page 4-44 "would likely contain elevated concentrations of nitrate, metals and total dissolved solids (TDS)." Why are ammonia and nitrite, the toxic nitrogen compounds, not mentioned in this statement? The blasting agents are made up of ammonium nitrate which will persist in this ground water reservoir. Page 4-44 reveals that seepage to unknown surface locations is likely, but does not contain the fact that the hydraulic head of this massive subterranean pool will cause more seepage than would naturally occur. The shear weight of standing water will force water at the bottom of the column to infiltrate into the joints and fissures found in the rock. This seepage will eventually reach the surface at a spring, seep or as a direct flow to the Clark Fork River. The additional contaminated seepage could cause heightened impacts to surface water or downgradient wetlands that are not addressed in the DEIS. (1594)

We are also very concerned about the likely seepage of wastewater of unknown toxicity from the underground excess mine water storage reservoir, which would migrate through fractures to surface waters through undetermined locations (4-44). (1220)

Please address the storage of water underground as a potential ground water pollutant. (1637)

The presence of the large multimillion gallon reservoir within the mine must be addressed, especially because of the opportunity for additional ground water contamination. (1991)

We are particularly concerned about the water management plan that includes storage of excess mine water underground and treatment via the bioreactor and/or ion exchange system before discharge to the Clark Fork River. We are concerned about several aspects of this plan. Quality of the stored underground water may deteriorate due to reactions of oxygenated water in contact with mineralized underground mine walls with resultant dissolution of

metals. Also, the ability to accurately predict and to control mine inflow through grouting may be less than anticipated (i.e., more water may enter the mine than anticipated).

The ability of the underground reservoir to contain high volumes of poor quality water, and of the treatment system to treat high volumes of poor quality water are not well described. Also, uncontrolled and/or diffuse discharge of such contaminated water to springs, seeps, ground water, or adit leaks or adit plug failures after mine closure are not well described. Uncertainty about the hydrologic impacts of the underground water storage are acknowledged in the DEIS (page 4-36). We have not found the necessary details on the critical mine closure plan regarding these ground and surface water management issues. We believe that these specifics and related contingencies must be addressed in the FEIS. (1214)

Response: Table 4-22A displays the post operational mine water quality data from the Troy Mine where the mine water is currently being discharged to the tailings impoundment. This is the best data available for predicting the post-mining water quality at the Rock Creek project given the similarities between the Rock Creek and Troy Mine orebodies, tailings, and mining methods (see Chapters 3 and 4, Geology, for more information). As long as the mine water was being discharged to the Clark Fork River it would be treated until it could meet MPDES discharge limits without treatment. Seepage from the mine, however, would be subject to ground water standards, not surface water standards nor MPDES limits based on surface water quality standards. Background ground water quality data on which limits for the seepage could based would be obtained from water entering the evaluation adit and the mine after mining commenced. Water would be collected from drill holes prior to blasting to avoid nitrate contamination as well as from drill holes drilled below the adit and mine workings for the express purpose of sampling ground water along fractures encountered during adit and mine construction. There is no way to accurately obtain this information before the mine is developed given the random nature of the fracturing system through which the majority of the ground water moves through the bedrock and orebody.

The water flowing through the bedrock and orebody naturally comes in contact with the metals in the rock. The mine would provide a more oxidizing environment that did not exist naturally and would allow releases of some metals that would otherwise not occur. (Please keep in mind that most of the metals in the mine water would be in the suspended sediments and not dissolved in the water.) Sampling at the Troy Mine indicates that oxidation of mineralized mine walls is minimal, and that only copper would be present in dissolved form in concentrations greater than aquatic life criteria (a surface water standard). The water in the Troy Mine, however, meets ground water standards and might possibly also meet non-degradation standards with regards to ground water.

Collecting data during completion of the evaluation adit would improve the predictability of long-term seepage from the mine and our understanding of mine water quality. Nevertheless, the evaluation adit would intersect a limited number of fractures relative to the mine workings. Potential impacts of the underground reservoir to be used during mining and the post-mining pool of water are discussed qualitatively in Chapter 4, Hydrology. The impacts cannot be quantified but the agencies acknowledge that there is some potential for impacts from the underground reservoir to existing downgradient springs and seeps and in the creation of new springs and seeps. Any water in the mine workings might eventually reach the surface through cracks and fractures already existing; ground water could have used some of those routes to reach the surface anyway over time had the mine not been built. Nevertheless, the mine would open new pathways of fractures not currently connected and so water could reach the surface at places it currently cannot get to. It is, however, impossible to accurately determine how much water, if any, would reach the surface and where it might surface, but it is reasonable to expect it (after decades or centuries) to eventually reach the Clark Fork River alluvium when it does not surface in springs and seeps as it probably does now. Some general

concepts of ground water flow have been included in Chapter 4, but cannot be confirmed until additional hydrogeologic monitoring is done from within the evaluation adit and mine workings as described in Appendix K.

Due to low bulk permeabilities in bedrock, flow rates would likely be very low, although flow would be greater in the connected fractured pathways. During mine operation the reservoir in the mine is expected to be used seasonally and seepage would be minimized by grouting the floor and walls. The mine would also be regrouted prior to closure to minimize post-mining seepage. A 1,000-foot buffer zone would be maintained at the north and south ore outcrops to minimize the creation of new springs and seeps from mine water stored in the mine after closure; the buffers could not be reduced unless Sterling had demonstrated to the agencies satisfaction that a lesser buffer would provide the same level of protection. Potential impacts to ground water and to surface waters from springs and seeps would like be insignificant. No such impacts have been documented at the Troy Mine. All springs and seeps downgradient of the mine would be resurveyed during evaluation adit construction and would have to be regularly monitored during and after mining to determine if mine drainage was impairing any of these resources. Additional surface water quality monitoring sites would be added in the Copper Gulch and East Fork Bull River drainages as well. If surface water quality impacts were identified, it may be necessary to regrout the reservoir area or implement other new technologies that might have been developed to reduce drainage from the mine. Additional details regarding adit closure have been added to the Alternative Descriptions in Chapter 2.

43. Another concern lies in the containment of ground water after the mine closes. The DEIS suggests that the mine adits may be plugged upon mine closure (page 4-45). ASARCO must be required to inspect and maintain these plugs if installed. Otherwise Rock Creek would be significantly impacted by tainted water and increased erosion when the plugs fail. A plan to monitor these plugs with at least quarterly inspections should be incorporated as a further mitigation in alternative four. However, capping the mine adits might be a bad idea. It would lead to polluted ground water popping out at the surface at many different places. Sending the excess mine adit water to a treatment facility, a proven facility, might be the better option. (1594)

The underground reservoir will cause more problems than are stated in the DEIS due to increased seepage. Mine adit plugs must be maintained in perpetuity if installed. (1594)

Response: The Agencies would not allow portal plugging without proper analyses before such closure. Also note that EPA has used portal plugging at Superfund sites such as Summitville to reduce impacts to water quality. A plug monitoring plan would be developed in conjunction with a final mine closure plan should the adits be plugged upon closure.

44. It is not known where and how the buildup of water in the adit portals would be discharged following cessation of mine activities. (1389)

Another route for nitrogen compounds into surface waters in the mine area is via ground water contamination. Seepage into the mine shaft indicates that there will be connection between the shaft and ground water (Peter Werner, DSL, pers. comm. 1994). There are several large faults in the formation to be mined, and mining will cease before hitting any faults for safety reasons (Peter Werner, DSL, pers.comm. 1994). The rock in this area is highly fractured. Apparently there are joint sets, or repeated fracture patterns in the rock, every foot or so due to the pressures of mountain building (Peter Werner, DSL, pers. com. 1994.) These joint sets can carry water, and the faults may also be water conducting (Peter Werner, DSL, pers.comm. 1994). Therefore, even if mining stops before striking a fault, ground water seepage could leach nitrogen compounds, and possibly heavy metals, from the mine shaft (Rob Walline, EPA, pers. comm. 1994).

This contaminated water could escape from the shaft into the aquifer: effective preventive measures for this potential problem may not exist (Peter Werner, DSL, pers. comm. 1994). Grouting would probably be prohibitively expensive, and even if it were not, it would probably fail to work (Peter Werner, DSL, pers. comm. 1994). ASARCO must demonstrate not only the capability to treat contaminated mine water, but also a strategy for limiting seepage to the aquifer. As the current proposal stands, ASARCO is assuming that 100 percent of the ground water inflow will be captured and treated. However, this assumption seems unreasonable in light of the fractured nature of the rock on the proposed mine site.

The mine shaft itself will have excess ground water entering it. The excess ground water inflow will be pumped out during mine operations, but will this process prevent all aquifer contamination? The exploration adit is also a cause for concern. Even if the fissures in the exploration adit are grouted, the grout could fail to prevent seepage over time (Peter Werner, DSL, pers. Comm. 1994).

There exists the possibility that ground water will leach undesirable substances from the mine shaft, and that these substances could make their way into the surface waters of the area, such as Rock Creek, Miller Gulch, the Clark Fork River, Noxon and Cabinet Gorge Reservoirs, and Lake Pend-Oreille.

The faults and joint sets, as discussed earlier, can carry water, and the distinct possibility exists that water in the mine, spills, nitrates, and leached metals could enter the ground water this way (Peter Werner, DSL, pers.comm. 1994). ASARCO must demonstrate their plans to test, in an environmentally safe manner, whether the mine shaft could seep to ground water resources. If it is found that seepage is possible, ASARCO should have a strategy for coping with the seepage problem, in order that it can be evaluated carefully for its potential effectiveness.

Once the mine is closed, ground water inflow will no longer be actively pumped out of the mine shaft. Residues of ANFO will remain in the shaft, and will become exposed to inflow, and possibly dissolve and percolate into the aquifer. The strata around the mine shaft itself, under aqueous oxidizing conditions, could start producing acid drainage (Rob Walline, EPA, pers. comm. 1994). Ground water inflow could dissolve high levels of metals, which could percolate into the aquifer and even contaminate surface water due to hydrologic connectivity (Rob Walline, EPA, pers. comm. 1994). If acid production does occur, it could increase the amount of metal leaching activity by increasing metal solubility (Laws 1993). ASARCO must attempt to cope with these problems. However, how will ASARCO prevent the oxidizing conditions in the strata around the mine shaft from causing serious long-term problems? How will ASARCO prevent seepage of residual nitrogen compounds?

Evaluate mine shaft for seepage potential before permitting, and if permitted, throughout operations and after mine closure. Strategies to prevent degradation of ground water from this source must be outlined in great detail. (1223)

Response: As there is no mine shaft proposed, we assume you are referring to the two mine access adits and the evaluation adit. During construction the adits would be grouted and then regrouted during mine operation to control seepage both into and out below the adits. As other seepage control technologies are developed, it is likely that they would be used as well. The evaluation adit would drain into the mine once the mine intercepted the adit, so no drainage is expected to reach the surface from this adit. If the mine were never developed after construction of the evaluation adit, it is likely that the evaluation adit would never completely fill up with water as it would intercept a much smaller area of bedrock compared to the mine. There is some potential for seepage through the adits, but the nitrogen and nitrate compounds would be gone a couple of years after adit construction. Nitrogen would be a greater component of seepage within the mine and the reservoir than seepage entering the mine adits. The geologic study by John Balla (2000) confirms that the Troy Mine and Rock Creek ore deposits are very similar. No acid drainage has developed at the Troy Mine and therefore none is anticipated at the Rock Creek mine. All mine drainage that would be discharged to the Clark Fork River would be treated to ensure compliance with the proposed MPDES permit limits.

Additional studies of ground water flow and water quality would be conducted during construction of the adits and during mining operations to better define the volume of water expected to seep into the mine and the adits. This information along with rock mechanics data would be used to modify mine closure plans. Under current conceptual plans, the mine adits might or might not be sealed and plugged once closure plans had been finalized. The final closure plan would have to address any impacts to wilderness lakes (which might be alleviated by plugging the mine and letting it fill up with water) or a likely potential for the creation of new springs and seeps from an underground body of water (which would be avoided by allowing the mine to drain or be dewatered in perpetuity). If the adits were plugged, any seepage from the adits would either infiltrate into bedrock in the adit or the mill pad below the portal if it met appropriate water quality standards. There would be no direct discharge to surface waters unless the water had to be treated and then discharged to either Rock Creek or the Clark Fork River at appropriate MPDES limits. If the adits were not plugged, it is most likely that the water would be pumped, treated if necessary to achieve MPDES limits, and discharged into the river in perpetuity.

The final EIS predicts that a maximum flow rate of 472 gpm would enter the adits by the end of mining. This value corroborates observations at the Troy Mine adit portal that indicate a range of flow rates between 300 gpm and 800 gpm. At Troy, the majority of water is made near the portal entrance between the months of April and June.

45. Extensive contaminated drainage from the actual mine workings and the possible effect of mining on nearby lakes (will tunnels underneath cause drainage?) are other significant impacts. How will these be compensated or corrected? This project cannot be considered alone but the total accumulation of contaminates. (1237)

Response: All aspects of the project have been evaluated in the EIS and cumulative aspects have been reviewed. Please refer to Chapter 4, Hydrology and Water Quality. It is not anticipated that the mine would affect wilderness lakes but additional monitoring of the lakes and mitigations that address the potential for impacts to the lakes have been included in Alternative V. For example, Alternative V includes a 1,000-ft buffer around Cliff Lake and the north and south ore outcrop zones.

46. Page 4-60 - after mine closure concern: mine water will continue to accumulate and discharge to ambient streams and although nitrate levels will diminish over time, metals levels will continue to be a problem indefinitely. (1504)

Response: After the mine was reclaimed, the concentration of nitrates and other nitrogen compounds would return to near baseline conditions once the use of ammonium nitrate blasting was discontinued. In addition, the termination of mining activity would likely reduce the contribution of total suspended solids (TSS) and total metals to surface water to near baseline conditions.

47. If the option of backfilling at least a portion of the tailings is considered, as it was in the Noranda alternative that was dismissed, would this still have the potential to pollute ground water flowing through the caverns? (1637)

Response: Backfilling tailings underground could result in prolonging the period that elevated nitrates and suspended solids are detected in the mine. Backfilling was considered but dismissed. See Chapter 2 for more details.

48. I do not see that the watershed and its effects on ground water and storage capacity have been addressed in this document in serious enough detail. (1389)

Response: A detailed discussion related to ground water and water quality for the proposed impoundment, mill, and mine sites is presented in Chapters 3 and 4 of the EIS.

49. Although prevention and minimization needs to be of foremost importance in the agencies' permitting requirements, what will be the specific mitigation measures in place should ground water become contaminated? The DEIS doesn't detail any. (1438)

Response: The action the Agencies and Sterling would take in the event of contamination will be addressed in the final remedial action plan. The remedial action plan is discussed in Appendix K. Sterling would be required to report any ground water quality violations to the agencies. Sterling would then be required to implement remedial measures to eliminate the source of contamination, if possible, and to clean up any contamination.

50. A map of springs is not provided. Although 120 exploration holes were drilled to define the ore zone, no observation wells were completed in these holes to collect hydrogeologic information. (1933)

Response: A map providing the location of major springs is provided in Chapter 3 of the EIS. Observation wells were not completed in the 120 exploration drill holes because these wells would have been located in the Cabinet Mountain Wilderness Area.

51. Whether or not the water will be used to transport a slurry of ore to a processing facility or transported and used independently, won't it contain - heavy metals and other compounds, not including those added and/or concentrated at the mill site and placed in the gigantic heap mound above the Clark Fork River? Again, at great issue is the volume of water to be used in the system. What efforts have the public bodies made to obtain the answers posed herein?

When the raw ore is treated, won't heavy metal elements, other elements and elemental chemical compounds be produced in great quantities? With respect to those elements, heavy metal elements and compounds, there seems to be no clearly understood plan of treatment "prior to" their release into the heap mound, nor what they might be, nor where they shall be disposed of, nor of what other impacts they might result in. What I am focusing upon are the compounded effects prior to their reaching the heap mound at the bottom of the valley above the river. What work have you conducted to assure the public of the safety issues? (1729)

Response: Please refer to Chapter 4, Hydrology, for a discussion and estimates of concentrations of constituents, which would occur in both the tailing water and mine discharge water. Water discharging from the mine and from the tailing impoundment would be captured and treated to comply with water quality laws and effluent limitations in accordance with the MPDES permit (see Appendix D). The Agencies have developed Alternative V to address a variety of public issues and concerns raised in regard to the proposed tailings impoundment and seepage.

WTR-304 Water Monitoring

1. Page 2-76. Water resources monitoring plan. It has already been documented that the baseline data for this document is inadequate (pg. H-10). The alert levels and corrective action plan is worthless without the baseline. The agencies should abort this EIS process and go back to the adequacy review stage and require that ASARCO garner 3 years of baseline data for all water parameters in all waters and situations to be affected. This alert and corrective plan should have been an integral part of this document. (1780)

Response: Under current stands, which have evolved through the permit review process, the aquatics baseline data appear to be inadequate. Therefore, before beginning the project, the agencies would require additional aquatic monitoring to confirm the predictions made in this analysis.

The monitoring alert levels and Corrective Action Plan focuses on identifying triggers for early detection of potential water quality-based environmental degradation and developing conceptual remediation plans for the most likely scenarios. This plan would not be finalized until after the mine was permitted because several components would be site- or alternative-specific. There would need to be some ties between the Water Resources Monitoring Plan and the various components of the Fisheries/Aquatics Plan.

2. The process for ensuring that impoundment seepage meets all water quality criteria should be described (e.g., location of monitoring wells for points of compliance, sampling and analysis program, and a clear understanding of what constitutes compliance with water quality criteria). How many samples will be collected over what period of time? Will there be trigger or alert standards specified and subsequent prevention actions? What trigger standards will be specified? What contingency actions are planned if contaminated ground water reaches the monitoring wells downgradient of the capture wells? Would the testing of seepage for comparison to water quality criteria be done on the water collected from the underdrains and perimeter trench drains or on the downgradient water quality monitoring wells? A discussion of the MDEQ rules and policies regarding these issues is appropriate here. (1214)

We are pleased to see the commitment to develop a Monitoring Alert Levels and Contingency/Corrective Action Plan. This plan should describe adit water monitoring and contingencies for possible long-term post-closure adit water treatment; long-term monitoring and contingencies for ground water seepage from the impoundment; long term monitoring and contingencies for ground water seepage and/or uncontrolled discharge of such contaminated water to springs, seeps, or adit leaks or adit plug failures from the underground reservoir; monitoring and contingencies in the event that Cliff and/or Copper Lakes are drained or otherwise affected by mining activities; etc. (1214)

Response: Nested monitoring wells will be installed at selected locations along the perimeter of the designated mixing zone, approximately 500 to 750 feet downgradient of the paste facility footprint. Acceptable concentrations of constituents in the ground water at the boundary of the mixing zone are based on compliance with Montana water quality standards and nondegradation criteria listed in the MPDES Fact Sheet/Statement of Basis (FS/SOB) and the final EIS. For parameters that have no numeric standards listed in WQB-7, no increase is allowed that would be injurious or harmful to beneficial uses. The MPDES permit FS/SOB establishes action levels for certain constituents to provide early detection of adverse ground water quality conditions. The exceedence of these trigger levels, while not a violation of the MPDES permit or Montana ground water standards, may require additional action by the mining company. These actions could include, but are not limited to: additional monitoring, installation of recovery wells, improvements or modification to the existing seepage collection system. Operational ground water monitoring would occur on a quarterly basis, except for action-level constituents which would occur on a monthly basis.

3. Page 2-76: states that ASARCO would submit a comprehensive long-term surface and ground water quality monitoring program. In conjunction with this plan, a Monitoring Alert Levels and Corrective Action Plan would be

developed to ensure early detection of potential environmental degradation. The plan would identify alert levels, which when exceeded, would trigger a contingency or corrective action to be implemented.

Page 2-130: states that ASARCO's water monitoring plan would be expanded Under Alternatives III and IV and would include a Monitoring Alert Level and Contingency/Corrective Action plan. This plan would ensure early detection of potential environmental degradation or impairment and would focus primarily on the protection of surface and ground water resources. The intent of this additional plan would be to prevent pollution and other problems before they occur.

This monitoring plan and corrective action plan is needed now so that the public and decision-makers can evaluate it. This is especially critical for the contingency plan. Monitoring is great, but if there is not an efficient, well thought out contingency plan in place, it's essentially worthless. This plan must be developed and presented in the revised DEIS.

Page. 2-76: states that long-term post-operational ground water monitoring would focus on tailings impoundment seepage and ground water quality inside and outside the permitted mixing zone. Again, the details of this monitoring plan should be presented for public review in the revised DEIS. (1223)

More detailed information should be provided on the proposed compliance monitoring related to the impoundment seepage, underground storage reservoir seepage, and monitoring to detect hydrological effects in the Wilderness Area. (1214)

The water monitoring plan for the Rock Creek proposal is inadequate. Once again, necessary information is lacking. The DEIS states that "ASARCO would submit a comprehensive long-term surface and ground water quality monitoring program." The basic expectations of that program must be a part of the EIS. (1638)

Response: The seepage collection and monitoring system at the tailings impoundment would not be fully detailed until an alternative is selected and if appropriate, the mine operating permit is issued. The Monitoring Alert Level and Contingency/Corrective Action plan would be finalized at the time of permit issuance.

Discharges from the water treatment plant and receiving water in the Clark Fork River must comply with effluent and instream quality limitations set forth in the MPDES permit. In addition, constituents in ground water at the boundary of the mixing zone must comply with Montana water quality standards and nondegradation criteria. Monitoring requirements for surface waters and treatment plant effluent are clearly specified in the Fact Sheet/Statement of Basis (FS/SOB) (see Appendix D). Effluent monitoring requirements include, but are not limited to: (1) continuous monitoring of the effluent flow rate, mill bleed, and duration of discharge, and (2) selected nutrients and metals up to three times per week. Instream monitoring of nutrients and metals would occur at a frequency that addresses high and low flow conditions, and seasonal variations. Acceptable concentrations of constituents in the ground water at the boundary of the mixing zone are based on compliance with Montana water quality standards and Montana nondegradation criteria. For parameters that have no numeric standards listed in WQB-7, no increase is allowed that would be injurious or harmful to beneficial uses. The MPDES permit FS/SOB also establishes action levels for certain constituents to provide early detection of adverse ground water quality conditions.

4. MPDES Permit Page 9 & 10 - Monitoring Requirements for Outfall 001 The monitoring frequencies are inadequate in comparison to other permits issued for mining operations in Region VIII. We think that because this is a new mine and there are uncertainties in what the influent will be, the sampling frequency needs to be increased to weekly monitoring for all parameters, except for acute toxicity. Acute toxicity needs to be monitored quarterly, as per the Region VIII NPDES Toxic Control Program guidance mentioned earlier. These changes need to be made on page 5 of the Statement of Basis as well. (1214)

The S.O.B.(p. 4) indicates that effluent limits will be based on a 30-day average, which is defined as "the arithmetic average of all samples collected during a consecutive period." The effluent monitoring frequency presented on page 5 of the S.O.B. calls for only one sampling event per month. Basic statistical principles dictate that you cannot calculate a meaningful monthly average with only one grab sample per month. In addition, meaningful values for average pH and TSS cannot be made with one grab sample per week. In order to generate a statistically meaningful 30-day average, sampling must be conducted daily at a minimum, not monthly. This is particularly true considering many of the effluent limits are based on pounds per day. A requirement for daily monitoring of the effluent from the water treatment plant must be included in any revised permit. (1223)

ASARCO's proposed environmental sampling program is inadequate as was attested to by a AT&T Bell Laboratories scientist at the Sandpoint hearing. It is subject to channeling, and has too few sample points. (1501)

ASARCO assures that monitoring wells & equipment will be installed & in place but how often will they be read & recorded & tested. With 2500 gallons/minute dumping into the Clark Fork if, no when there is a problem allot of pollutants will be dumped before it is detected & probably a lot more will be dumped before any action is taken. (1321)

The stream going into the Clark Fork River is 2,005. Now 2,005 gallons a minute -- that's a lot of water. It should be monitored continuously. There is no possibility that the monitoring schedule talked about in the DEIS which had a minimum monitoring period of monthly. (1952)

Water monitoring should be done more frequently. (1987)

We do not feel that periodic monitoring of the effluent will be enough to safeguard our water quality. We feel strongly that continuous monitoring is necessary. This monitoring must be legally defensible. A single point of discharge is preferable. (1429)

Further, given the hazards to ground water quality of the proposed ASARCO tailings pile it is unconscionable that the DEQ allow such minimal monitoring at the outset of the work. Such cursory checks can only be justified after it is demonstrated through several years that no adverse effects on the ground water are occurring from this tailings pile. (2010)

The proposed monitoring system falls short of providing real time data, which would allow for rapid reaction and adjustment to the proposed infiltration and runoff management plan. Both the timing and location of the proposed monitoring results in merely a notification of exceedance, not an ability to prevent or avoid impacts. (2084)

Monitoring wells should number at least 30 to provide significant data. If the possibility of "channeling" in the substrate is agreed (by authorities with geological expertise, on the basis of cores) then M should be proportionally greater, equal to a number set by a professional statistician in possession of the dimensions of the "front edge" of the system and the best estimates of subsurface flows. I believe this is a critically important point. The cost of the wells is not statistician. Cost of sampling and analyzing will not be high if analyses are done automatically on spectrometers located in an ASARCO on-site laboratory. (1404)

More accurate and more frequent monitoring must be conducted for proposed mine water management. Better and more frequent baseline data should be collected for EIS and MPDES permit reviews. (1638)

Monitor water quality for any toxic substance flowing into Rock Creek at least every other day. (1636)

MPDES Permit Page 9: Self-monitoring requirements. Weekly or monthly grab samples are simply not adequate (see my comments above. We need to get ASARCO involved in the design and operation of a simple on-site sampling lab which can process samples daily. Section D; This table is the heart of the problem. One must assume that the average parameter concentration will vary over quite a wide range. One cannot calculate a monthly average with one grab sample a month, or obtain meaningful values for average ph and TSS with one grab sample a week. The solution to the problem is almost trivial, if ASARCO is persuaded to accept the idea of self-monitoring in

an on-site lab. Samples could be drawn from a line flowing continually from 001 to the lab, or, worst case, grabbed once a day at least.

MPDES Permit Page 10: Samples for whole effluent toxicity testing - acute toxicity should be compounded from daily samples, and if this is done, monthly species tests would be sufficient.

MPDES Permit Page 11: TRE/TIE is fine, but action and response must be based on good (meaningful) sampling statistics. Otherwise one is open - wide open - to the charge of misleading the Department and the public. This cold result in an awesome lawsuit, with a statistician as the expert witness. I would like to see the compliance plan before the event.)

MPDES Permit Page 12, Section 2, 1a: Reporting date annually is not enough. If initial data taken daily from an adequate number of wells (not less than 30) shows that there is no problem at all in the first years, by all means lengthen the sampling if there is any subsequent disturbance.

MPDES Permit Page 12 and 13: Comments for Table 001 apply to 002 (see Page 9 above). Table seems silly: 004, 005, 006 have to be sampled during the event, surely? Quarterly doesn't make any sense to me.

MPDES Permit Page 15: Using E-mail, values can be reported to the department daily. Let's use up-to-date methods. The cost is trivial.

SOB Page 4: A statistically meaningful 30-day average can only be obtained by sampling (at a minimum) daily.

SOB Page 12, Table 3: Load in pounds per day is used as a parameter. To estimate this from small samples taken monthly or weekly is, technically speaking, a deception. Minimum sampling period would be one day, and it has to be shown that the sample is a significant temporal variation in the parameter. One can only prove this by extensive sampling. In the event the variance was found to be low after accumulating data for, e.g., one year, the sampling rate could then be relaxed proportionately.

MPDES Permit Page 5: My focus is the adoption of scientifically sound sampling procedures for outfalls 001 and 002. Data must be examined for variance and assigned statistical significance to comply with accepted scientific norms.

MPDES Permit Page 6: I am prepared to accept the specific limits in Table 1a. I need to be convinced that the sampling procedures give meaningful values for the 30 day average, annual average, and the instantaneous maxima. (1404)

Response: The proposed MPDES has addressed sample frequency for both the surface water discharge and the discharge to ground water. The water resources monitoring plan would be finalized after and if the permit is approved. The monitoring requirements have been substantially revised in the proposed MPDES permit (see Part I.D, Appendix D). Sample frequency range from daily to monthly depending on the expected variation of the individual constituent. The sample frequency follows that recommended by EPA for a lognormal distribution with a coefficient of variation of 0.6.

5. The Remedial Action Plan on pg. H-5 is a joke when you consider that there is no adequate baseline from which to begin drawing conclusions, criteria or statistics. Turning to pg. H-3 Surface and Ground water monitoring: it is ridiculous in this day and age and with the importance attached to water, that monitoring in all phases of the project, construction, operation and reclamation, would only be considered on quarterly basis. Continuous monitoring is the only way that will insure these 36 water appropriations are protected.

The proposed quarterly testing of ground waters does not suffice the demands of QA/QC for the current appropriators as aforementioned. By the time impacts are noticed occurring to their appropriations a minimal time lapse of at least three (3) months will have occurred. If recent history of regulatory functions and response is to be our guide, it could well be six months minimally before notification and consultations would occur, and more than likely a year.

ASARCO is aware of and has been exposed to constant water monitoring, there is no excuse other than a corporate bottom line for implementing it. While no appropriators wish a problem with their water, constant water monitoring they could independently and electronically access would be a mitigation that the state must seriously consider. (1780)

Response: The frequency of monitoring at specific locations would be addressed in the final water resources monitoring plan. Some locations could require more frequent monitoring as is suggested in this comment. Monitoring as some sites is specified in the MPDES permit (see Appendix D). Monitoring reports would be submitted quarterly. Under the self and rules it would be in the applicant's best interests to report water quality exceedances and violations promptly.

6. The statistical significance of a small sample taken quarterly is not significant when assessing the effectiveness of water capture system. Please address statistical significance of water monitoring program. (1404)

Response: When the water monitoring plan is finalized, it must be a statistically valid plan.

7. Page 16 of the S.O.B. states that self-monitoring requirements will include quarterly sampling for all metals. However, quarterly sampling is inadequate to assure protection of human health and aquatic life downgradient of the tailings impoundment. Bi-weekly/monthly sampling and reporting should be required for all parameters. (1223)

Response: Frequency of monitoring is based on effluent variability not toxicity. Monitoring frequency has been increased in the proposed permit for some parameters.

8. MPDES permit Page 10 - Last Statement of Part I, Section D.a We would suggest that load values be reported monthly on the Discharge Monitoring Reports. The permit requires monthly load calculations. Reporting those calculations monthly makes sense. (1214)

Response: The discharge permit has been revised to require monthly load reporting.

9. RWMP (ASARCO 1995) page 3 - 10, para 2. Annual monitoring of storm water discharge collected in the detention pond is unacceptable to determine if exceedances are permissible. The technology exists that measuring and sampling devices can be installed for instantaneous monitoring, otherwise we are dealing with after the fact events that may cause temporary but periodic violations. (1780)

Response: The annual sample requirement was an effort to characterize mine drainage that is not discharged (i.e. this water is recycled to the mill). This requirement has been dropped.

10. Bio-treatment monitoring should be continuous (at intervals defined by statistician) (1404)

Response: The MPDES discharge permit would require regular monitoring of important parameters. Certain operating parameters, such as influent flow rates, pH, and temperature, will probably be monitored on a continuous basis. Other water quality parameters will be monitored, as required, to operate the treatment facility successfully (see Appendix D).

11. Page 12 & 13 - Sampling Table. As with the surface monitoring requirements, we think the monitoring requirements need to be changed. We think that monthly monitoring is probably more appropriate. The term "grab" sample is not appropriate for ground water monitoring. A different term should be used and it should be defined as utilizing standard procedures for ground water sampling, such as removing 3 casing volumes of water. The sample of water must be representative of the water in the aquifer, not the water in the casing. (1214)

Response: The term "grab sample" has been retained. The permittee must follow agency-approved sample collection procedures which would include purging the well.

12. Page 6 of the S.O.B. states that "after the evaluation and pre-production phases of the project are complete, the permittee must conduct acute static renewal toxicity tests on a grab sample from the effluent on a semi-annual basis. If acute toxicity occurs in a routine test, an additional test for each species failing the first test must be conducted within 30 days of initial sampling."

Contingency plans should be developed and included in the permit to determine what actions will be taken if samples are found to be acutely toxic. The S.O.B. only calls for repeating the test if the sample is toxic. The permit should spell out the contingency plan in the event of toxic readings, particularly with regard to evaluation of the passive bioreactor and determination of when the ion exchange system will be brought on line. (1223)

Response: The frequency of the Whole Effluent Toxicity (WET) testing has been revised in the draft MPDES permit and WET testing is required at outfall 001. The authority to require toxicity testing is contained in Montana Surface Water Quality Standards (ARM 17.30.601 et seq). Discharges to ground water are not subject to this provision.

13. On page 5. of the Statement of Basis, footnote 3., we understand this to mean that whole effluent acute toxicity testing be done twice during the last two years of this permit and then tested twice per year on subsequent permit re-authorizations. (2067)

We have several questions regarding the Whole Effluent Toxicity (WET) monitoring plan. First, the S.O.B. and draft permit only require WET testing for the effluent discharged from the water treatment facility. We believe WET testing must be conducted on all discharges from the project, including 1) mine drainage from the mill area, mine adits, and the exploration adit, and 2) seepage from the tailings impoundment to local ground water, Rock Creek, Miller Gulch, and Clark Fork River.

Second, the semi-annual WET testing requirement on page 6 of the S.O.B. is inadequate. The testing frequency should be increased to monthly. Allowing the permittee to alternate between an acute 48-hour test using Ceridaphnia and an acute 96-hour test using fathead minnows (page 11 of the draft permit) is inappropriate. Both tests should be run monthly. (1223)

MPDES permit, page 10 - Section D.1.b - Whole Effluent Toxicity Testing This paragraph is inconsistent with the self monitoring table and Page 6 of the Statement of Basis in that it requires quarterly sampling and the other two require semi-annual sampling. As stated earlier, acute toxicity needs to be monitored quarterly. Please make sure that this section and the section in the Statement of Basis are consistent with the Region VIII NPDES Toxic Control Program guidance mentioned earlier.

MPDES Permit, page 10 - Footnote (3) of the Self Monitoring Table Acute toxicity testing is not required to begin until the evaluation and preproduction phases are completed. We think you should be more specific as to when this monitoring will begin, based upon the best information available to you as to when the production phase will begin. Routine quarterly monitoring should begin at that point. (1214)

Response: The proposed permit was revised to require semi-annual Whole Effluent Toxicity (WET) testing.

14. The discussion of surface and ground water sampling indicates that water quality sampling would be collected and analyzed during construction, operation, reclamation, and during temporary facility shutdowns. We note that surface and ground water quality samples will need to also be collected and analyzed for a potentially long period of time after the mine is closed (e.g., tailings impoundment and underground reservoir seepage quality). (1214)

What is the time frame for the frequency of monitoring, and for the finish date of monitoring? It needs to be generations into the future to assure NO degradation. (1438)

Response: The Agencies would consider the actual facility water balance data, estimates of seepage, and results of the ongoing ground water program in determining how long monitoring of private domestic water supply wells would continue. At a minimum, ground water quality sampling and analysis would continue until bond release. The timeframe for monitoring would likely be dependent on post-operational water quality.

15. Name potential pollutants & identify actual pollutants with frequent monitoring. (1474)

Response: Estimated ground water quality resulting from the tailings impoundment seepage below the tailings impoundment is listed in Table 4-20. Whole rock analysis and extraction procedure toxicity analysis of tailings solid and waste rock are presented in Table 4-23. The estimated untreated and treated discharge water quality from the water treatment plant is presented in Table 4-24. The conceptual water resources monitoring plans are presented in Appendices K and D.

16. Evaluate the option of an on-line bioassay at the treatment facility, with automatic shut-off mechanisms. This type of bioassay tests treated effluent by mixing it into an aquarium at a similar rate to mixing of discharged effluent into receiving waters. If a spill is missed, or sudden high concentrations of metals, or other toxins, is not treated effectively, organisms (fish) in the aquarium may begin to die. A camera can then automatically trigger a cease-discharge mechanism until the problem is dealt with properly. This kind of on-line bioassay prevents toxic flushes from reaching the receiving body of water. (1223)

Response: The MPDES discharge permit would not require quarterly whole effluent toxicity testing using either fathead minnows (*Pimephales promelas*) or an aquatic invertebrate (*Ceriodaphnia sp.)*. Instead, acute whole effluent toxicity (WET) limits would be applied. The WET limit is included as a condition of the MPDES permit to prevent acute lethality in the mixing zone during critical flow periods, when little or no water is released through Noxon Rapids Dam.

17. The water resources monitoring plan to be implemented during mining is described in Appendix H. Field procedures are to be consistent with the U.S. Geological Survey's "National Handbook of Recommended Methods for Water-Data Acquisition" (paragraph 2, page H-4). It should be noted that this handbook was published in 1977, thus, some methods described in this document have been superseded. In particular, sampling methods currently used by the U.S. Geological Survey are described in "U.S. Geological Survey Protocol for the Collection and Processing of Surface-Water Samples for the Subsequent Determination of Inorganic Constituents in Filtered Water" (USGS Open-File Report 94-539). We recommend that the more recent methods be employed. (1933)

We suggest indicating that monitoring frequency, spatial density, selection of parameters or indicators and other monitoring design factors be based on conditions, uses, and goals for the water that is monitored. Monitoring frequency and other monitoring design factors should be based on conditions, uses, and goals for the water that is monitored. This may require different temporal sampling frequency than quarterly. (1214)

Response: You are correct. Monitoring design would be modified based on the alternative selected and sampling frequency would be based on the specific data goals which apply to the data point in question. Monitoring must comply with methods outlined in the MPDES permit.

18. Monitor the slurry line constantly. (1474)

Response: The slurry line would be encased in larger steel pipe at creek crossings to guard against spills. Small emergency dump ponds would be provided in critical areas along the pipelines, such as before stream crossings, to contain possible spills. The slurry lines would be continuously operated and monitored at the concentrator. In the event of leakage, the system would shut down and be immediately repaired. The effects of any leakage would be mitigated through appropriate cleanup actions. Under Alternative V, pipelines would be double-lined, buried and equipped with leak detection sensors reducing the risk of pipeline failure and leakage.

19. The permit application relies on too many assumptions based on too many uncertainties to design an adequate collection and treatment process. This permit relies on self monitoring and a Work Plan that has yet to be designed. The proposed level of monitoring (quarterly) is inadequate given the current state of technology available for BADT. (1780)

MPDES permit, page 13 & 14 - Storm Water Sampling Table This self monitoring table needs to be revised here and on page 22 of the Statement of Basis. The table should only be used for true storm water monitoring, which will not include outfall 003 and possibly 006.

Footnote (2) in this table is inconsistent with footnote (2) in the table on page 23 of the Statement of Basis. This footnote requires that total recoverable method of analysis be used while the Statement of Basis says the dissolved portion of the sample be used. Total recoverable is correct. (1214)

Response: The water management plan has been revised based on Alternative V. The proposed MPDES permit contains both monthly and quarterly monitoring requirements. Sample frequency for ground water is based on transmissivity of the aquifer and not the technology of monitoring equipment.

20. Page 14 states that "if a single sample exceeds the value given the permittee shall take an additional sample within 24 hours of receiving the result. The average of the two samples shall be used to determine compliance."

What is the basis for this averaging system? A violation is a violation. What is the proposed turnaround time for sample analysis? Weeks, months? This is also a concern for the "averaging" discussed on p. 15 of the S.O.B.

The S.O.B. at p. 15 states that "the permittee shall submit to the Department for review and approval, a Work Plan proposing additional capture wells, improvements or modifications to the existing ground water recovery system, or a plan to cease discharging, if any of the following conditions occur. Based on the average of any three samples per year." What is the basis for using the average of any three samples? This will allow the permittee to choose "the best" three samples from the year and could ignore exceedences during the other 9 months out of the year. (1223)

Response: Because of the variability and potential for sampling error, the use of sample average and check sampling is standard operating practice.

21. Page 7, part 1, other limitations: No instream monitoring of the Clark Fork River down stream of the diffuser.

Page 14 S.O.B., F mixing zone: I disagree with the statement that "no instream monitoring is necessary;" It would be to the advantage of both the Department and ASARCO to do minimal testing (high & low water to intermediate) in case Idaho authorities or the environmentalists come up with complaints that mine waste water is contaminating the river. (1455)

Response: Monitoring of water quality in the Clark Fork River would be required both up and downstream of the point of discharge.

22. We understood from the information provided at the public meetings that there will be in-stream monitoring requirements for the Clark Fork River. Page 14 of the Statement of Basis, paragraph 2, line 4, contradicts this. In-stream monitoring should be included in the permit to verify that untreated seepage from the tailings impoundment entering the Clark Fork River is minimal. (2067)

Response: Monitoring wells would be used to monitor seepage from the impoundment/paste facility. Instream monitoring for this component of the discharge would be ineffective.

23. WET testing should be conducted on the seepage from the tailings impoundment so that impacts to aquatic life in the ground water hyporheic zone can be evaluated. WET testing should occur monthly using both an acute 48-hour test using Ceridaphnia and an acute 96-hour test using fathead minnows.

Contingency plans should be developed as part of the permit to determine what actions will be taken if samples are found to be acutely toxic. Specifically, the contingency plan should include the installation of additional seepage collection wells downgradient of the tailings impoundment in the event of toxic discharges from the tailings impoundment.

In addition, there should be surface water monitoring along the shores of Miller Gulch, Rock Creek and the Clark Fork to determine surface water impacts. (1223)

Response: The department does not find that whole effluent toxicity testing of impoundment seepage would be justified. The paste storage facility developed under Alternative V would greatly reduce the volume of seepage and would minimize this concern.

24. RWMP (ASARCO 1995) Appndix B. "Hydrometrics responses to DHES", 4/1/94 # 4 pg., on pg.2. Where's the provision for measuring Clark Fork River flows to maintain minimum dilution factor of 1:1000 during staged flows? (1780)

Response: Flow in the river is measured continuously at Noxon Rapids dam. For this reason, it is not necessary to require flow measurement in the permit.

25. Monitoring parameters such as for Arsenic are absent and NO mention of testing for flocculant reagents is required. There are a series of wetlands immediately adjacent to Miller Gulch and downstream of the proposed tails impoundment that are not mentioned nor for which it appears baseline data has been gathered. (1780)

Response: Arsenic is included in the monitoring program; flocculent reagents are discussed in Appendix I of the final EIS. Outfall 002 would authorize discharge to Miller Gulch and associated waters of the U.S. only during 10-year/24-hour storm event or greater.

26. RWMP (ASARCO 1995) Appendix B. pg. 5, # 11. Discussion on bio-accumulation of cadmium and mercury, small sample size and justification for 1/2 detection limit, low standard for arsenic. If parameters are too low to detect now, how are they to be measured once dilution from Clark Fork River occurs? (1780)

Response: Monitoring requirements in the MPDES permit for surface water discharges would require that the effluent be sampled before dilution with the receiving water.

27. EPA commented on the DEIS regarding the lack of baseline information on arsenic, mercury, selenium and chromium at the Troy mine waters. The mine water to be treated and discharged at Rock Creek is based upon Troy mine waters. In this permit, you have placed a limit on mercury and required self-monitoring for arsenic and mercury. This will provide information on whether mercury and arsenic are present, and whether a limit needs to be placed in the permit in the future for arsenic. We feel, because of the lack of data, that you also need to include a requirement for self-monitoring for selenium and chromium, as well as arsenic. This will determine the need for a future limit in the discharge for these two parameters. (1214)

Response: Monitoring requirements for selenium have been added to the final MPDES permit (see Appendix D). Chromium is not expected in mine water, and will not be analyzed for.

28. Page 8 of the draft MPDES permit indicates that compliance for tailings impoundment seepage to local ground water will be based on dissolved concentrations. Operational monitoring (p. 12) will also monitor the dissolved fraction. We believe only monitoring the dissolved fraction is inappropriate for this project because it overlooks the total metal loads to receiving surface water (Clark Fork, Miller Gulch, and Rock Creek) that are hydrologically connected to the aquifers below the tailings impoundment. Consequently, the total load of metals, and the significance of impacts to aquatic life that they will cause in the surface water streams, will be underestimated or go completely unnoticed. (1223)

Response: Ground water monitoring is based on compliance with Montana ground water standards (ARM 17.30.1001 et seq) which are based on the dissolved fraction of the sample.

29. MPDES Permit, page 12 - Outfall 002 (Section D.2.1) - Ground Water Monitoring The first sentence in this section ends with a statement that samples or measurements shall be representative of the volume and nature of the ground water unit. This is somewhat confusing. We think it means that samples or measurements should be representative of each hydrostratigraphic unit. It needs to be clarified or removed. (1214)

Response: This change has been incorporated into the proposed MPDES permit.

30. S.O.B. Page 8, part 1 under other conditions: There should be an intermediate condition between (2) & (3). A gradual increase of the parameters in (3abe) above the baseline values for a particular monitoring well should trigger additional recapture well or wells upgradient from that particular monitoring well depending on amount to speed of change. Any sample with an unusually high or low reading of the required parameters should require immediate resampling.

Page 9, part 1(3abc): The parameter values set in (3abc) are too high before triggering the response in (3). If the purpose of the recapture wells to pump a back system is to minimize seepage from the tailings impoundment spreading into the ground water outside the mixing zone then the high parameter values of (3abc) would indicate that the seepage has already occurred and the corrective action is too late. (1455)

Response: The Statement of Basis has been modified to include a trend analysis to evaluate an increasing trend. These comments were incorporated into the proposed MPDES permit in Appendix D.

Seepage from the facility, and subsequent bypass of the recapture system would be authorized by the permit. The discharge into the regional aquifer would be authorized pursuant to the permit. The acceptable levels for the discharge are specified in the proposed permit and comply with Montana ground water stan dards, nondegradation policy and protect beneficial uses.

31. Page 14 of the S.O.B. states that "because of the uncertainties involved in designing and implementing the impoundment seepage collection system, compliance with water quality standards will be monitored in compliance wells located downgradient of the capture system and mixing zone."

These uncertainties can be eliminated by lining the tailings impoundment to prevent seepage from escaping the impoundment instead of letting it all out and then trying to capture it (i.e., trying to close the barn door after you've let all the horses out).

Page 16 states that "monitoring wells shall be located downgradient of the tailings impoundment and designated M01 through M14, or more if necessary. At each monitoring location, a sample from each hydrostratigraphic unit shall be collected (lacustrine, basal, bedrock, and other)."

This is an inadequate number of monitoring wells to detect changes in water quality caused by the tailings impoundment seepage. We believe a minimum of 30 monitoring wells, and likely more, will be needed to adequately evaluate and detect impacts caused by seepage from the tailings impoundment, particularly considering the likelihood of effluent channeling in the substrate.

Response: The final number of monitoring wells would be determined in a MPDES-specified work plan that would be reviewed by the Agencies. In addition, seepage impacts under Alternative II have substantially been mitigated under the Alternative V paste storage facility. Under this alternative there is no tailings impoundment, and no potential for "effluent channeling."

32. Also, how many samples will be taken at each location? Will there be a series of four nested wells at each of the 14 sampling locations, raising the total number of monitoring wells to 56, or will each individual monitoring well in each hydrostratigraphic unit account for one of the fourteen wells, meaning there will only be three to four actual sampling locations around the impoundment? Overall, this limited monitoring is woefully inadequate. (1223)

Response: Each monitoring location (site) will provide groundwater quality data for hydro-stratigraphic units present at that location. For most locations, three monitoring wells would be necessary (lacustrine, basal gravel/shallow fractured bedrock, and deep bedrock aquifers). The final number of monitoring wells would be determined in a MPDES-specified Work Plan that would be reviewed by the Agencies. As an example, if the work plan specifies that 15 well locations are necessary, then a total of 45 monitoring wells could be required if all hydrostratigraphic units are present at all locations.

33. MPDES Permit, Page 16 - Section B.1 - Ground Water Monitoring Well W01 - W14 The first sentence in this section says that more monitoring wells may be necessary. The Statement of Basis and the permit should be clearer on this that the Department will be the one determining if more monitoring wells will be necessary and that the Company will, as a requirement of the permit, install these wells when the Department makes that determination.

It should also be clarified in the Statement of Basis that, at each of the monitoring well sites, a separate well or a nested well will be screened in each of the hydrostratigraphic units present at each location. (1214)

Response: Lining the impoundment would not eliminate the need for a comprehensive ground water monitoring program. The ground water monitoring program has been revised. Text stating that the department must approve the monitoring plan was included in the revised draft and proposed MPDES permit.

34. The fact sheet for the MPDES permit provided by Montana DEQ states that "Several indicator parameters are included in the permit to monitor the effectiveness of the ground water capture system." No mitigation action is described in the event the system proves ineffective. Monitoring plans should include activities to be undertaken in the event the system fails to adequately capture pollutants and results in degradation ;of nearby domestic ground water resources. (1779)

Response: Pumping rates would be increased or additional wells would be installed depending upon the Alternative permitted until the system efficiency was optimal.

35. Page 4-49: "continued monitoring of the pumping systems for potential bypass by seepage-contaminated ground water is essential. If monitoring indicated bypass of seepage, the pumping rates could be adjusted, or additional wells could be added to increase the efficiency of the pump back system." Figure 2-14 (p. 2-35): clearly shows seepage from the tailings impoundment continuing downgradient of the ground water capture wells and beyond the "to-be-approved mixing zone." (1223)

Response: Figure 2-14 was not intended to show that seepage would definitely continue past the ground water capture wells but that the monitoring wells would be located down gradient. Data from the monitoring wells could be used to determine whether or not the capture wells were controlling the seepage capture. If not, then measures such as increasing pumping rates or installing additional pumpback wells could be implemented to ensure compliance with the MPDES permit. Installation of pumpback wells would only be required as a contingency measure under Alternative V should monitoring data indicate a need for additional seepage capture.

36. SOB Page 19F: Note that (paragraph 2) "Secondary fracturing may produce relatively high localized hydraulic conductivity." This statement validates the improvements suggested in this letter. With only 14 wells across a 3/4 mile front, the acknowledged possibility of channeling, and sampling on a weekly basis, it would be deceptive to use the assure MDEQ or the public that there is nondegradation. (1404)

Response: The conceptual plan consists of fourteen monitoring locations with multiple wells at each location to monitoring each hydrostratigraphic units under Alternatives II-IV. The final monitoring plan would need to be reviewed and approved by the agencies.

37. How will ground water contamination be dealt with? (1360)

Whether or not the monitoring of seepage will be adequate to determine whether a problem exists is questionable. Furthermore, if monitoring seepage from the impoundment indicates that it does violate water quality standards, how will the problem be corrected? (11)

If ground water or surface pollution does occur, how will ASARCO clean it up? Please come up with a plan for independent daily monitoring of water quality, cleanup of pollution if it does occur, and restoration of lost beneficial uses. (1637)

How can we the public have any confidence that violations at this project will be handled in an environmentally friendly manner? There may now be a manual to refer to, but what are the steps that would be taken and how quickly would the Department respond? (1643)

It is ludicrous to suggest that the proposed monitoring of seepage wills will provide enough time to react to a problem. Even if a problem is detected, what makes you think that it can be corrected without continued or further damage to the environment? Isn't the damage already done once the problem is detected? (1925)

The proposed discharge permit addresses water quality monitoring to determine if there is contamination of the ground water. Pages 7 through 9 of Part 1 of the permit cover self-monitoring and the development of a work plan if the seepage collection system should fail. What is not explained is how contaminated ground water and soils would be cleaned up in the event of a system failure. (1991)

The proposed monitoring system falls short of providing real time data, which would allow for rapid reaction and adjustment to the proposed infiltration and runoff management plan. Both the timing and location of the proposed monitoring results in merely a notification of exceedence, not an ability to prevent or avoid impacts. (2084)

If checking the discharge water shows too much pollution does ASARCO have to shutdown? (1525)

Response: The action the Agencies and the applicant would take in the event of contamination would be addressed in the final remedial action plan and may include stopping discharges to the Clark Fork River under some circumstances until the problem is resolved. The conceptual remedial action plan is discussed in Appendix K. The applicant would be required to report any ground water quality violations to the agencies. The applicant would then be required to conduct remedial measures to eliminate the source of contamination, if possible, and to clean up any contamination. These measures would be adapted from measures routinely used by EPA, the states, and other parties to eliminate sources of contamination and would be accordance with allowable actions according to federal and state laws and regulations.

38. The current plan calls for water samples to be taken once a month. What happens if there is a violation on the other 350+ days of the year? (1248)

Response: Monitoring requirements for surface waters and treatment plant effluent have been revised, and are clearly specified in the Fact Sheet/Statement of Basis. Effluent monitoring requirements have increased and now include, but are not limited to: (1) continuous monitoring of the effluent flow rate, mill bleed, and duration of discharge, and (2) selected nutrients and metals up to three times per week. Instream monitoring of nutrients and metals would occur at a frequency that addresses high and low flow conditions, and seasonal variations. The increased frequency of monitoring would provide a higher level of information that would be more representative of the range of conditions over time, and would more like detect exceedences of compliance limits.

39. Please describe how ASARCO's water monitoring plan will prevent toxic seepage into surface and ground water. This is not adequately addressed in the DEIS. (1207)

Response: The final water monitoring plan would be used to detect any releases to the environment. In the event of a release, the remedial action plan discussed in Appendix K would be implemented. Tailings seepage would be prevented or minimized under Alternative V through the use of paste technology to construct the tailings facility (see Chapter 2, Alternative V description). Lining of storm water and mill ponds and mill site underdrains would help minimize seepage at the mill site.

40. As proposed, the monitoring wells will only detect pollution after it has already reached the ground water. What guarantee is there that the ground water can be cleaned up after it is contaminated? (1248)

Response: The MPDES permit Fact Sheet/Statement of Basis establishes action levels for certain constituents to provide early detection of adverse ground water quality conditions. The exceedence of these trigger levels, while not a violation of the MPDES permit or Montana ground water standards, may require additional action by the mining company. These actions could include, but are not limited to: additional monitoring, installation of recovery wells, improvements or modification to the existing seepage collection system.

41. It is stated on page 2-34 that the seepage collection system would continue to operate until seepage met all water quality criteria. More detailed information should be provided on the procedure for monitoring for compliance with ground-water quality standards. (1214)

Page 2-130 - water monitoring plan: concern: is not described and made available to public review (1504)

Response: The final water monitoring plan would be included in the operating permit. The Agencies' conceptual water monitoring plan is presented in Appendix K and proposed MPDES permit requirements are described in Appendix D.

42. Since it is stated that Rock Creek often sinks into the coarse alluvial materials during low flow periods (page 3-20), it should be recognized that ground-water quality may be impacted by contaminated surface water infiltrating into the alluvium along Rock Creek below the mill site. The water monitoring program should address this. (1214)

Response: The monitoring program would include stations in Rock Creek above and below the proposed mill site. Underdrains and lined containment and storm water ponds at the mill site would reduce the potential for impacts to Rock Creek.

43. We are pleased that ground water will be monitored for several decades for all action alternatives (page 4-37). Uncertainties about the quality of impoundment seepage and the effectiveness of the seepage collection/capture system necessitate such long term monitoring.

Long-term ground water monitoring should also be required for seepage from the underground storage reservoir. Will anything be done to minimize or mitigate infiltration of water from the underground reservoir and/or sumps to the underlying ground-water flow system? We have not found the necessary details on the critical mine closure plan regarding these ground and surface waters water management issues. We believe that these specifics and related contingencies must be addressed in the FEIS. Again as noted previously we believe that application of paste backfill technology would reduce these concerns by reducing mine inflow. (1214)

Response: The underground storage water would be monitored for the long term. A paste technology has been proposed for surface tailings disposal and would reduce the amount of seepage compared to conventional impoundments. Under Alternative V, the mine adit might be sealed near the ore body if hydrogeologic monitoring data indicated that was the correct method. It is possible that the mine water would be captured, treated if necessary, and then discharged to the river in perpetuity (DEQ 2001a). See related discussion in the EIS and responses to previous comments.

44. RWMP (ASARCO 1995) Appendix. D. page 33-34, 5.2. There is nothing said under regulatory compliance as to what steps will be taken should trigger level criteria be exceeded at the edge of the mixing zone. Quarterly or even monthly sampling of perimeter monitoring wells is incompatible with a system that must determine quality in a timely fashion. Constant monitoring is a necessity in this situation. On site sampling analysis facilities must be a prerequisite, and third party monitoring acceptable to the community is also a must. A work plan designed around such monitoring must be proposed and in place before any permitting that allows development of this project to proceed. Site specific measures must be designed that will be implemented should pollution be detected, time frames established to ensure compliance and clear language that includes total shutdown of the facility incorporated should these measures fail. (1780)

Response: Compliance limits and sampling requirement are described in the proposed permit. Trigger values would require corrective action be initiated prior to exceedence of compliance values. Should the action fail and compliance levels are exceeded, the situation would be evaluated on a case-by-case basis.

45. Numerous monitoring plans are included in the DEIS; however, no mitigation measures are described if monitoring studies identify the need for action. Monitoring plans should include action items and definable thresholds for impacts, after which time action is taken. Agencies responsible for tracking monitoring and ensuring mitigation compliance should be clearly identified. Further, while the DEIS indicates that during the life of the mining operation, seepage collection ditches will intercept sedimentation originating from dam faces, nothing is

planned to handle sediment loading post mining. The mitigation is incomplete as it does not continue through reclamation activities. (1779)

Response: Additional contingency measures have been added to some monitoring plans in Appendix K where possible problems could be identified. For some resources, there are simply too many variables to determine the most likely scenario. However, it would be a requirement that the applicant would need to develop action plans for developing contingency measures. Please refer to Appendix K for a discussion on monitoring alert levels and contingency/corrective action plans.

The reclamation of the tailings facility embankment faces would prevent erosion of the slopes and create sediment that might reach surface waters. The face of the slopes would be reclaimed concurrently as the impoundment under Alternatives II-IV or the paste facility under Alternative V was constructed. There would be several years prior to bond release after mine closure to ensure that the revegetation was sufficient to prevent erosion and sedimentation. It is not anticipated that the seepage collection ditches, a feature of the impoundments under Alternatives II-IV, would be needed after mine closure and after the tailings seepage met MPDES permit limits without treatment and no longer needed to be collected and treated.

46. The state was questioned. Their response. We cannot find ASARCO in violation of water quality because it is not a legally defensible monitoring program. But it was the State that allowed that monitoring program and approved it. But it's not legally defensible. Similar monitoring programs are proposed for Rock Creek. (1504)

Response: The water monitoring program at the Rock Creek project would not be the same as that program used at the Troy Mine. The conceptual water monitoring plan is presented in Appendix K and has been expanded based on comments on the draft and supplemental EISs. The final plan would be legally defensible. Additional detailed information related to monitoring requirements are presented in Appendix D.

47. Water Monitoring Program: Must be legally defensible and if violations are found, must be able to stand up in a court of law. A legally defensible monitoring program must be developed following these steps: 1) that which will be considered degradation is defined in specific measurable terms, 2)monitoring parameters and protocols are developed which are geared to detect that degradation, 3) this monitoring program is begun 2 or 3 years before any activity occurs in order to establish valid and completely comparable baseline data.

The water monitoring plan as Appendix H is too general for evaluation. The details and specifics must be presented to the public for public review. However, in App. H a few things are mentioned which demand comment. Page H-4 - Water Balance: 8th bullet: what seepage collection ponds? The text discusses only seepage collection trenches and wells.....12th bullet: what land application disposal areas? The text discusses no LAD areas. This method of treatment is unacceptable.

The water monitoring program must be "legally defensible". The agencies should describe to the public what the process would be if a violation of water quality laws were to be found at the project. the results of monitoring would have to stand up in court. The agencies should have 3 independent experts in the field write a description of what a "legally defensible" monitoring program would be for this project, compile the results and present a definition to the public. My view is that once a day would be a minimum for all discharges with immediate on site analysis and daily submittal to the agencies. In addition, using dissolved analysis techniques for ground water monitoring precludes the possibility of detecting migration of metal bearing colloids of >.45 micron sizes in the ground. As this is a real possibility, this plan for monitoring is inadequate. Furthermore, independent consultants, paid by ASARCO should perform all of the monitoring tasks. (1504)

Response: The seepage collection ponds are discussed in Chapter 2, Alternative 2, Tailings Impoundment Seepage and Storm Water Control section. Land application disposal is no longer proposed; the reference in the EIS has been deleted. The permit-related water resources monitoring plan will be attached to the final MPDES permit and a plan for other monitoring has been expanded in Appendix K. The detailed monitoring plan for aquatics dated November 18, 1994, is on file at the

DEQ and Kootenai National Forest offices. The proposed MPDES permit contains language that defines what is legally enforceable, including standard language developed by the U.S. EPA and the State of Montana used in discharge permits since 1974. The language is periodically updated to reflect recent changes in statutory authority and judicial review. For ground water compliance, the dissolved fraction is monitored pursuant to Montana Water Quality Standards (ARM 17.30.1001, et seq.). If the permit did not follow approved methods, it would not be enforceable.

48. Something I would like to see addressed in the EIS is "agency accountability." It is obvious that in the past the agencies have been working for industry rather than the public who pays their wages. A legally defensible water monitoring program along with accurate base line data should be fully outlined. The means of enforcement and fines for violations should also be documented. The public needs to know that the agencies are working for them. (1530)

Some of the document's additional deficiencies regarding surface water stem from inadequate data or the lack of explanation of data. The data collected from the Troy mine is not robust enough to be reliable and cannot be used to determine that no problems exist. Dissolved metals were not examined in the Troy mine adit water after closure (Table 4-16). Even when the mine was active (1987 to 1994) dissolved metals were only analyzed four times (Table 4-15). These are the metals that will be discharged to the Clark Fork after filtration removes the metals adsorbed to other solids, and therefore must be considered more fully. It is wrong to base effluent concentrations on this inadequate Troy data. Is this the type of monitoring program ASARCO will use to detect degradation of the Clark Fork River and Rock Creek? (1594)

Response: Additional information is provided in the final EIS. Specifically, 17 post-operational water quality samples from the Troy Mine adit were collected by the agencies and analyzed for total recoverable constituents. Because the dissolved fraction is contained in the total recoverable analysis, it is considered a worst-case analysis. These data were collected over a five-year period between 1993 and 1998, and are summarized in Chapter 4, Hydrology. The data indicate the between 1993 and 1998, the concentration of copper in adit water decreased from 0.34 to 0.05 ppm. Other metals were detected in lower concentrations or below laboratory detection limits. Data from the Troy mine can be used to predict the post-operational water quality of adit discharges from the proposed project.

The monitoring program that would be used at the Rock Creek Mine is described in Appendix K. The DEQ is responsible for ensuring compliance with the Montana Water Quality Act and penalties are described in the Act and in Chapter 1, Agency Roles and Responsibilities. DEQ would collect samples periodically to ensure permit compliance. As part of permit requirements, the applicant would conduct a regular monitoring program and would submit sampling data quarterly. The applicant would also submit an annual report summarizing unedited laboratory data and results of quality control sampling. The Agencies' conceptual water monitoring plan is presented in Appendix K. MPDES permit requirements are described in Appendix D.

49. Baseline data on the water quality of all bodies of water involved should be done before ANY work begins. Data should be collected by a neutral party - not by ASARCO. What is being done to insure that all pertinent data is being collected in an impartial manner? What happens if the baseline data show that Rock Creek already exceeds the limit for some metals? (1384)

Relying on data from the Troy mine, a very different operation from that proposed at Rock Creek. ASARCO should have to go back and pay for independently-gathered, site-specific data, including thorough baseline data on all resources, for the Rock Creek project before the final EIS. (1740)

You propose to do monitoring of water quality parameters if the mine is permitted and begins operation. Given that you have inadequate pre-mining data on existing water quality parameters at Rock Creek, for example seasonal data are missing for some sites, how will you be able to show water quality violations after the mine is operating? (1248)

Response: The applicant (as ASARCO) collected baseline data on water quality and quantity at the Rock Creek project site. The baseline data are included in the applicant's Application for an Operating Permit. Baseline data for Rock Creek water quality collected by the state and the applicant are presented in Tables 3-4 and 3-5, in Chapter 3 of the EIS. Rock Creek is characterized by soft calcium-bicarbonate water with low or nondetectable levels of oil and grease, nutrients, and metals.

50. Several years ago, metal levels exceeded criteria for the protection of aquatic life near the Troy mine. Tests did not detect a problem until waters were actually in violation of state standards because the waters of Stanley and Lake Creek are very soft (Hansen 1988). Metal contamination was only detected when sensitive methods were utilized (Hansen 1988). It is critical to compare detection limits to water quality standards in order to determine if violations of the standards can be detected with the detection limits being used. In 1985, the state found concentrations of copper, silver, and lead in Stanley and Lake creeks to be many times greater than state standards (Hansen 1988). One Lake Creek sample from downstream of the mine showed copper levels to be 100 times the state standards. Erich Werber of the Water Quality Bureau (WQB) monitored Stanley Creek in 1985 and found dramatic increases of Cu in sediments, and in total recoverable Cu. Of 116 tests done at 8 sites for 4 different metals, 46 of the tests exceeded state standards (Hansen 1988).

The Water Quality Bureau believes that the extraordinarily high readings were due to heavy rains carrying tailings material deposited by a slurry line rupture in 1981 into the creeks. In 1984, a biological survey of Lake Creek showed marked decline in diversity of diatoms and total numbers of macroinvertebrates compared to a survey in 1977 (Hansen 1988). Unfortunately, the baseline data on these creeks was only gathered for a single year. Hence there is insufficient replication for rigorous testing of statistically significant changes. Clearly, more baseline data should be gathered before mine operations are allowed to commence. ASARCO has gathered baseline data on Rock Creek and Miller Gulch in 1985 and 1986. Officials generally agree that a minimum of three years of environmental baseline data should be gathered (Hansen 1988). Will this baseline data enable accurate comparisons to be made of present and past conditions once mine operations have commenced? (1223)

How can an operating permit be given to a company when insufficient baseline data has not been gathered and included in the DEIS? How are water degradation and impacts to be monitored if there is little or no data to compare it to? (1283)(1265)(1371)(1501)(1522)(1587)

Response: Before beginning the project, additional baseline monitoring would be undertaken to confirm the assumptions used in the analysis of the final EIS and the results of the analysis based on the existing data. This includes additional hydrologic data collected from the evaluation adit as well as existing and additional surface water monitoring sites. Baseline monitoring would occur on any wells installed during operation startup. See the Water Resources Monitoring Plan in Appendix K for more detail.

51. I am assuming that the data presented on pages 3-33 to 3-34 will be used as baseline data to which the ground water monitoring wells data during mine operation will be compared. If there are any deviations from the baseline data then will remedial action occur to improve the efficiency of the wells?

Looking at figure 3-6 on page 3-35 I noticed the placement of the wells used to determine the ground water quality baseline data. Nine out of the twenty monitoring wells are placed in the area covered by the tailings impoundment, three of which are in the immediate vicinity of the old landfill. It would make more sense if these wells were located below the impoundment since that is where the monitoring wells would be during mine operation. The water quality data provided by these wells would be more representative of actual baseline conditions. The wells listed in figure 3-6 without water table data must be water quality monitoring wells only. There are twelve of these wells and three of them are situated immediately around the old landfill site. Why are they placed so close to the old landfill? Are they placed there to possibly bias the water quality data with elevated landfill metals runoff? (1673)

Page 2-130 implies that ASARCO will expand water monitoring for alternatives III and IV and include an "Action Plan." The rest of the paragraph describes the intent of the plan and its coordination with other monitoring activities. Where is the plan for action to solve water pollution problems? (1288)

Response: The detailed action the Agencies and the applicant would take in the event of contamination would be addressed in the final remedial action plan. The remedial action plan is discussed in Appendix K.

The old landfill site was monitored closely to establish impacts of the old landfill on ground water. Additional monitoring wells would be installed downgradient of the impoundment; additional baseline data would be collected before the impoundment is constructed under Alternatives III and IV.

52. The monitor wells must be in place prior to any further mining activity, so that accurate data collection prior to operation of the mine can occur. Without the prior testing, how can accurate monitoring after the mine is operational happen? Again the draft EIS fails to outline any action once the contamination has occurred. I again suggest that if contamination of the monitoring wells, Rock Creek, of Clark Fork River occurs the mining operation must stop. Therefore ASARCO has a reason for being certain the monitoring takes place and contamination does not occur. The current draft EIS outlines no consequences to the mining company if contamination occurs. There must be a built check and balance system so that ASARCO makes certain that the monitoring occurs. Finally the monitoring of water quality must continue for at least 75 years after closure of the mine. (1674)

Response: Baseline monitoring would occur on any wells installed during operational startup. The action the Agencies and the applicant would take in the event of contamination would be addressed in the final remedial action plan. The remedial action plan is discussed in Appendix K. The Agencies would consider the actual facility water balance data, estimates of seepage, and results of the ongoing ground water program in determining how long monitoring of private domestic water supply wells would continue. At a minimum, ground water quality sampling and analysis would continue until bond release.

53. One of the worst things is that the Troy mine was allowed by the state and feds to discontinue taking sample data about emissions (mostly water) because they were showing that it was unclean emissions - nothing was done to clean it up instead it was all pushed under the rug in large scale cover up. (1294)

Response: Tighter environmental controls and water quality monitoring requirements would be in place for the proposed project. Monitoring would also be required during temporary shut-downs and after mining ceases. For example, discharges from the water treatment plant and receiving water in the Clark Fork River much comply with effluent and instream quality limitations set forth in the MPDES permit. In addition, constituents in ground water at the boundary of the mixing zone must comply with Montana water quality standards and nondegradation criteria. Monitoring requirements for surface waters and treatment plant effluent are clearly specified in the Fact Sheet/Statement of Basis (FS/SOB). Effluent monitoring requirements include, but are not limited to: (1) continuous monitoring of the effluent flow rate, mill bleed, and duration of discharge, and (2) selected nutrients and metals up to three times per week. Instream monitoring of nutrients and metals would occur at a frequency that addresses high and low flow conditions, and seasonal variations. Acceptable concentrations of constituents in the ground water at the boundary of the mixing zone are based on compliance with Montana water quality standards and Montana nondegradation criteria. For parameters that have no numeric standards listed in WQB-7, no increase is allowed that would be injurious or harmful to beneficial uses. The MPDES permit FS/SOB also establishes action levels for certain constituents to provide early detection of adverse ground water quality conditions.

54. The ground-water monitoring section included in Appendix H (Page H-3) should be expanded to include a discussion of the goals and objectives of the ground-water monitoring program. (1214)

Response: The goals and objectives of the ground water monitoring program are discussed in the introduction to the water resources monitoring plan summarized in Appendix K. The final water resources monitoring plan will be written when the mine operating permit is issued.

55. MPDES Permit Page 10 - Water Quality Standards Discussion The last sentence of the second paragraph refers to excess algal growth resulting in aesthetic problems. You might want to look into algal growth tests and determine if you want to include them as a monitoring requirement in this permit. (1214)

Response: DEQ does not feel that algal growth tests of the effluent would be warranted. Instream monitoring of secchi disk, chlorophyll, and ash-free dry weight are considered better test for algal growth because they incorporate in stream conditions.

56. We urge you to proceed with the MPDES permit, but suggest that unbiased, experienced and reliable monitoring be required. (1507)

Response: The proposed MPDES discharge permit outlines the requirements for monitoring of discharged waste water, ground water, and storm water. Additional requirements are outlined in Appendix K.

57. Has baseline water quality, flow and geologic unit been determined for all perennial springs shown on Figure 3-4, page 3-18? This data should be collected for use in determining impacts to these springs from mining. A table should be included with this information. Will all the springs shown on Figure 3-4 be included in pre-mining, operational and post mining monitoring? If not which springs will be included and what criteria are used to select springs for continued monitoring? (1214)

Response: Baseline data has been collected on these springs and the springs would be included in the final hydrologic monitoring plan that would be approved by the agencies.

58. Page 2-76: states that monitoring of lake levels would occur at Cliff and Cooper lakes because mining could cause fractures that may extend to the surface thereby affecting lake levels. ASARCO must be required to begin collecting lake level data now so that we have some reliable, meaningful baseline data to compare lake levels to during active mining. (1223)

Response: Baseline data on lake levels is in a report entitled "Hydrology and Chemistry of Wilderness Lakes and Evaluation of Impacts from Underground Minings," Cabinet Mountain Wilderness, Montana (DEQ 2001) which is on file with the Agencies. This information has been incorporated into Chapter 3, Hydrology. Please see Chapter 4, Hydrology and Geology for a discussion of potential impacts. The mine plan under Alternative V incorporates mitigations that reduce the potential for surface impacts. The possibility of fracturing to the surface is considered remote.

59. Hydrology - twice a year monitoring of potentially impacted lake levels is not adequate. Significant losses of lake volume and associated aquatic life could occur between these periods. Several permanent stations are needed for surface water flow monitoring to determine the adequacy of low flow estimates and their time of occurrence. (1595)

Response: Twice a year monitoring of lake levels and monitoring static head in peizometers installed in the Copper Lake fault and under Cliff and Copper lakes should be adequate to determine effects on the lake from the addition of mine discharge water to the flow of the river.

As a condition of the MPDES permit, the applicant would be required to continuously monitor the real time flow of the river at the point of discharge to determine which of the two MPDES permit limits, based on two different flow regimes, would be applied for permit compliance. The applicant has proposed to install a real-time flow monitoring system that would consist of (1) velocity meters to measure flow velocities; (2) telemetry system to transmit data to data collection system and waste water treatment plant control system; (3) continuous computerized data collection system; and (4) treatment plant control system to control the release of discharges. Monitoring would begin prior to discharge of treated mine water to sufficiently demonstrate that the applicant could effectively and accurately detect dam operations and streamflow conditions. The design for the monitoring system would be modified as needed to improve detection accuracy.

60. RWMP (ASARCO 1995) Appendix D, page 40, para. 2. The localized damp boggy areas along the south fork of Miller Gulch should be included as 404 permit impact area wetlands. They should have surface water monitoring points and upgradient ground water monitoring wells. The first paragraph expresses general ground water flows and you can believe that these bogs will be one of the first areas to show levels of potassium xanthate from the flotation milling process. (1780)

Response: Thank you for your comment. This monitoring recommendation will be evaluated when the final ambient monitoring program is developed.

61. Who pays if we want an independent water test on our well? (1510)

I own 2 pieces of property in Sec 20, T26N., R32W. The water is being monitored now by Hydrometrics Inc. (Believed to be owned by ASARCO) I request my water be monitored by an independent consultant and paid by ASARCO. (1593)

All well testing will have to be done by agencies charged with the monitoring and not deferred to ASARCO, to insure that it is done and done correctly. Who will pay to have all existing wells in the area tested prior to start-up to begin gathering the baseline data? (1246)

Response: All monitoring wells would be sampled and paid for by the project proponent.

Split samples (separate analysis of an identical sample) collected by the DEQ would be periodically collected and analyzed to verify the applicant's data. DEQ samples water resources at large mines during mine inspection at least four times a year. Split samples from domestic wells would be collected from residential wells.

62. An independent toxologist must be allowed to research chemical impacts on our water. Pre-testing of water permit holders along the Clark Fork River and Rock Creek independent of ASARCO's testing must be required before ASARCO is allowed a water permit. Independent testing of our water must follow on a regular basis. Should adverse water quality be found in the testings, immediate measures must be promised. (1529)

Response: The water quality impacts are presented in Chapter 4 of the EIS. The Agencies' conceptual water monitoring plan is presented in Appendix K. Existing water uses would be included in the long-term monitoring program. The applicant would be required to repair or replace any water system that has been impacted by the project.

63. Discussion of how future violations will be monitored and corrected in view of the fact that the monitoring will be self monitoring by ASARCO while Montana legislative audits have shown that neither the Montana Hard Rock Bureau nor Water Quality Bureau have effectively monitored or enforced the state's mining and water quality laws. (1730)

What is the role of the state in monitoring discharge? How many staff are available in the State of Montana for monitoring? How often will the proposed mine site be visited by agency personnel? (1248)

Someone other than ASARCO or the governing agencies does the monitoring of the tailings pond and water discharge. (1207)(1288)(1383)(1386)(1389)(1501)(1525)(1643)(1674)(1712)(1987)

The water resources monitoring plan has to be improved to give credibility to the data. A plan that allows ASARCO or a consultant paid for by ASARCO without third party oversight at various critical sites and times is ludicrous. The fiasco of the distortion of the scientific analysis performed by OEA Research Sept. 1995 by government agencies to minimize the negative effects of the proposed mining plan discounts the government's role as an unbiased control group. Why not allow one of the State or National Public Environmental groups oversee some of the collection and testing of the water samples throughout all phases of the mine construction, operation, and shutdown? The CERCLA, 42 U.S.C.9605 and the Clean Water Act will require ASARCO to contain, report, and clean up any discharges, oils and pollutants that might occur at their mill site or they will be fined for noncompliance. What

measures are in place to assure that ASARCO has plans readied to prevent these things from happening during construction and maintenance of their mill site and are not just agreeable to paying fines? (1679)

Pages 2-77-2-81: Discussion of monitoring and mitigations here and in Appendix H: In all these sections, the EIS must contain clear statements that all monitoring and mitigation activities will be enforced, as well as strong statements concerning how and by whom the enforcement will occur. ASARCO and/or state/federal agencies must be required to retain professionally trained, unbiased consultants to monitor and oversee mitigations. The DEIS generally lacks statements about enforcement; identifying key players, preparing lists and reports of "potential remedial action alternatives" is not enough. What happens to these lists and reports? Specifically, which of the key players will have the authority to enforce necessary actions? (1288)

An independent consultant to monitor the air and water quality would be absolutely imperative. (1337)

Thus, MWA recommends that DEQ require ASARCO to fund an independent analysis of the water management plan by qualified experts selected by public-interest groups in the Clark Fork Valley. This independent party would be given full latitude to conduct its own studies of the hydrogeology and geochemistry of the proposed mining and tailings sites. It should be given authority to gather a full range of baseline data and to design an appropriate monitoring protocol. This monitoring design would be implemented separately from ASARCO's self-monitoring design unless ASARCO agreed to fully accept the public-interest design. The research and monitoring plan should be subject to public comment and rigorous peer review. In addition, an unbiased and credible technical review team - also funded by ASARCO - should make the final decision about acceptance of a mine design and water management plan based on a minuscule, virtually nonexistent level of acceptable risk. Only in this way will public trust be cultivated at levels sufficient to permit this mine. The mine should not be permitted unless full and adequate assurance are provided to the public. (1220)

What guarantee is there that ASARCO will report it's own violations? (1248)

We need local EPA people to check the water daily at the mining company's expense. They should also have the authority to curtail operations immediately until leaks are cleared up and water quality resorted. (1289)

Who will be doing the monitoring? (1707)(1429)(1384)(1371)(1607)(1510)

"Self monitoring" seems absurd when in the hands of the owners. (1865)

I also request that ASARCO should be required to fund independent water sampling of all discharge areas; sampling that would be done randomly, three times a week or more. (2021)

There is not a monitoring process proposed by ASARCO stated in specific terms. The only statement by ASARCO is that there will be a monitoring program put in place later that satisfies the MPDES permit. The draft EIS states that the anticipated monitoring procedures and sampling will probably occur once a quarter or twice per year. This is another example of the type of vague explanations given by ASARCO when questions of protecting water quality occur. There should be a definite water quality monitoring program established that follows EPA guidelines. (2065)

Sufficient DEQ funding should be charged as part of the permit fee to allow for independent compliance monitoring of mine water discharge. Tax payers should not have to fund effective monitoring, nor should the effort be limited to that possible under current DEQ budgets. (2082)

It is an insult to the public to propose that ASARCO could or would be responsible enough to the citizens of Montana and to those downstream such that "self monitoring" would be proper. (2090)

Monitor all waters in the area. (2098)

Page 2-42 Water Treatment: It is easy to state that "Water treatment and effluent discharge to the Clark Fork River would meet effluent limitations in accordance with an MPDES permit from DHES." However the DEIS contains no

information that would lead one to this conclusion. How will this be assured? What independent, unbiased, panel of trained professionals (not ASARCO or state agencies, re conflict of interest) will be retained to monitor water quality? Who will ensure that necessary actions are taken when problems occur? It is inadequate to simply state that monitoring will be done, and reports filed with DEQ or other state or federal agencies. A detailed plan for monitoring, reporting, and executing needed actions is essential. (1288)

Numerous monitoring plans are included in the DEIS, and they should include action items and definable threshold for impacts, after which time action is taken. Agencies responsible for tracking monitoring and ensuring mitigation compliances should be clearly identified. (1779)

Response: The Kootenai National Forest (KNF) and the DEQ would review the water quality monitoring results. The DEQ is responsible for ensuring compliance with the Montana Water Quality Act. DEQ is funded and staffed at a level the legislature believes is appropriate.

Action items, threshold (or trigger points) and responsible agencies have been identified in the wildlife monitoring and mitigation plan.

The Agencies' conceptual monitoring program is described in Appendix K. As stated in Appendix K of the EIS, the monitoring plans that are presented are conceptual only and would be finalized based on the selected alternative. They currently lack the trigger or alert levels which, when reached, would require the applicant to implement a corrective action plan. The applicant would develop final monitoring plans, which would specify triggers and thresholds for corrective actions, prior to project startup. The Agencies would approve these final monitoring plans based on the selected alternative. Final monitoring plans would be available for public review at DEQ and KNF offices following their development and approval. The MPDES permit includes action limits for ground water compliance wells including limits for nitrate, sulfate, potassium, and dissolved metals.

DEQ and KNF personnel would be responsible for monitoring compliance with mining plans if the mine permit is granted. Inspections are required under the Metal Mine Reclamation Act. As part of permit requirements, the applicant would conduct a regular monitoring program and would submit sampling data quarterly. The applicant would also be required to submit an annual report summarizing unedited laboratory data and results of quality control sampling. Water monitoring reports must be submitted as per the approved monitoring plan.

64. The methods and frequency of inspecting the embankment and the impoundment and the identification of inspectors are not included in the DEIS and "are to be worked out during the final design process." Why were these procedures not included in the document and what kind of public review will be allowed? (1679)

It is stated on page 1-9 that DSL would routinely conduct inspections of the Rock Creek project to ensure compliance. Please specify what is meant by "routinely". What is the anticipated frequency of compliance inspections? (1214)

Due to the close proximity of this operation to the Clark Fork River, the company's operation should be monitored very closely, with frequent unannounced inspections of every phase of the project, and possibly a full-time inspector on site. (1270)

Response: The agencies conduct inspections under various statutes. Many of these would be unannounced.

The final monitoring schedule for the tailings facility will be determined when the permit is issued. The schedule would vary with the intensity and type of activity, with more inspections scheduled during potential high-risk periods.

Under the Metal Mine Reclamation Act, major mines are required to be inspected quarterly. Under the Montana Water Quality Act, the mine would be inspected every 3 or 5 years depending on how the mine was categorized. Additional inspections would be conducted in response to complaints or violations or patterns of exceedences of trigger values or permit limits in monitoring reports.

65. Water Resources Monitoring Plan (APPENDIX-2) The water testing procedures are scientifically flawed and need to be corrected....Establish a procedure whereby ASARCO is charged a fixed fee, to be billed by the state to the mine to cover the costs of the water quality testing. This then would be a cost of business operation for the mine that certainly is not cost prohibitive for them and is very cost effective and scientifically sound for the state. The entire monitoring and testing program then could be performed by the State Water Quality Bureau or an independent laboratory where is should be done, without any conflict of interest. (1678)

Independent monitoring must be required...outside party needs to be contracted - paid by ASARCO but chosen and reportable to the state and local individuals who form a watchdog team. (1438)

Response: The DEQ is responsible for ensuring compliance with the Montana Water Quality Act. DEQ would collect samples periodically to ensure permit compliance. As part of permit requirements, the applicant would conduct a regular monitoring program and would submit sampling data quarterly. The applicant would also submit an annual report summarizing unedited laboratory data and results of quality control sampling. These monitoring results would be on file at the agencies offices and open to public review at any time during regular office hours. The Agencies' conceptual monitoring program is described in Appendix K, and additional details on MPDES permit monitoring requirements are provided in Appendix D.

66. With the present and future cuts in governmental agency funding, I find it totally unrealistic to believe that federal or state forest, environmental, and mining agencies will have the funding to properly monitor this project over the next 100 years. (1917)

Sufficient DEQ funding should be charged as part of the permit fee to allow for independent compliance monitoring of mine water discharge. Taxpayers should not have to fund effective monitoring, nor should the effort be limited to that possible under current DEQ budgets. (2082)

Response: Future funding by the legislature is dependent in part on public interest. To date, the legislature has determined that monitoring compliance is in the public interest and is of benefit to the public.

67. Who approves the ground water monitoring plan? Will there be agency review? (1214)

Response: The Agencies would review and approve the final ground water monitoring plan details.

68. In response to numerous concerns expressed at the hearings we would like a provision in the permit authorizing quarterly citizen monitoring of all discharge points. At the Sandpoint hearing, ASARCO responded favorably to a request for some type of citizen monitoring. (2067)

Response: Interested citizens may contact Sterling directly in this regard. The MPDES discharge permit is a legal document which is based on authority granted to the agency under the Montana Water Quality Act. Authority to grant such inspections on private property is not within the agencies' jurisdiction.

69. The Troy mine has had 4 water quality violations with minimal repercussions (and those would not have happened had it not been for local watchdogs.) What assurances will the agencies commit to demonstrate to the public that they are willing to do more than slap ASARCO'S hand should violations occur? (1438)

Response: The DEQ enforces compliance with the Montana Water Quality Act, and can fine violators for noncompliance. Sterling would be required to abate any violations in addition to paying fines.

70. Water Resources Monitoring: The agencies must establish all monitoring criteria in consultation with independent, politically neutral professional consultants. What measures will be imposed to ensure that ASARCO complies with established standards? (1288)

Response: Discharges from the water treatment plant and receiving water in the Clark Fork River must comply with effluent and instream quality limitations set forth in the MPDES permit. In addition, constituents in groundwater at the boundary of the mixing zone must comply with Montana water quality standards and nondegradation criteria. Monitoring requirements for surface waters and treatment plant effluent are clearly specified in the Fact Sheet/Statement of Basis (FS/SOB). The MPDES permit FS/SOB also establishes action levels for certain constituents to provide early detection of adverse ground water quality conditions. The exceedence of these trigger levels, while not a violation of the MPDES permit or Montana ground water standards, may require additional action by the mining company. These actions could include, but are not limited to: additional monitoring, installation of recovery wells, improvements or modification to the existing seepage collection system.

WTR-305 Water Treatment

1. *Demand ASARCO use proven and best available water treatment technology for their mine water. How can the document approve the untested treatment facility as submitted? (C)(P1)(P2)(1207)(1214)(1220)(1223)(1232)(1255)(1268)(1288)(1298)(1305)(1308)(1322)(1326)(1330)(1331)(1346)(1350)(1351)(1353)(1384)(1385)(1387)(1389)(1401)(1418)(1423)(1427)(1429)(1433)(1439)(1440)(1443)(1446)(1447)(1453)(1454)(1496)(1514)(1515)(1520)(1525)(1526)(1587)(1590)(1594)(1597)(1603)(1606)(1616)(1630)(1638)(1654)(1655)(1659)(1670)(1678)(1697)(1712)(1724)(1729)(1734)(1736)(1737)(1739)(1740)(1779)(1781)(1914)(1918)(1923)(1925)(1926)(1928)(1929)(1948)(1951)(1955)(1957)(1979)(1991)(1999)(2059)(2065)(2076)(2084)(2090)*

What guarantees can be given that the bioreactor system will work at all since it has not been proven to succeed in a large water-processing facility as proposed ASARCO mine in this cold and rainy climate? (1207)(1389)

We feel that there should be a limit (and appropriate self-monitoring) for 5 day biochemical oxygen demand (BOD) included for Outfall 001. If animal manure is used as the substrate for the bioreactor, there is concern that upon initial start-up of the bioreactor, the discharge will contain high amounts of BOD and nutrients. You already have nutrient limits but need to include BOD. These limits should be based upon secondary standards of 30 mg/l for the 30 day average.

The proposed water management plan provides for storing excess mine water underground and treating it via the bioreactor or ion exchange system before discharge to the Clark Fork River. We are concerned about several aspects of this plan. Quality of the stored underground water may deteriorate due to reactions of oxygenated water in contact with the mineralized underground mine walls with sulfide mineral oxidation and metals dissolution. Also, the ability to accurately predict and to control mine inflow through grouting may be less than anticipated. This could result in the need to contain, manage, and treat greater quantities of water of poorer quality than anticipated. The ability of the underground reservoir to contain high volumes of poor quality water, and of the treatment system to treat high volumes of poor quality water should be more fully described. (1214)

More detailed information should be presented on the treatment of excess metals and dissolved ions. Will the ion exchange system be effective for all possible contaminants? The water management and treatment scheme should be in acceptable final form before the FEIS is finalized. (1214)(1245)(1526)(1957)

Much more detail needs to be provided about the proposed bioreactor plant. This type of treatment can be problematic in areas where winter conditions are severe. Please provide more specifics about the type of bioreactor system proposed, experience with full scale applications, and how this system will operate under severe winter conditions and over time as metals accumulate in the substrate (e.g., cold weather treatment efficiency, susceptibility to upsets, removal of metals, ultimate disposal of metal laden substrate, etc.). The ion exchange backup treatment system may be needed during severe winter operating conditions. (1214)(1482)(1675)(1780)

The details of how the water will be treated has not been adequately address in the DEIS. (1214)(1220)(1223)(1237)(1242)(1288)(1402)(1638)(1739)(1740)(1955)

Require protection of water quality - In addition to measures that might be taken in a new Alternative 5, Alternative 4 should be revisited to better ensure protection of our public water resources, downstream users and beneficial uses. ASARCO must be required to use proven and best available technologies to treat the degraded mine water. (1220)

Page 3 - 12. A conceptual bio-treatment facility is insufficient data for a public disclosure document where people are supposed to make value judgments and provide substantive comment.

Review of the Draft Permit and the Statement of Basis reveals that the applicant (ASARCO) has yet to provide an accurate description of the facilities covered under this permit. The applicant did not present specifications on the

tailings impoundment/seepage recovery system or the water treatment system. In fact, the applicant and agencies have not even selected the location for the mine's mill facility. As a result, it is impossible for the public and decision-makers to provide meaningful comment on the applicant's ability to effectively control pollutants regulated by this permit. The applicant must provide the plans and specifications that demonstrate the proposed treatment systems are capable of meeting the effluent limitations imposed by the permit.

We do not believe the proposed treatment systems (passive bioreactor) will comply with the effluent limits set forth in the draft permit. The system relies heavily on the experimental treatment techniques that are unproven at the magnitude and duration of the Rock Creek project.

We recognize these systems can remove nitrate from mine water by a combination of incorporation into cell mass, conversion to ammonia, and outgassing of nitrogen gas. However, a review of available literature clearly demonstrates there are few, if any, passive bioreactor systems that effectively treat 100 gpm, much less 1,700 to 2,300 gpm anticipated at Rock Creek.

The S.O.B. at p. 1 states that "the primary method of wastewater treatment would consist of filtration (rapid sand filtration) and settling to remove solids, followed by mechanical aeration to decrease ammonia levels, followed by passive biological treatment."

The S.O.B. at p.1 states that "ASARCO has submitted a conceptual level design in the WMP and proposed to pilot test the treatment system prior to full scale design."

Passive bioreactors are experimental systems that have never been used to treat such large volumes of water, a fact that raises serious questions about the system's ability to achieve the effluent limits contained in this permit. The largest working passive bioreactor is at the Leviathan Mine in CA, and that's experiencing problems already.

The proposed pilot test for the treatment system will not provide data that will allow accurate predictions about the long-term effectiveness of the system. Just because it works on small flows for a short period of time does not necessarily mean it will work for the life of the mine under extreme and variable conditions.

ASARCO proposes to conduct the pilot test at their Troy project. Does the ASARCO Troy operating permit allow this activity? Has this proposal undergone full public and agency review as required by MEPA and Montana water quality law? Does mine water discharged from the Troy facility contain nitrate and metals levels similar to those that will be generated at the Rock Creek project? The Troy mine has been shut down for about four years now, which means nitrate levels in the mine water should be significantly lower than those expected at Rock Creek.

How will excess metals (either from incomplete filtration or pumped back tailings impoundment seepage) effect the treatment efficiencies of the passive bioreactor?

The S.O.B. at p. 1 states that "if the PBT fails to meet effluent limits, ASARCO has proposed to employ ion exchange following PBT to selectively remove nitrate and ammonia."

Will the ion exchange plant be constructed and ready to go online immediately, or will there be down time between the discovery that the PBT is not working and when the ion exchange system is up and running? If so, what guarantees are in place that all water quality requirements will be met? It should be noted that this scenario could not fall under an "upset" condition to qualify for an exemption from discharge requirements. In addition, who will make the determination that the PBT is not working and the ion exchange needs to be brought on line, and what will that determination be based on?

How will residual metals affect the treatment efficiency of the ion exchange system? These systems require a relatively clean water stream in order to operate effectively. What impact will pumped back tailings impoundment seepage have on the ion exchange system?

Additionally, the draft permit does not contain a monitoring and contingency plan to determine when the ion exchange treatment facility will be brought on line. The passive bioreactor is an experimental treatment technique unproven in treating the volume of mine wastewater expected, particularly under the harsh and variable climatic conditions. The department should establish specific criteria - ie. a specific number of exceedences over a given period of time - which when reached will require immediate use of the IX system. To allow this to occur, the ion exchange system must be constructed and on-line prior to construction of the mine operation.

The draft permit at p. 11 states that "if toxicity is detected, and it is determined by the Department that a TRE/TIE is necessary, the permittee shall be so notified and shall initiate a TRE/TIE immediately thereafter. If the TRE/TIE establishes that toxicity cannot be eliminated, the permittee shall submit a proposed compliance plan to the Department."

These plans should be spelled out right now considering the experimental nature of the proposed water treatment system. There should be specific criteria for when the IX system comes on line because failure of the passive bioreactor is reasonably foreseeable. Without an adequate discussion of these details, the public cannot properly comment on the draft permit and DEIS.

Lastly, ion exchange has also never been used on a project of this size and operational constraints of such a system must be considered. What assurances are there that it will work as planned? Without these assurances, compliance with water quality laws and regulations is speculative at best.

No mention is made in the DEIS that passive bioreactors can actually increase the amount of Biological Oxygen Demand (BOD) in the discharged effluent. During the early phases of bioreactor operation, discharged water can be expected to be colored and to contain soluble residue from the manure in the substrate. Although these levels will decline as substrate is consumed, there is no discussion of the amount of BOD that will be discharged from the system or the effects it will have on receiving water. We request that the Agencies present an evaluation of BOD loading, and assure that is minimized as a condition of project approval, in the revised DEIS.

Page 2-42 states that engineering specifications for the proposed Rock Creek passive biotreatment system have not been prepared as part of the revised Water Management Plan. However, data were presented for a system at another ASARCO treatment facility where a pilot cell is in operation. Data from this pilot cell provides little to no useful information for consideration at Rock Creek because the climate, water quality, and scale of the project are so different. The DEIS is also confusing because it suggests that the full scale system is operating at the Missouri site. Page 2-42 states that "the full-scale treatment facility is substantially larger, and would treat approximately 1,500 gpm." Please clarify what information ASARCO and the Agencies rely upon when they suggest that the proposed passive bioreactor will effectively treat between 1,500 and 2,500 gpm of contaminated mine water.

The DEIS has painted a very optimistic picture that the proposed passive bioreactor system will substantially improve the quality of mine water discharged from the system. The DEIS discussion, however, has failed to consider many of the negative environmental effects that may be caused by operating the system.

The proposed water treatment system relies heavily on the experimental and unproven passive bioreactor system. The system does have some merit--when it is operated under anaerobic conditions it will remove nitrate from incoming water by a combination of incorporation into cell mass, conversion to ammonia, and outgassing of nitrogen gas. However, a review of available literature indicates that there are few, if any passive bioreactor systems that effectively treat 100 gpm, much less the 2,000 to 3,000 gpm of mine water that will be generated by this proposed system. Consequently, we question whether the proposed system will be able achieve water quality standards as predicted. The following statement in the DEIS confirms this concern: P. 4-64: the use of passive biotreatment cells to treat mine discharge contained nitrates and metals is not a proven technology at the flow rates estimated for the proposed Rock Creek project. Despite this admission , the DEIS still suggests that the proposed passive biotreatment system would remove 80% of the nitrates present in the mine water. This number has no basis

in fact, and is not supported by any of the data presented in the DEIS. The limited amount of data that is referenced was collected from a pilot scale system in Missouri, and is not sufficient to draw conclusions on regarding the Rock Creek Project.

Several statements in the DEIS suggest that the Agencies do not know how the bioreactor substrate will be disposed of once active treatment stops. Page 2-43: Spent substrate from the cells would be disposed of in the tailings impoundment, unless metals content was extremely high. When treatment was complete, the passive biotreatment cells would be capped and abandoned in place. Page 4-66: there is a concern that this treatment system could result in waste that would be buried in place after the cells were no longer used. The characteristics of the contents of the passive biotreatment cell, and whether the cell ultimately contained a hazardous waste would be identified. Disposal options for the cell contents at the end of mine life would be evaluated and approved by the Agencies.

Page 3-13 in the Draft Water Management Plan (Hydrometrics, Inc., June 1995) states that since cold water temperatures adversely affect biotreatment processes, the effectiveness of any biotreatment alternative for nitrogen removal during winter operations needs to be carefully considered. Concerns over seasonal variations in treatment efficiencies were also offered as a reason to dismiss the constructed wetland treatment system. Page 2-105: there is also a possibility that the constructed wetland would not be as effective during the winter months. Based on that, and other limitations, constructed wetlands were dismissed as an alternative to treat discharges from the mine workings. If the same thinking is applied to the passive bioreactor, then the proposed treatment system would have to be dismissed as well. This contradiction must be fully explained and resolved in the revised DEIS.

Page 4-66: states that the design of the passive biotreatment system has not been reviewed by the Agencies. Earlier statements in the DEIS claim that the Agencies are confident that the proposed treatment system would meet water quality standards. We question how these statements can be made without knowledge of the design specifications for the system. These design specifications are especially critical in determining the expected treatment efficiency of the proposed system.

ASARCO has estimated that potential cell life is at least 50 years, based on carbon consumption. We question this statement because ASARCO and the Agencies have not provided any scientific basis for this estimate. It is very possible that the substrate will in fact only last five years before treatment efficiencies begin to decline. Treatment efficiencies will be limited by factors including loss of easily metabolized substrate and potential armoring by sulfide precipitates on the substrate. Once the substrate declines in availability, it will likely loose it's ability to support the anaerobic system, which will allow oxygen to penetrate more deeply into the substrate and potentially allow sulfides to reoxidize. In light of these uncertainties, the Agencies must present a detailed analysis for how the substrate will be monitored to assess its treatment capacity.

A final design consideration that must be presented in the revised DEIS is the design and operation of flow distribution systems within the passive bioreactor. Flows will need to be carefully managed to control biological processes in the treatment system. Preferential flow paths may well short circuit the idealized flow paths and reduce the ability of the system to treat the very large volumes of water proposed for the project. Quite simply, a channel that flows directly downward from the point of discharge into the substrate will render the bulk of the treatment system useless, In light of these concerns, the Agencies must provide the complete design specifications for public review in the revised DEIS. The public simply cannot evaluate the proposed system based on the information presented in the DEIS.

In recognition of the fact that passive biotreatment system are unproven at treating mine discharges high in nitrates and metals at the flow rates expected at the Rock Creek project, ASARCO proposes to develop a contingency plan for the treatment of excess project water. This contingency plan will include the ion exchange treatment system proposed under Alternative II.

Page 2-42: states that this ion exchange technology would remove over 90% of the nitrate and some dissolved ions and metals.

Page 4-64: states that the mitigation would ensure that the proposed discharge limits would be met. These optimistic, and unsubstantiated, statements are not supported by any discussion in the DEIS. The DEIS fails to disclose the fact that ion exchange systems are unproven at treating the volume of mine water to be discharged. In fact, the description of the ion exchange system is vague and offers the reader no opportunity to meaningfully evaluate the proposed system. P. 4-42 of the EIS admits that "ASARCO has not submitted engineering specifications for the proposed ion exchange system."

The revised DEIS should include a presentation of peer-reviewed data demonstrating that ion exchange systems can 1) treat the volume of mine water expected, 2) remove the nitrates and a wide range of metals simultaneously, and 3) achieve the level of treatment suggested in the DEIS and required by law. When describing this proposed system, the following issues must be addressed:

Page 2-42: presents information and data from an ion exchange system that treats about 650 gpm system. Flows from the mine workings are expected to exceed 1,500 gpm. The revised DEIS must demonstrate that the ion exchange system will effectively treat the volume projected for the mine. In addition, it must demonstrate the system can treat more than the expected volume in the event that the water balance models have under predicted ground water flow rates into the mine workings.

Page 4-56: states that a passive biotreatment system, coupled with an ion exchange polishing system, would be used to treat mine water. ASARCO expects, and the Agencies concur that, by a combination of settling and sand filtration, passive biotreatment, and an ion exchange polishing step, Montana water quality regulations could be satisfied. This uncertainty is unacceptable. We request the Agencies resolve these unanswered questions in the revised DEIS, that they require its use as a condition for permit approval.

If the Agencies did in fact consider conventional water treatment, then we request a full disclosure of the results of that review, including the reasons it was dismissed from further consideration. If the Agencies have not fully evaluated conventional water treatment, then we request they do so and present their findings in the revised DEIS. The DEIS provides no explanation of why this alternative was dismissed. Considering the experimental nature of the passive bioreactor/ion exchange system, and its likelihood for failure, conventional water treatment must be considered as an alternative in the EIS and required as a project component.

The bottom line is that page 1-11 states that MDEQ, the Forest Service, and the Army Corps of Engineers must all deny approval of the project if it will violate water quality standards. The Agencies have failed to present any conclusive discussion to suggest that the proposed water treatment system will consistently and effectively achieve water quality standards. Consequently, the revised DEIS must include such a plan for public review, or deny approval of the project.

Page 2-36: during the wet season, excess mine water would likely be stored underground. During the dry season, stored water would be released and directed to the water treatment system. Storing the majority of water during spring and early summer will mean that more water will have to be discharged in late summer, fall, and winter, the months that treatment efficiencies in the passive bioreactor can be expected to drop off. How will ASARCO modify their water storage plans if the treatment system is unable operate as efficiently as expected?

In addition, because the proposed water treatment system is experimental and unproven, there is no way to accurately predict the concentrations of nitrates, ammonia, and metals that will be discharged to the Clark Fork from the project. These issues must be clarified.

Many questions come to mind in evaluating the proposed passive biotreatment facility. How will this experimental facility be designed to provide effective treatment throughout the life of the proposed mine? Exactly what species of plants will be used to vegetate the facility? By definition, plants that can survive under high concentrations of metals are remarkable, and most highly metal-tolerant plants are dry-land grasses (Neumann et al. 1993). The

proposed sand filtration will not remove dissolved metals, and those metals, plus ammonia and nitrite, could have toxic effects on the microorganisms responsible for the denitrification process (Eger et al. 1994). A fine balance of aerobic and anaerobic processes makes up wetland biochemistry; these processes must be established to provide effective denitrification (Barnes and Mann 1991). Will ASARCO line this wetland pit to minimize nitrogen leaching from cow manure into the ground water? What will happen when the proposed sand filtration system fails because it is saturated with sediments? What will happen when the biotreatment facility is metals-saturated and no longer functioning? Will ASARCO cease operations until a new filtration system and/or wetland is created? Finally, what will ASARCO do with excess mine inflow during winter months when the proposed facility is senescent? ASARCO should demonstrate a strategy to safely and completely contain waste water for the 7 months out of the year that the passive bioreactor is dormant due to seasonal changes.

It would be extremely risky to consider an experimental method of treatment when the stakes are so high. The proposed passive biotreatment system seems unlikely to denitrify mine shaft effluent effectively. Under the current proposal, dissolved metals may inhibit denitrification, and possibly end up in the Clark Fork if the proposed treatment facility fails to remove them. Previous experience with these systems suggests that even if the facility removes metals effectively from the mine shaft effluent, it will only do so for approximately 10 years, and the life of the proposed project will be at least 30 years. The proposed Rock Creek project's waste water has the potential to cause long-term environmental impacts that can be extremely difficult, if not impossible, to correct once they have occurred (Greber et al. 1979). My primary concern here is whether ASARCO is considering the best available technology possible to treat their mine waste at the proposed Rock Creek mines. It seems that pollution prevention is the best strategy. Under 6602 (b) of the Pollution Prevention Act of 1990, a national priority is established that: pollution should be prevented or reduced at the source wherever feasible, pollution that cannot be prevented should be recycled in an environmentally safe manner wherever feasible, pollution that cannot be prevented or recycled should be treated in an environmentally safe manner wherever feasible, disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner.

There exist many different strategies for treatment of nitrogen contaminated effluent: it seems that a prudent strategy would be for the I.D. team to decide which strategy is technologically most likely to prevent significant degradation of the state's waters, and require ASARCO to use this technology. The Clark Fork River, Noxon and Cabinet Gorge Reservoirs, and possibly lake Pend Oreille will be impacted by the proposed Rock Creek mine's accidental and deliberate discharge to ground and surface water. The Clark Fork -Pend Oreille Basin Water Quality Study shows that these waters are already impacted and impaired by the addition of nutrients and heavy metals. Therefore, it seems that these waters are "Tier I" waters under 40 CFR 131.12, and that no further degradation should be allowed to occur. It seems reasonable to require ASARCO to employ the best pollution control strategies available. The Clark Fork-Pend Oreille Basin Water Quality Study recommends maintaining or reducing nutrient loading from the Clark Fork River. Target levels were established for the Clark Fork River in the study at 6 ug/L soluble phosphorus and 30 ug/L soluble nitrogen, in order to avoid problem algae growth and associated dissolved oxygen problems.

If ASARCO does not want to utilize tertiary denitrification as a treatment option, they must explore the alternative of utilizing a secondary treatment facility that would produce land-applicable sludge. This would result in zero discharge of nitrogen compounds to the Clark Fork River, and to ground water. The sludge would be a high nitrogen-content substance usable as fertilizer. Metal contamination of the sludge would make it inappropriate for land application.

However, the waste water from the underground workings could be treated to remove metals prior to secondary treatment. If ASARCO could demonstrate that they could produce land-applicable sludge that is not contaminated with heavy metals, this could be a viable alternative. Vegetation on the site of sludge application can be tested to ascertain whether or not any excess nitrogen is escaping vegetation, and is available to leach into ground water, or run off into surface water. The sludge could then be sold as fertilizer to farms nearby, to help regain some of the costs of treatment. This is a critically important alternative, as discharge to surface water should be considered a last resort. Prior to the construction of the Troy mine, a regional EIS was recommended, but was not done due to

the cost associated. Now, more than two decades later, is it reasonable to allow a new mine project to commence operations without an ecosystem wide analysis of present and past impacts of metals and nutrients, plus projected impacts of growth in the area over the next several decades?

This is particularly critical since the DEIS suggests that all decisions regarding the effectiveness of the system will be based solely on pilot-scale studies conducted at Rock Creek. Consider the following statement:

Page 2-43: a pilot system would be constructed for treating adit discharge during exploration. This system would use a passive biotreatment system worked as planned, it would be expanded for use during operations. If it could not adequately treat the volume of water of [sic] meet discharge standards, the ion exchange would be expanded. This "permit as you" go approach is unacceptable. All biological treatment systems tend to exhibit good attenuation in the first couple years of operation as the fresh substrate adsorbs metals and nutrients. However, these short-term successes cannot be the basis for the determination of whether the passive bioreactor "is working" and can be expected to treat up to several thousand gallons per minute of mine water for several decades.

Based on experiences at the Levithian Mine, this type of reactor works very well for the first several months, and then declines as the easily available substrate is consumed and/or becomes loaded. After three years of operating with contaminated acid mine drainage at 0.5 to 1 gallon per minute, the treatment efficiency of the Levithian system has decreased substantially. In light of these shortcomings and unanswered questions regarding the efficiency of the passive bioreactor, the Agencies must present more conclusive data regarding the expected success of the passive bioreactor and must evaluate a conventional water treatment plant for the proposed project with a demonstrated history of effectively treating mine discharge of similar quality and flow. Since it is likely that only a conventional water treatment plant can realistically achieve the necessary requirements, this system must be made a condition of project approval.

Demonstrate that high levels of ammonia, nitrite, metals, and possibly acids will not impact denitrification efficiency of the chosen treatment facility design, and that other methods (such as chemical pre-treatment of effluent) will be employed to prevent disruption of denitrification by toxins.

Address concerns about the proposed passive biotreatment facility. An efficient, well-documented method of secondary treatment for denitrification must be utilized. Using an experimental facility of unproven effectiveness is an unacceptable risk for water quality. ASARCO has agreed to secondary treatment of effluent prior to discharge, and must comply with 80 percent TSIN removal. The treatment method must remove metals and N.

A final design consideration that must be presented in the revised DEIS is the design and operation of flow distribution systems within the passive bioreactor. Flows will need to be carefully managed to control biological processes in the treatment system. Preferential flow paths may well short circuit the idealized flow paths and reduce the ability of the system to treat the very large volumes of water proposed for the project. Quite simply, a channel that flows directly downward from the point of discharge into the substrate will render the bulk of the treatment system useless, In light of these concerns, the Agencies must provide the complete design specifications for public review in the revised DEIS. The public simply cannot evaluate the proposed system based on the information presented in the DEIS.

Page 4-56: states that a passive biotreatment system, coupled with an ion exchange polishing system, would be used to treat mine water. ASARCO expects, and the Agencies concur that, by a combination of settling and sand filtration, passive biotreatment, and an ion exchange polishing step, Montana water quality regulations could be satisfied. This uncertainty is unacceptable. We request the Agencies resolve these unanswered questions in the revised DEIS, that they require its use as a condition for permit approval.

If the water flow through the system is sufficiently slow that sulfate reduction is occurring, then hydrogen sulfide will be present in the discharged effluent. Its concentration in the effluent will depend on the influent sulfate concentration and substrate availability. It is important to note, however, that undissociated hydrogen sulfide has a

toxicity similar to hydrogen cyanide. Thus, if the water from the anaerobic system is discharged directly into surface water, it could cause significant impacts on aquatic life in the receiving stream. Hydrogen sulfide is clearly present in the discharges from the Levithian bioreactor system. Please clarify in the revised DEIS how hydrogen sulfide discharges form the passive bioreactor will be monitored and prevented and how its negative effects on aquatic life will be eliminated.

ASARCO proposes to use a passive biological treatment system as the primary means to remove nitrates and metals in mine water generated by the project. Under this system, the water would be pretreated using filtration and settling to remove suspended solids, followed by mechanical aeration. Nitrate and some ammonia would then be removed in anaerobic passive biotreatment cells consisting of mill tailing, sawdust, manure, and alfalfa. An ion exchange system would provide backup treatment in case of failure in the passive bioreactor, and all discharges are expected to meet water quality standards. We believe several key issues regarding this proposed water treatment system must be clarified in the revised DEIS. These include the experimental nature of the proposed system, the potential for negative environmental effects it may cause, and the need for review of the detailed design specifications of the proposed system.

Page 2-43: ASARCO proposed to build cells that could treat 400 to 500 gpm each. The water balance indicates that about year 30, this system would need to grow to treat an average of 2,000 gpm. The conceptual design of the system does not provide adequate space and substrate to achieve the desired treatment efficiencies. The 6,000 sq. feet of proposed substrate does not appear to be sufficient. This is especially critical in light of the following statements:

Page 4-36: total inflow to the underground workings and adits would equal about 2,046 gpm (exploration adit=168 gpm, conveyor and service adit= 228 gpm, underground mine =1650 gmp). The quality of mine inflow would be affected by blasting activities: concentrations of nitrogen, ammonia, suspended solids, and metals would increase.

Page 4-41: a larger safety factor was used to reflect a greater degree of uncertainty in the estimated mine inflow. This discussion further states that actual inflows may be higher or lower and that variations in flow estimates ultimately would affect the size of the treatment systems and the area required for siting treatment facilities, and the rate of ground water withdrawals for make-up water supplies.

We do not believe the safety factor of 2 is conservative enough to safely design the treatment system. This is because of the severely limited amount of baseline hydrologic information collected at the site. The revised DEIS must present more comprehensive hydrologic information and use a larger safety factor for hydrology assumptions in the mine water treatment plant design. Looking at the project maps, it does not appear that there is excess room available to expand the size of the treatment facility in the event that inflows were higher than estimated. In fact, the document provides no discussion of how big the passive biotreatment cells will be, what the hydraulic residence times are expected to be, and whether that will provide sufficient treatment. Therefore, the design specifications for the passive bioreactor must be present

Page 2-104: the critical design criterion for sizing the components of a constructed wetland is the hydraulic residence time (HRT), the total time the water remains in the treatment cells prior to discharge. The revised DEIS must disclose the estimated hydraulic residence times in the passive bioreactor cells. (1223)

The public needs a fair opportunity to review the actual treatment proposal, and the treatment plan needs to be proven safe and effective, not a theory. Once the mine has started, stopping an ineffective system will be difficult. Neither the public nor the State of Montana has the responsibility to research and find a reliable method for treating discharges. (1237)

There is no other option but to put the settling pond residual, the poisoned manure from the poop pond and any other chemical pollutants from the sight into the tailing pond eventually. The only other place is back into the mine or into Rock Creek which they obviously want to avoid.

I understand that the project plans to use unproven method of water purification. I have some specific concerns about the methods I have heard will be used. In regard to the water that will not be used in the milling process, I understand there will be a settling pond, followed by a bio-reactive system and finally an ion exchange system. The settling pond will remove the particulate and precipitants from the effluent. It will not however remove all of the metal, a small portion of each of the various metals and compounds will become soluble. This is based only on the solubility coefficient and temperature. This mixture of soluble ammonium and metallic compounds will then be sent to the bioreactor. The bioreactor will rely on the bacteria feeding on organic material to breakdown the ammonium compounds. The bacterial engine for this process will be sensitive to several variables. The water exiting the mine will be warm. It will cool substantially in the settling pond, especially in the non summer months and approach the normal temperature of surface water in the area. While that is good because more of the soluble material will precipitate, it will be detrimental to the bacterial activity. The second and probably larger problem for the bacteria will be the metals in solution. Those metals will have a devastating effect on the bacterial biochemical engine. This design relies heavily on what will be both cold and poisoned bacteria, and is therefore seriously flawed. (1242)

ASARCO is proposing to use water treatment of mine waste that is experimental in the case of the bioreactor or unproven as a mining waste water treatment system in the case of the ion exchange. How can you issue a water discharge permit and guarantee that water quality standards will not be exceeded when this treatment may fail? (1248)

Federal Register May 22, 1989 lists ion exchange and reverse osmosis as the best available technologies for removing nitrates from water. Why is ion exchange the backup choice for Rock Creek instead of the primary choice? If ion exchange is a functional backup, where are the plans describing the sizes and specs (including the chemical and physical parameters) specifically needed for the flows and influent water quality expected at Rock Creek? All we have to evaluate are a few transparent words of assurance. Why are there no substantive plans if ion exchange is a feasible treatment method? Without detailed plans, how can you make any judgments and how can the reviewing public be assured of this method s efficacy in treating the quantities of water produced by the proposed project?

Page 3-21: "In practice, the substrate in the bioreactor cells could be tested annually to evaluate the remaining cell life." Why annually? Where are your data allowing you to predict that only yearly sampling will enable ASARCO to know when to recharge the cells? Why should I not judge that the carbon source will be consumed in a matter of weeks or months? Where are the data indicating the amounts of available carbon in the manure, etc substrate, and calculations of the rates of carbon usage based on the amounts of nitrates in the influent water? How long will the pilot cell in Troy be in operation? How will the public be apprised of the success or failure of the pilot? We learned at the April 1996 Q & A session in Noxon that MDEQ has "about 1.5 FTEs" for the entire state of Montana "to check on these kinds of things." Please provide a realistic schedule that assures the public that ASARCO s pilot testing will be monitored. Who will assure that an ion exchange system will be built that will accommodate the full volumes of water to be treated when the pilot fails? Who will evaluate the efficacy and chemical safety of the ion exchange system?

Where, for instance, is the published literature in professional, scientific journals on the experimental bioremediation water treatment system? Without such literature, it is impossible to evaluate the system's effectiveness in removing nitrates and in handling the quantities of water proposed. Where (at what other mining facilities; in fact at what other facilities of any kind) does it work? Why (on what scientific grounds) would you approve this system for the Rock Creek project? Why do you think this system would work when experts have either never heard of it or believe it will fail?

The passive biotreatment system and "backup" ion exchange systems are completely unproven technology for the water volumes proposed, as discussed later.

Page 2-43: Par. 1: The DEIS proposes that the Rock Creek project be permitted before a pilot test of the PBS is performed. Even if this were appropriate, why should anyone expect that ASARCO would have the scientific

expertise to produce a water treatment system that would depend on a precisely established and constantly monitored and maintained anaerobic microbial environment? It is clear from the vague wording in the DEIS that ASARCO has no knowledge of what all this would entail. Most telling is the lack of estimates of how long the PBS cells would function with the massive volumes of water to be treated, the limitations of gravity flow through the cells, and the absence of any maintenance schedule. "ASARCO has estimated that the potential cell life [of the PBS] is at least 50 years." This is unfounded nonsense. Where is the data to support this? On the contrary, qualified researchers working on similar systems for small water volumes have found that cell failure occurs in a few months to a maximum of one year.

The so-called backup ion exchange system (in case the PBS fails) is also inadequately described. As is true for the PBS, ion exchange systems are applicable only to small volumes of water. Claims in the DEIS that ion exchange will function for the projected volumes are unfounded. Where are the data in the DEIS or in the professional research literature to support these claims? What meaningful assurances do the agencies have that any components of the water treatment system will function adequately?

It seems the bioremediation system is essentially the same as the anaerobic part of a sewage treatment system. There's no mention of this in the DEIS.

It is stretching the rope of available technology to blatantly say that ion exchange will solve all problems as a fail-safe mechanism. The volumes of water are too great, and there are too many unknowns in the water chemistry.

Biotreatment depends on growth of bacteria. The bacteria use nitrates to grow and in the process convert nitrates to nitrogen gas (odorless and tasteless). The bacteria also need carbon, which they would get from cow manure and alfalfa. To know or even guess how much nitrate will be converted to nitrogen gas - and this is the key to deciding whether the system will handle the nitrates in the water entering it - you have to know the carbon to nitrogen ratio. In other words, what is the amount of carbon available to the bacteria in the manure and alfalfa and what is the amount of nitrates you are trying to remove. Knowing this balance is essential, and until some data are presented showing how much manure it will take to keep the bacteria working, how often more must be added, what the carbon sources really are, there is no basis for saying the treatment system will work.

The passive bioreactors may be an additional source of sulfides, especially over the long term. In fact, last night one of ASARCO's engineers explained the importance of sulfides to metal precipitation in the bioreactors. So what happens after the cells are capped and left in place in perpetuity. Do they start adding acid water to the ground or the Clark Fork? Why was this not addressed?

RWMP 3-19: Par 2: Concerning your statement about treatment efficiencies in 5 to 10 degree C range, I see only 3 data pts (of 49) on the Fig 13 graph that are in the 5 to 10 range, and the effluent nitrate spiked during this period. Please explain how you can conclude that this even suggests the system is working efficiently in the 5-10 range. Assuming the influent water will have to be heated to make the system work during perhaps 6 months of the year, how will the water be heated? Please provide specs of the method, relevant to the projected volumes of water at Rock Creek.

Page 3-21: Where are your calculations of carbon consumption rates relevant to the projected amounts of nitrate in the Rock Creek influent water? Please explain why these are not presented in any public document? Why are no data given for the carbon to nitrogen ratios for the West Fork system? Please explain how you or the reader can predict the efficiency of the biotreatment system without these figures? Please explain the relevance of the proposed Full Scale West Fork System to this RWMP and MPDES? Are not all data derived from a pilot scale 20-25gpm system at West Fork?

When the carbon source in a treatment cell is depleted and sludge is removed to tailings impoundment, what assurances are there that volatile amines will not pollute local air?

Why is there no mention of the metabolism of sulfur compounds in the bioreactor? The sulfate levels in Troy adit waters (Table 9, p. 4-2) are fairly high (23..3 mg/l). Estimated sulfate figures for the Rock Creek (Table 4-18 in DEIS) untreated effluent avg= 22mg/L; max= 42mg/L. With these levels, one would expect that considerable amounts of sulfate would be reduced to sulfide by sulfate-reducing anaerobic bacteria in the bioreactor. Please do not answer that there will be no such bacteria in the manure, etc mixture, because there will be. Table 4-18 DEIS in fact seems to imply that there will be no sulfate reduction because it lists, under treated effluent, sulfate avg=22; max 42mg/l, the same as prior to treatment. Please explain this apparent oversight or error. The sulfide would either precipitate as metal sulfides (which a Hydrometrics engineer at the Noxon meetings attested) or go off as hydrogen sulfide gas, a very toxic substance. Either way, where is your description of the sulfur chemistry of the bioreactor system and the implications of the products of sulfate reduction to the bioreactor effluent? (1288)

The entire section on water treatment, including that in Ch 4, Hydrology, is unacceptable; this alone, especially considering the cavalier attitude of the paragraphs toward the vital importance of maintaining quality fresh water, is sufficient rationale for rejecting the entire DEIS.

Is it not true that the nitrate-laden mine water to be denitrified is virtually free of organic materials? If true, how will the system as planned prevent organics (from the carbon source and the bacteria) from being flushed out of the system into the effluent? Relevant to these questions, PRC wrote: "Because of these concerns, biological denitrification was dropped from further consideration." Please explain your decision to ignore this statement and proceed with biological denitrification as the treatment of choice. (1288)

The bioreactor and ion exchange systems are unproven for mine wastes on a large scale. Because this mine will generate such large amounts of waste water containing heavy metals, it is crucial that the systems built to handle this water be well tested and able to handle large amounts of materials. Why hasn't ASARCO been required to submit alternatives to these unproven methods? (1331)(1429)

How bad would the potential wastewater problem be if part of the treatment is to be cow manure? (1348)

Because metals can attach to sediments, ASARCO plans to use a settling pond to remove sediments and assumes all the metals will be removed at this point

The next step, passive bio-reactor, is experimental technology that consists of a series of "cells" comprised of soil, alfalfa hay, sawdust and cow manure and works with microbes (bacteria) that "digest" nitrates. ASARCO has used this for less than 2 years at a lead mine in Missouri & some other experiments are taking place elsewhere. There is no place where a bio-reactor has handled large volumes of water like at Rock Creek, there is no proof that the microbes can work in our cold temperatures & climate, and the concentrated wastes that end up at the bottom of the pits will be left in place forever (with no analysis of this impact).

The 3rd step is an ion-exchange plant, which is experimental technology for treating mine water. There are well under 100 plants in operation in the U.S. today and they are only used in small drinking water systems. They need a fairly clean stream of water entering the plant in order to work properly, so if the settling ponds & bio-reactor don't work neither will the ion-exchange. It also produces a concentrated toxic sludge that needs to be disposed of properly and ASARCO has not identified what it plans to do with the sludge (1351)

ASARCO plans to use a settling pond to remove sediments and assumes all the metals will be removed at this point via this inadequately installed settling pond. It's quality is questionable. The passive bio-reactor they plan to utilize is only experimental technology which has never been used in a place like Rock Creek that will handle large volumes of water! There is also no verification that the microbes that "digest" nitrates can work in our cold temperatures and climate leaving concentrated wastes behind (which has not been addressed). (1373)

The EIS did not answer many of my concerns specifically enough. It also tried to compare the water quality treatment based on limited information from the ASARCO Troy mine near Bull River which has no discharge and sits in a different geological setting - the impact is bound to be different. (1402)

Have the agencies allowed only proven and best available technologies to treat the degraded mine water? (1438)

We recommend that ASARCO and DEQ seek alternative wastewater treatment systems which are proven effective for projects of this scale, and which pose virtually no risk to fish or wildlife from either day to day operation or worst case failures. (1445)

What are the long term effects of 1500 gallon/min. discharge and an untested/unproven filtering system when proven systems are available. Montana now has some of the lowest water quality standards in the nation and seems agreeable to granting a variance for further lowering the standards to accommodate this project . (1446)

The proposed water treatment system relies on an experimental and unproven water treatment process. The DEIS indicates that the engineering specifications for this treatment system have not yet been submitted by ASARCO. (1496)

Page 2-42 - treatment system: design details for biotreatment and ion exchange systems concern: not available for public review and comment. Will they be lined? Justification for location in Alt.II? Soil types not given for location in Alts. III & IV. Also justification for this location.

Page 4-56 - water treatment concern: The DEIS should discuss better and more expensive methods of water treatment that could be required. (1504)

No reliable, professionally reviewed, engineering performance standards have been submitted to demonstrate that the passive water "treatment" system will work. The EIS relies solely on ASARCO's purported success elsewhere with a similar, bench-scale size system, which is only 30 feet by 40 feet, and which handles just a fraction of the discharge that will be required at the Rock Creek project. Before a real treatment system is accepted, performance standards must be described. Treatment to us means you know how much and what quality your discharge input will be, how long it will be treated, how much and what kind of pollutants will be removed, and what the quantitative quality of the treated output will be. A real treatment system must have controls on the input and output end, and it must be able to be adjusted to account for variables (increased discharge and metal loads; climate changes, etc.) The system proposed here is too vague. The DEIS never discloses how much sludge will be generated by the pollution-removal system, what's it quality will be, and where it will be disposed. This is a major oversight. (1526)

The unproved water treatment system must be evaluated further before it is relied upon to protect the Clark Fork and Lake Pend Oreille. If the tailings impoundment pond is to be drained into the biotreatment facility the effects of this action must be detailed in the final EIS. The impacts to surface water quality caused by the increased amounts of ground water inflow to the mine adits in alternative four need to be discussed in the final EIS. The DEIS relies upon weak data for assumptions of resulting surface water quality. The threat posed by nitrogen to the Clark Fork and Lake Pend Oreille is understated by the DEIS.

The document does not significantly analyze the water treatment process. The notion that the proposed water treatment process will purify the excess mine water to a state where it will be harmless to the river is a critical assumption of the DEIS. Worst case scenarios of impacts to the Clark Fork are listed on page 4-57, Table 4-18. These scenarios assume that the treatment system will function as planned. If these assumptions are invalid, then the DEIS loses its credibility and worth. It is my concern that the experimental passive biotreatment system will not be capable of handling the quantity of water discharged from the mine (estimated 1069 gpm from table 2-2 p. 2-40 from year four to year thirty), and the ion exchange system will not make up the difference. Direct discharge of untreated effluent to the Clark Fork River would be the result. This effluent would contain high concentrations of metals and nitrogen compounds.

The biotreatment - ion exchange system needs to be evaluated further before it is relied on as the primary protection of the Clark Fork against the mine's potential deleterious effects. The system must be proven capable of reducing the concentration of nitrates, nitrates, and toxic ammonia over along period of time. Controlled experiments including actual field tests could accomplish this. Until the system is proved to be effective over the period of time that ASARCO proposed to use it, from the exploration adit to the post-mine discharge treatment, it must not be the foundation of the DEIS as it currently is. The document suggests on page 4-64 that "ASARCO would develop a contingency for the treatment of excess project water. This contingency could include expanding an engineered water treatment plant..." An option such as this that has been proven effective over time should be the basis of the water treatment system and not experimental methods. In case the biotreatment facility fails, emergency contingencies including land application of the excess mine water could also be utilized. This topic is not addressed in the DEIS and should be considered in the final EIS.

The ability of the proposed treatment processes to lessen the impacts of this additional load is not considered. The bioreactor as planned is not designed to affect the levels of dissolved metals in the effluent. (1594)

There is potential danger of polluting the river and lake with heavy metals and nitrates because of ASARCO's reliance on experimental water treatment methods. I urge you to analyze and disclose the effects of these water quality concerns. (1613)

Polluting the Clark Fork River and Lake Pend Oreille with heavy metals & nitrates during the construction & after because of ASARCO's reliance on unproven, experimental water treatment methods .(1635)

This permit should only be granted once ASARCO has a final design that has been shown to work on large scale projects, through all seasons and all high flow events to prevent ground and surface water pollution. (1637)

ASARCO is proposing to treat mine water with a passive bioreactor system. This is an experimental process that has only been utilized on a small short term scale. Also, the process may not be suited to Montana's cold water temperature. We do not feel that the Rock Creek project's water treatment should be experimental. The treatment plan calls for an ion exchange system to be utilized if the bioreactor method fails. Has ion exchange been demonstrated to be effective for long term large scale mining project demands? The proponent must prove that wastewater can be effectively cleaned prior to issuing a discharge permit. Detailed water treatment consideration must be part of the EIS review . (1638)

According to the DEIS, "Engineering specifications for the proposed Rock Creek passive biotreatment system have not been prepared..." Once again reviewers are being asked to accept that this will be an environmentally sound and workable system apparently on faith alone. Detailed information on this water treatment system must be an integral part of the EIS. Has the design been successfully employed elsewhere? (1638)

According to the DEIS, "Engineering specifications for the proposed Rock Creek passive biotreatment system have not been prepared." Once again reviewers are being asked to accept that this will be an environmentally sound and workable system apparently on faith alone. Detailed information on this water treatment system must be an integral part of the EIS. Has the design been successfully employed elsewhere? (1638)(1220)

At this time the waste treatment plan seems to be pie-in-the-sky, let's keep our fingers crossed and maybe it will work sort of thing. By the company's own account, there are only two operations in Montana they can cite. One in operation for three months at 25-100 gpm and another for eighteen months at 5-10 gpm and another I believe in Missouri operating for two years at 50 gpm. How does this translate into a procedure that can handle 1700-2300 gpm? What exactly is known about these operations independent of the Company's description? How does the untreated discharge at these operations compare with that expected from the Rock Creek Project? How much carbon will be needed-manure and/ or methanol - how will it be transported? Highway 200 in Sanders County is a mess- worse in the east in good part because of heavy truck traffic with a fix a long ways off. Railroad

transportation- there have been two derailments in the Noxon-Heron area in the past several months? Yet these potential impacts have not been discussed. How will the carbon materials be stored on site? What will happen if, and many say when, the PBT plan fails? In ion exchange, what happens to the toxic sludge? It seems to be a major transportation issue again. Also unclear to me is what happens as sediments build up in the tailings pond? Is it removed? Would a second pond be required?

We deserve better than an unlined tailings pond and unproven technology proposed by ASARCO to treat degraded mine water- what happens if and some state when the technology fails - what about our ground water, Rock Creek, the Clark Fork, and downstream waters? Why isn't the treatment plan and its details a part of the DEIS? (1643)

What is the evidence ASARCO is giving that their water treatment methods will adequately remove pollution from the waste water before they drain it into the stream? (1655)

The efficacy of this waste water treatment plan proposed using "passive bioreactor', "ion-exchange', reverse osmosis and other treatments on large scale as proposed has never been tested. Why isn't that a consideration in mining when the potential health hazards and environmental danger and damage is equivalent to dangerous drugs and cosmetics only on a smaller scale? (1678)

With regard to contaminants stored in the heap mound, am I correct to understand they will be treated with biologic treatment - straw and manure and that only clean effluent will be allowed to enter the river? I am aware of biologic treatments in the form of inoculation and/or composting of chemically poisoned sites but not of just using manure and straw. What scientific authority do you have to support ASARCO's methodology and plan of treatment? Of the processes I am aware of, time is one of the key elements in biologic treatment of soils - time to prepare and, if necessary, to compost (meaning to remove and turn the soils as one would in a large composting operation with yard wastes) or to inoculate the help mound in place. The foregoing is only the point of beginning.

In order for biologic microbes to do their work, doesn't it take time (normally not a matter of hours or days in the case of heavy metals) during which period, continuous testing programs are underway?

It is difficult to imagine how one might be successful with this process at the bottom of the valley where all of the contaminants gather under the pressure of discharge (volumes which are most likely not yet known) and ground water (uncontrollable by ASARCO); where the possibilities are for the water and water table to rise in storm and wet season conditions (uncontrollable by ASARCO) so as to dilute the combined action of the microbes - causing them to go dormant and cease to work, or worse yet, to be wiped out and/or carried away.

It seems that exacting thought should be given to the possibility of overloading the microbes with concentrations that might kill them off. What work have you conducted to assure the public of ASARCO's proposed method of treatment working? I should very much like to see the exact studies of the methodology to be used, of the plans to protect ground water from contamination and finally, the river itself. Do you possess these in-depth studies? What are the qualifications of the scientists?

When the treated (?) effluent comes to the bottom of the heap, won't it pool? If it doesn't - (because ASARCO doesn't plan to install a single wall - let alone a double wall liner of the type used in landfills which accept contaminated wastes), then what? Will the effluent be pumped out and recirculated in totality? (1729)

Your agency must disclose and analyze the effects of pollution in the Clark Fork River and Lake Pend Oreille with chemicals associated with the operation of the mine because ASARCO plans to use an unproved and experimental water treatment method. (1730)

We need more protection provided and more information about the treatment plan if the mine is to go forward. (1736)

The bio-reactor is unproven. Will the reactor really accommodate the 1,5000 gpm flow estimated? What happens if there is more flow? What happens when the reactor is closed down for "regeneration"/sludge removal? (1778)

The DEIS indicates engineering specifications for the proposed Rock Creek passive biotreatment system have not been prepared, or included as part of the revised Water Management Plan. The limited information presented is from a much smaller pilot project operating without discharge, and in a different geologic setting than occurring at the proposed project site. Further information is necessary to determine the potential effectiveness of the treatment system to prevent impacts to aquatic resources within the Clark Fork River from increased nutrient loading. (1779)

Engineering specifications for the proposed Rock Creek passive biotreatment system have not been prepared or included as part of the Water Management Plan or Draft EIS. The limited information presented is from a much smaller pilot project operating without discharge and in a different geologic setting than that occurring at the proposed project site. Nevertheless, the system as described is expected to remove 80% of the nutrient load from water utilized in mining activities. Presumably, reclaimed water with a 20% increased nitrate load would then be discharged into the Clark Fork River, where nutrient loading is already a concern. Further information and specific design criteria including criteria for determination of system success for the proposed biotreatment system and any proposed back-up system is necessary to determine potential impacts to aquatic resources in the Clark Fork River. (1779)

Specifically this area of Montana is the wettest part of the State. Nowhere does the state or ASARCO describe the criteria that are critical to the functioning of the bio-reactor, such as temperature? Both air and water. Amounts of manure and straw to treatable water. What occurs when the bio-reactor is non-functional due to cold freezing weather perhaps? Yet under Water Treatment pg. 4-56 "ASARCO experts say, and the Agencies concur that, by a combination of settling and said filtration, passive biotreatment, and an ion exchange polishing step, Montana water quality regulations could be satisfied." That's a long jump on a short rope when the second sentence of the paragraph reads, "Because passive biotreatment is viewed as an unproven technology....". And again on (Pg. 2-42, "Engineering specifications for the proposed Rock Creek passive biotreatment system have not been prepared as part of the revised Water Management Plan." The discourse on the ion-exchange polisher is predicated to the ion exchanger will also be non-functional? What kind of treatment is this water going into the Clark Fork getting? (1780)

The permit application bases non-degradation upon unproven experimental technologies with limited basis of use on the quantities of water projected to come from these facilities. (1780)

Will the "bio reactor" function on a large scale facility at a high altitude and with varying weather extremes? will the microbes/bacteria survive? On the small test plot, "edge effects" would have dominated. Was this taken into account? (1926)

The long term environmental impact on water quality is the most important aspect of this project and can not be overlooked or underestimated. The draft EIS states numerous times that the mining activity will have a substantial impact with most of the methods ASARCO has proposed. Their unproven technology is unacceptable to protect the water quality of this area. (1917)

I object to using unproven technology to treat the mine waters. What is the backup plan if it doesn't work as it is supposed to? There has been too little study to accept this as the viable plan with no adequate alternative. (1925)

The DEIS must provide a detailed analysis and comparison of the use of proven water treatment technologies along with ASARCO's experimental approach. (1936)

The passive bioreactor, is based on nitrate-digesting microbes. All microbes, and especially those living on nitrates, are temperature-sensitive and may not function in the colder temperatures found on the site for most of the year.

This treatment method is unproven for long-term reliability and has never been used by ASARCO on any site for longer than one year.

The ion-exchange system proposed for use as a final nitrate-removal step has been proven only for small drinking water treatment systems that already have a clean stream of water to work with. It has not been used to remove nitrates from the massive volumes of water that ASARCO will generate at the site. Further, the method is ineffective if other pollutants, like metals, are in the water, and it will produce a toxic concentrated waste that will also have to be disposed of somewhere. (1948)

Why rely on an unproven water filtration system to remove pollutants before we dump 1,500 gallons per minute of this into the Clark Fork? (1951)

This Draft Environmental Impact Statement is inadequate. It's filled with conclusions and conjecture, and it sanctions unproven technology for water treatment and relies on dilution as the solution to pollution. It relies on remediation rather than prevention, even though the history of all mining has proven that once you can see the contamination, it's too damn late. (1955)

By using treatment methods not fully tested for large volumes, the results could be disastrous. How would you correct it when you have thousands of gallons pouring out daily? The department of Water Quality should monitor these new methods of water treatment sites continually that are now being used so that you will be able to evaluate these treatment methods more fully, before you make the decision to grant the permits. (1987)

With regards to the statement on S.O. B. page 3, IDFG believes the lower Clark Fork - Lake Pend Oreille ecosystem is too valuable to experiment with. Monitoring of discharge may serve to detect problems, and even force cessation of discharge until problems are corrected or the back-up system is place, but impacts to the environment will have already occurred. Because of the costs associated with stopping operations or replacing the treatment system, there may be a tendency to "tinker" with the experimental system prior to switching to a move effective but expensive treatment.

The statement on page 4 does not indicate a level of confidence in the experimental system which leaves us assured the system will adequately treat wastewater. If this statement could be backed up with examples of projects where the same or similar system, applies to projects of this magnitude, could be shown to be effectively protecting water quality and fish and wildlife resources, our concerns would be greatly reduced. As stated above, however, we do not believe the lower Clark Fork -Lake Pend Oreille system is the appropriate location to test this proposed treatment.

The use of a passive biological treatment for denitrification purposes is conceptual in nature. To paraphrase the statement on page 4-56 in the DEIS, using the proposed ion exchange system as a final polishing step, ASARCO expects that Montana water quality regulations could be satisfies. This appears to be a relatively unproven technology for handling waste water from mines. We do not believe this is the proper place for this technology, especially with the proximity of the Rock Creek drainage and the Clark Fork River. What happens if the technology does not work? No mention is made in the draft permit, or the DEIS as to the mitigation measures to be utilized for cleanup, or how the costs will be paid. (1991)

A discharge permit without design specs or scientific data would not assure that the technologies are available or adequate to meet the needs of water quality and fisheries viability.

If ion exchange becomes necessary in the event the unproven and highly questionable passive filtration methods fail, consideration must be given for contingencies for off-site handling of the discharge. (1999)

ASARCO is taking the environment into a great "experiment" with its proposed bio-treatment facility. This treatment process has many faults, all of which would have a significant impact on the surrounding environment if allowed to be put in place. ASARCO's proposal is to build an experimental bio-reactor treatment plant for treatment

of 2,000 to 3,000 gpm of mine tailings water. This treatment would consist of mill tailings, sawdust, manure, and alfalfa to create an anaerobic reaction for the removal of nitrogen into the system. The Tribe does not believe that the environment is ASARCO's testing grounds for its "experiments". The Tribe is amazed yet appalled that ASARCO is proposing such a facility and treatment plan with the ignorance to not submit a proposed facility design.

The proposed "bio-reactor" was designed from one of ASARCO's mines in Missouri. This plant was designed for a totally different geological make-up. The Rock Cr. site is a high mountainous region, comprised of glacial till, lacustrine, and alluvial soils sitting over a dense formation of bedrock. Missouri has a profile of deeply layered sedimentary rock, covered by dense layers of top-soiled clays. These soil profiles of extremely heavy clays are ones that automatically have trapping capabilities, the soils in the Northwest do not. Also, Missouri has a totally different meteorological profile than that of the Rock Cr. Site. This type of treatment will in no way be capable of being able to handle the loads that will placed against it.

Nitrification from treatment is almost eminent. The Kootenai Tribe of Idaho does not believe that the Clark Fork River, one that already is faced with an excess nutrient problem, should have to have an addition load placed onto it. On page 2-42, the DEIS outlines, very briefly, how they plan to utilize this treatment process. ASARCO is estimating that 80% of all nutrient loading will be removed by this process. Where is the remaining 20% going, more than likely, directly back into Rock Cr. with their 2,500 gpm discharge permit. A 20% increase into the Clark Fork System would have a severe, detrimental effect, especially to those affected users downstream. As stated before, the treatment plan is to utilize mill tailings, sawdust, manure, and alfalfa to create an anaerobic reaction.

It seems inconsistent to the Tribe that ASARCO is applying three items which contain medium to extremely large amounts of nitrogen so that they can remove nitrogen from the system. The Tribe does not understand the rationale behind that thinking. Also, ASARCO has not thought of the additional, cumulative environmental impacts of this bio-treatment. They would need extremely large amounts of manure and alfalfa to support this operation. The area does not have large feedlots to gain the amount of manure, nor the farmland to grow the alfalfa needed that would be needed to support this operation. In essence, they would be promoting another heavy polluting industry to come into the area and place additional nutrient impacts onto the system.

The Kootenai Tribe of Idaho does not understand how this treatment facility can actually be feasible? On page 2-43 ASARCO admits that "a pilot system would be constructed for treating during exploration.....If the passive bio-treatment system worked as planned, it would be expanded for use during operations." The NEPA process does not allow for what ASARCO might do, it is supposed to address the facts and actual proposed actions for the project. ASARCO is essentially asking for a "permit as we go" process. They want to conduct mining as usual, then address the environmental problems that are created. The Tribe will not allow that to occur.

The Kootenai Tribe of Idaho believes that this treatment type does not begin to carry the capability needed for treatment of water of this amount. Biological breakdown of any material takes time, a lot of time. The Tribe does not believe that this treatment facility could effectively treat amounts of water ranging from 1,500 to 3,000 gpm for clean discharge back into the system.

Water coming from the mine will carry any materials used in the mine or dug from the earth. The warm water will carry particulate matter, metals, nitrogen compounds from blasting material and any other chemicals from the mine in solution. The initial settling pond will settle out most of the particulate, but the solution which is next to be sent to the biologic filter will carry not only the nitrogen compounds but also metals in solution and any other soluble chemicals. (2026)

The state should not approve a discharge permit for this mine that includes application of the "passive bioreactor" system as currently conceived. The method, at best, has only been used on what appears to be a bench scale basis, in a limited situation without the benefit of quantitative scientific review. That's not good enough for this project. Moreover, the "backup" plan for ion exchange needs fleshing out, including just when it will be used, what it's removal efficiency will be and what will be the expected quality of the final discharge. Regardless of the treatment

selected, at a minimum, the MPDES permit for each discharge should show: what will be the expected quality and quantity of the influent; how the system can be adjusted to accommodate changes either in influent or the conditions that affect it; what the specific performance will be (i.e., removal efficiency); where sludge and other byproducts will be disposed of and how they will be monitored; how the treatment system and receiving waters will be monitored; and how monitoring data will be used (i.e., what are the feedback loops and corrective measures to be employed when monitoring results are unsatisfactory). (2058)

The EIS must address heavy metal and nitrate pollution of the river caused by ASARCO's reliance on experimental water treatment methods. (2059)

ASARCO has not provided engineering specifications for the PBT system or the ion exchange system. The public or any decision makers are not able to analyze what the systems will do without adequate information. This means the Forest Service is unable to comply fully in providing information to the public as required under 36 CFR Subpart B Statute 200.5 and 36 CFR Subpart A Statute 228.6. Instead of providing engineering specifications, ASARCO has referred to the Troy Mine pilot PBT. The projected quality of water after treatment is claimed to be non-degrading. It is not logical to expect that the pilot PBT of approximately 1200 square feet accurately reflects how a PBT removed 80% of the nutrient load which is lower than the 90 to 95% removal hoped for by ASARCO. In addition, the biotreatment systems used as comparisons are located in different parts of the country with very different climatic and geological features. Is it feasible to believe that a PBT system which is 50 times larger than the pilot system will automatically make it more efficient? The point is the information gaps are too large to make an informed and analytical decision without engineering specification of the systems proposed for usage. This nondisclosure of information by ASARCO is in conflict with NEPA requirements to inform the public and decision makers.

The ASARCO plan proposes to use a passive biological treatment system (PBT) with an ion exchange system for backup. The DEIS states that an ion exchange system will be used only if the PBT does not meet effluent standards, fails, or is temporarily out of service. If the ion exchange system is not used as a backup system, then it will be incorporated as a final polishing step in the treatment process. This sounds like ASARCO expects to build an ion exchange system because by their own admission the PBT pilot program did not perform as efficiently as hoped. Although the PBT is untested at the ultimate volumes the Rock Creek Project will require, ASARCO is proposing to use it anyway as the primary wastewater treatment system. This is a very large experiment with a lot of uncertainty. The PBT system will be in place for several years before maximum production is reached. The investment in the mine by then will be substantial. If the PBT system fails and financial arrangements for a backup are not in place, then the choices will be between water quality degradation or mine closure. It is essential that additional bond requirements or other appropriate financial measures are required to insure the ion exchange system or any other appropriate system could be built if the experimental PBT fails. (2065)

The MPDES permit must clearly require that a proven BAT be used to treat waste water from this operation. The passive bio system is not proven in this climate. The permit must require that the ion exchange system be built or that bonding sufficient to build such a system be posted before ground is broken. (2066)

In the event that the bioreactor, at some point, is unable to achieve effluent limits, an interim plan should be included in the permit to cover the period of time before the backup ion exchange system if functional.

Prior to the issuance of a permit, MDEQ requires the applicant to submit a preliminary plan which, theoretically, can achieve effluent limitations. After the permit is issued the applicant must then submit final plans for agency review and approval. We understand that if the passive biotreatment pilot study fails to meet expectations, plans for the ion exchange backup system will be added to the submittal. A formal Professional Engineer plan and specifications review and written approval must be issued by MDEQ before construction can begin. (2067)

I'm skeptical of the viability of the biological treatment system to be used to clean the mine's water before discharging it into the Clark Fork River. Whatever success that has been claimed with respect to this kind of system needs to be evaluated under the specific conditions and circumstances particular to Montana's climate and geology.

You should be requiring the construction of an ion exchange plant over the biological treatment plant proposed. (2076)

The nutrient treatment philosophy discussed at public hearings is not the system being reviewed by the department. A project of this scope and magnitude must not depend on the results of pilot tests.

"State of the Art" is not synonymous with "Experimental." Far too much dependence on experimental mitigation's, for a project with this scope and magnitude of potential environmental impacts, is being proposed. (2084)

The untested nature of the waste water treatment is of great concern. What if this fails? What if the back-up plan is not feasible or not appropriate? (2090)

You should not allow them to release degraded mine water into the Clark Fork River with unproven cleaning methods is absurd. (2205)

Response: The draft MPDES permit and the draft EIS had to consider the systems included in the company's application; therefore, the passive bioreactor and ion change system were included in the draft permit and the draft EIS. The agencies believed that the ion exchange system provided sufficient backup to the uncertainties in the biotreatment system. Nevertheless, numerous comments were received regarding the design, reliability, and effectiveness of the waste water treatment system proposed in Alternative II as described in the draft EIS, the applicant's MPDES permit application, and the draft MPDES permit. In response to these comments, the applicant and the Agencies developed an alternate waste water treatment system which is included in Alternative V (see description in Chapter 2) and is described in detail in the supplemental and final EISs and is included in a revised water management plan and the proposed MPDES permit in Appendix D. Analysis of this system can be found in Chapter 4, Hydrology under Alternative V, Surface Water Quality.

However, with the change in the preferred alternative in the supplemental and final EISs, alternative water treatment technologies have been proposed to reduce nitrate concentrations in the mine wastewater from the proposed Rock Creek mine. Ion exchange and passive biotreatment technologies described in the draft EIS would not be used under Alternative V. The Agencies and the applicant believe these proposed alternative water treatment technologies, which include reverse osmosis (RO), and a different method of biological denitrification, are either more reliable, as is the case with RO, or have a greater potential to treat the mine waste water successfully, as is the case for the alternative method of biological denitrification.

Sterling has proposed to install an RO facility at the beginning of the project to treat water flows up to 650 gallons per minute (gpm), which is the maximum flow expected in Year 5 of the mine. RO is a proven technology for the removal of contaminants such as dissolved nitrates. Large-scale RO facilities have been constructed and successfully operated at many locations throughout the world. Even so, the applicant is proposing to complete pilot-scale testing of RO equipment before final design and implementation of an RO treatment system at Rock Creek to determine removal efficiencies and expected effluent quality and to determine quality and quantity of the RO reject water.

All components of the Alternative V water treatment system have been successfully used to treat mine wastewater similar in constituents and under similar climatic conditions to that anticipated at the proposed Rock Creek mine. These technologies should not be considered experimental or unproven.

In particular, the two proposed nitrate removal technologies, RO and anaerobic biotreatment cells (ABC), have been successfully used to remove nitrate from mine wastewater at other mines located in Montana and South Dakota. While it is true that the anticipated quantity of water requiring treatment at the Rock Creek mine will be greater than the quantity of water being treated at these existing mines, the individual RO or ABC treatment units would be sized to treat waste water flows (650 gpm) very similar in magnitude to that being successfully treated at the existing mines (100 to 200 gpm).

While the final design and layout of the proposed water treatment system may require minor modifications to more accurately reflect site-specific conditions such as chemical constituents, flow rates, and water temperature, the proposed Alternative V water treatment system should be capable of providing the level of water treatment required by the MPDES discharge permit.

Design of the wastewater treatment system must be based on the requirements of the MPDES discharge permit. The permit requirements cannot be based on the design of the treatment facility, but instead must be based upon preventing degradation of the water quality within the Clark Fork River. Whatever type of wastewater treatment may be permitted, Sterling would have to provide adequate treatment capacity to treat the actual flow of wastewater from the mine and meet the limits in the proposed MPDES permit. The treatment system would have to be operational when the mine opens. A smaller version of the system would be used to treat water from the evaluation adit and act as a pilot plant to help in final design of the full system to be used during mine operations.

There are no provisions in state law to require a bond to construct a different waste water treatment system should the proposed waste water treatment system not function as planned. If the system were to fail to provide adequate water treatment for any reason, appropriate enforcement actions would be taken. Remediation could include closure, construction of another system, or other abatement actions.

2. Matters of water treatment were deferred in the DEIS. "Engineering specifications for the proposed Rock Creek passive bio treatment system have not been prepared." At the public hearings ASARCO suggested a new bio treatment plan that's not even in the MPDES permit application. Statements by officials suggest we don't actually know what's being proposed. How can educated analyses of the proposed project be made if the design is constantly shifting? (1196)

We are disturbed by the permitting process as it has been explained to the public. In particular, we believe it is inappropriate to issue a draft permit when so much of the proposed wastewater treatment techniques are experimental and untested or are moving targets regularly being changed by ASARCO. We were alarmed by Tom Reid's comments that the state is concerned solely about the effluent limitations at the end of the pipe and not about the actual treatment process up the pipe. The public is left to puzzle over an ever-changing black box of experimental technologies about which the state says not to worry if ASARCO agrees to specific effluent limitations. (1220)

Review of the draft permit and the S.O.B. reveals that the applicant (ASARCO) has yet to provide an adequate description of the facilities covered under this permit. Consequently, the public and decision-makers are precluded from providing meaningful comment on the applicant's ability to effectively control pollutants regulated by this permit. The applicant must provide the plans and specifications that demonstrate the proposed mineral processing,

tailings impoundment/seepage recovery system, and water treatment systems are capable of meeting the effluent limitations imposed by the permit, and that dilution is not being used in lieu of treatment.

First, at the recent meetings held to explain the Draft Permit to the public, the applicant admitted they are now considering using a "semi-passive" biotreatment system, a technique not even discussed in the Draft Permit, the SOB, the WMP, or the DEIS. In their recent newsletter entitled The Rock Creek Mine, (March, 1996), the applicant states they will use biotreatment to remove metals including copper, cadmium, lead, and zinc "present in the mine wastewater. Yet the Draft Permit, the SOB, the WMP, and the DEIS all indicate that settling and filtration will remove the metals, and that the passive bioreactor will be designed and operated to remove nitrates and ammonia. These conflicting statements only serve to confuse the public and preclude a meaningful review of the proposed water treatment systems in the Draft Permit.

Second, the permit application lacks a complete discussion of instances where the proposed Rock Creek treatment systems exist in other locations. Department regulations require that "each applicant must report the existence of any technical evaluation concerning his wastewater treatment, along with the name and location of similar plants of which he has knowledge." 16.20.1310 (10)(f). The applicant lists only the "ASARCO Troy Mine" in response to this inquiry in Section VI.B of the application.

This short reference to one tailings impoundment is totally insufficient to meet the requirements of the application regulations. Does this mean that the Troy mine is the only production or treatment facility that "resembles" the proposed Rock Creek tailings impoundment? (See Application Section VI.B.). In order for the application to be complete, an adequate review of other tailings impoundments in the West, with a full discussion of their successes/failures, etc., must be included in the revised draft permit. (1223)

The biotreatment graphics presented were only suggestions presented 24 hours before the comment meeting. These suggestions are not in the EIS, not committed to by ASARCO. (2012)

Response: Sufficient information has been provided to allow the passive biotreatment system to be considered and included in the draft EIS. MPDES permits limits are not based on the type of treatment system but rather on state water quality standards and the quality of receiving waters. However, public comment and agency concerns did result in the development of an alternate wastewater treatment system that the applicant incorporated into its Alternative V water management plan and MPDES permit application. The Troy mine and impoundment are the only similar operating facilities in the area and as such are excellent tools for estimating impacts for determining the quality of mine adit and tailings water and the geochemistry of waste rock and tailings. However, there is not a water treatment facility at Troy to compare with. Information on other similar systems to that proposed under Alternative V has been included in the final EIS (see Chapter 4, Hydrology). Discussion of other dissimilar mines would not be useful in predicting impacts from the Rock Creek Project.

3. The DEIS raises several questions regarding the seasonal variations in treatment efficiency for the proposed passive bioreactor. Generally speaking, the efficiency of these systems is expected to decline in the colder winter months. These issues must be addressed in the revised DEIS. (1223)

The Tribe does not believe that this type of facility would also carry the capability of year round operations due to the areas climatic type. The area consistently gets below 32B F for long periods (months) of time during the winter. Just this last 1995-96 winter, temperatures fell well below the 0B F for periods of 2-4 weeks. And that was recorded in the warmer, low-lying areas. The Rock Cr. site is higher in elevation than the recorded temperature sites. The bio-reactor is known for not being able to work in cold climate conditions. (2026)

The warm water will cool in the settling pond so the bacteria in the manure and organic material pond will not grow well nor function well for most of the year because of the cold. Plus the bacteria and enzymes will be poisoned by

the metals and other chemicals in the solution. We then will have a contaminated, cold lagoon that in my opinion will not break down the ammonium compounds very well. (1242)

Experts have said that below 50 degrees Fahrenheit the bacterial action in an aquatic bioreactor slows down. Do you have any evidence that the bioreactor will work in winter conditions and in nighttime conditions most of the year? (1248)

Response: In response to the many comments received questioning the adequacy of the water treatment system proposed in Alternative II which includes the passive bioreactors, the applicant and the agencies developed an alternate waste water treatment system which is included in Alternate V (see description in Chapter 2) and is described in detail in the supplemental and final EISs. This alternate would incorporate design features which would reduce the adverse impact of cold weather on waste water treatment including insulation of biological treatment process (anoxic biotreatment cells). However as noted by commenter during cold weather, biological activity would be reduced which may result in inadequate nitrate reduction within the biological treatment units. Should this occur, additional nitrate reduction could be obtained using the reverse osmosis units or wastewater could be stored within the mine until conditions for biological nitrate reduction improve. The settling pond proposed as part of the Alternative V water treatment system does not rely on biological activity to reduce suspended solids, therefore cold weather would not adversely impact the performance of this pond.

4. Page 4-36 to 4-38 In the summary of the expected environmental consequences to the hydrology associated with mine development, the DEIS indicates considerable uncertainty about discharge of water from the mine, both in terms of quantity and quality. The DEIS suggests that as much as 2046 gallons per minute (4.5 cfs) may be discharged. The DEIS indicates this water would be treated as long as necessary to remove pollutants, but gives no specific information as to how the water is to be treated or how long treatment may be necessary following closure of the mine. Mine drainage can be a chronic source of toxic pollutants, and can impair the ability of receiving waters to support fish and other aquatic organisms. (1445)(1991)

One of my primary concerns is how the company will adequately treat the 2,500 gallons per minute of ground water which will flow into the mine and become contaminated. Without proper treatment, this discharge will severely harm the Clark Fork River and Lake Pend-Oreille. (1606)

Another component of the DEIS not given enough attention is the potential problems associated with the increased ground water inflow to the mine due to lengthened mine adits in alternative four. This alternative has merits in decreasing impacts to the area and increasing monitoring, but excludes the added ground water from consideration. It is stated on page 4-67 in Table 4-23 that inflow (with applied safety factor) would be approximately 2,247 gallons per minute (gpm). This is an increase of 200gpm over alternative two, and a total increase of at least 2.6 billion gallons of water over the mine's lifetime (200 gpm ‘ 24 hr/day ‘ 365 days/yr ‘ 25 years of operation). ASARCO must compensate for this increase when designing a water treatment system. This should be included in the final EIS. (1594)

Response: The water treatment facility would have to be sized to handle the increase in ground water inflow into the mine adit which can be expected to occur under and of the action alternatives. Information related to the revised design of the water treatment plant is provided in Chapter 2 and analyzed in Chapter 4 of the EIS. The design of the water treatment facility has been revised under Alternative V. Keep in mind that maximum flows of 2,298 to 2,043 gpm (Alternative II and V, respectively) would not occur until the end of mine life. See Tables 2-3 and 2-15 for more water balance information.

Upon completion of mining activities, the quantity of water discharging from the mine should decrease, at least until the mine fills with water. The EIS indicates it would take approximately 7

years for the mine to fill. Once the mine fills, discharge of water may occur. The quality of the mine discharge water would return to near baseline condition after mine closure. However, until the quality of this mine discharge water meets the requirements of the MPDES discharge permit, the discharge water would have to be treated. The same treatment facilities that were required to treat mine waste water during mine operation would be suitable to treat waste water after mine closure.

5. Revised Water Management Plan (ASARCO 1995), page 3 - 16, paragraph 3. (a) With bio-cell depth of 4 ft. and substrate depth to 4 ft. there is not enough depth of area to preclude overtopping during a probable heavy rain or possible rain on snow event. ie: recent rains and flooding winter of 1995 - 96. (b) 2H :1V side slopes are inconsistent with reclamation measures (see Golden Sunlight mine decision) and would encourage noxious weed growth. (c) Bioreactor cells must be considered to leak unless they are lined and will contribute to ground water pollution, they must therefore be considered as outfalls under MPDES. (1780)

Response: (a) Overtopping during heavy storm events could be a possibility, but these passive biotreatment cells would be filled with various substrate materials and would not contain open standing water. So runoff from the surface of the cell would more likely be the problem. If this system were approved then these issues would need to be addressed in the final plant design. (b) These slopes would be to the interior of the excavated cell and the substrate would be place against them holding the slopes in place. As the intent was to reclaim the cells with the substrate in place, reclamation of these slopes was not considered an issue. If the substrate were to be removed and placed in the impoundment for reclamation, then the cells would need to be filled with clean material to the approximate original contour and then reclaimed. (c) The biotreatment cells were designed with a clay liner, but the agencies would not have ruled out the need for a synthetic liner should the final design and site data not support a conclusion of no seepage through the bottom of the cells. However, the water treatment system incorporated into Alternative V and that which was included in the revised water management plan and MPDES permit application is considerably different and many of these concerns are not relative to this alternate system. Please see the Alternative V description in Chapter 2 for more details.

6. Revised Water Management Plan (ASARCO 1995), page 3 - 19, # 2 @ pilot test cell to be built at Troy project using water of similar chemistry, does that include nitrates from blasting agents ; because blasting is not currently being done while mine is inoperational? Also where is pilot test plant to be built? (1780)

Response: Undoubtedly if the pilot plant at Troy was to be a realistic test for the Rock Creek Project, nitrates would need to be added into the test water in concentrations anticipated in the mine discharge from the Rock Creek mine. Since the company has expressed an inclination to restart the Troy Mine just prior to start up of the Rock Creek Mine, the Troy Mine discharge would contain nitrates from resumed blasting and should provide a fairly realistic test of a pilot plant. Under Alternative V, a test biotreatment plant would be constructed at the alternate evaluation adit support facilities site where a reverse osmosis cell would also be available to ensure that discharges met MPDES permit limits prior to discharge. Once the company made a decision to develop the mine after evaluation adit was completed, Sterling would build the full-scale water treatment plant at the approved location. Final designs for both components of the system would incorporate data and information gained from the test biotreatment plant and the RO system used for the evaluation adit discharge. Data for this conceptual system were obtained from the Stillwater Mine.

7. Page 2-36 - water management: exploration adit water would undergo treatment prior to discharge. concern: exploration adit water treatment not described and presented to public for public review. (1504)

There is no indication that the water treatment facility will be completed to treat water discharged from the exploration adit. These issues must be addressed in the revised DEIS. (1223)

Response: As indicated in the EIS in Figure 2-15 the exploration adit water would be filtered, aerated, and treated using passive biotreatment before discharge to the Clark Fork River. Sterling has modified this proposal since completion of the draft EIS. Under Alternative V, Sterling would construct a reverse osmosis and anoxic biotreatment system to provide treatment of evaluation adit wastewater up to flows of 650 gallons per minute.

8. Revised Water Management Plan (ASARCO 1995), Appendix B. page 4 of Hydrometric's response to DHES comments. # 8, ASARCO response....."Also, since adit water will pass through the tailings impoundment for treatment before discharge, tailings water quality is very appropriate." What kind of treatment does adit water get in being discharged to the tails pond ? (1780)

The water treatment plans don't make sense to me. It's said that any contaminated water will be captured and pumped back into the tailings pond. To do what? Pick up more metals + nitrates and leach out again? To evaporate? As recent weather has demonstrated - this is a very wet climate much of the year. Contaminated water will have to leach down or run off. I can't see their water treatment plans being effective. (1753)

Page 2-42: states that additional settling of suspended solids would occur in the tailings impoundment. Excess water would be discharged through a clarifier and sand filtration unit before being routed to the water treatment system for nitrate removal. This statement is confusing. It suggests water would be taken from the mine adit and discharged to the tailings impoundment for additional settling, then routed to treatment system. Yet the proposed treatment plant is supposed to take water directly from these mine adits. This issue must be clarified in the revised DEIS. Also, the statement admits that the filtration and flocculation will not remove all suspended solids, and for that matter all metals associated with them. How will the passive bioreactor remove the metals associated with these suspended solids if it is only designed to remove nitrates? (1223)

Response: Please see MPDES discharge permit. Adit water would no go directly to the impoundment except as water in the tailings slurry and stored on top of the impoundment under Alternatives II-IV. The impoundment would then act as a filter to remove suspended solids before seepage was captured and either returned with excess water to the mill or sent to the waste water treatment plant prior to discharge (see Figure 2-16). Under Alternative V, tailings water removed from the tailings at the paste plant and seepage captured beneath the paste facility would also either be returned to the mill circuit for reuse or report to the treatment plant prior to discharge to the Clark Fork River.

9. Page 2-42: para 5: Mentions the pretreatments (filtration, settling, and aeration to decease ammonia fraction of total nitrogen). Where in the DEIS is the necessary discussion the mechanical aerators, their location (with the water treatment complex adjacent to the tailings impoundment), their size, construction type, and perhaps most importantly their potential impact on air quality? It is likely that residents in the town of Noxon would smell ammonia being removed by the aerators. How will the levels of ammonia liberated into the air by all sources of the mining facility be monitored? What independent agency will ensure that this does not occur? (1288)

Response: The final design of the mine wastewater treatment system would have to be reviewed and approved by the State before construction and start of operation. Air emissions from the treatment system would have to comply with State law and regulation. It is not likely that residents in Noxon would be affected by ammonia vapors from any of the wastewater treatment systems in the various alternatives described in this EIS.

10. Page 2-42 - water management: two 100,000 gal mine sumps to treat mine water - where located? mill site drainage sump - where located? lined? concern: lack of agency attention to and disclosure of facts to public for public review (1504)

Response: The mine sumps would be located underground. A specific location within the mine has not been identified. The mill reclaim pond would be located approximately 400 feet south of the mill and would be lined to prevent loss of untreated mine wastewater.

11. The S.O.B. at p. 3 states that "Treatment of captured water will consist of settling prior to discharge." However, settling alone prior to discharge is an unacceptable treatment option for mine drainage, particularly in an undersized detention pond. Also, sediments from the detention pond must be removed and properly disposed of on a frequent basis with a proven technique prior to discharge to state waters. Settling alone cannot be considered treatment. What happens to any pollutants that seep from the ponds into ground water and then into surface water? As noted above, these discharges must be regulated under a traditional NPDES permit as a point source. (1223)

Response: Sedimentation is a proven and effective method of removing suspended solids from storm water runoff before discharge. Process water would undergo additional treatment to meet MPDES discharge limitations prior to discharge.

12. Page 2-36: states that a pressure filter and oil skimmer would be located at the exploration adit sump to remove suspended solids and oils and grease from the water supply? Where will these metal-rich suspended solids be stored, in the mine workings or somewhere off-site? The revised DEIS should identify where these solids will be stored and what the environmental impacts associated with that storage will be. (1223)

Revised Water Management Plan (ASARCO 1995), Apndx B. "RESPONSE TO EPA COMMENTS..." # 1, Mechanical filtration will remove up to 90% of the total metals in the mine discharge. Where does this metals material removal then report to? (1780)

What is the expected efficiency of the filtration and settling stage? The Coalition questions the assumption that the sand filtration settling will remove 100% of metals prior to discharge to the PBR. The PBR is designed for nitrate removal only. What impact will dissolved metals and residual metal-bearing sediments have on the treatment efficiency of the passive bioreactor? Where will the settling take place and where will the settled solids be disposed of? (1223)

Response: Most of the metals would be contained in the suspended sediments removed from the adit water by filtration. The sediment would either be added to the flotation tanks in the mill for processing or directly to the tailings being piped down to the impoundment under Alternatives II-IV or the paste plant under Alternative V.

13. Page 2-42: states that the ion exchange system (650 gpm) would produce an estimated 5,800 gallons per day of waste brine and that this waste brine would be disposed of in a publicly owned treatment works, land applied as fertilizer, or shipped to a manufacturer for use as an agricultural fertilizer product. This discussion is inadequate. First the DEIS underestimates the volume of waste brine the will need to be disposed of [sic]. To treat the expected 1,500 gpm of mine water a day, at least twice as much (11,600 gallons a day) of waste brine will be generated. Second, the DEIS fails to disclose the permanent disposal location for these waste brines. If it is at a POTW, its location must be identified and the effects on water quality in the effluent and receiving waters must be presented. Finally, it fails to recognize that land application and/or reuse as a fertilizer is unlikely because of the residual metals present in the waste brine. If the wastes are disposed of in such a manner, the environmental impacts of doing so must be disclosed. (1223)

Page 2-43 - waste brine: waste brine could be disposed on the land? How, Where, When, How much??? concern: lack of disclosure of potential plans for disposal of toxic waste, plans not available for public review (1504)

How will the brine from the ion exchange system be handled? (1438)

Page 2-43. The contents on this entire page are a woefully inadequate attempt to explain a highly complicated water treatment plan. What would be the composition of the 5800 gallons per day waste brine? A disposal plan should be included in the final document. (1196)

Where will the waste brines from the ion exchange system be disposed of? In its 1990 Petition for Modification of Ambient Water Quality, ASARCO stated that "backwashing of the ion exchange resin would result in significant quantities of waste brines. Disposal of the waste brine would have the potential for additional environmental effect." These waste products could be considered hazardous wastes requiring permanent disposal in a RCRA-type facility, yet this issue is not addressed in the S.O.B. or the DEIS.

The solution of pollutants and metals well then be sent to an Ion Exchanger. Ion exchange works well to purify water in small quantities but only if you have minimal pollution and a very clean substrate to move the ions into. But what about the non-ionic pollutants that make it through the biologic filter? Where will the polluted substrate be sent to be cleaned? This soon becomes a simple shell game, with the final shell being the tailing pond. The rainwater, run off and further mine water will of course eventually leach all the soluble metals and chemicals into the Clark Fork River. (1242)

What will you do with the sludge from the bioreactor? (1248)

There was some confusion as to where ASARCO plans to dispose of the water treatment by-products. We understand that removed substances will be disposed of per 40 CFR 503 guidelines, which may prohibit disposal of these substances in the tailings impoundment due to its planned leakage to surface and ground waters. Removed substances and the fate of the bioreactor plants after mine closure should be evaluated as to how the Federal regulations affect their disposal. (2067)

The Tribe also does not believe that this system is capable due to the fact that the "waste" created will be placed directly back into the tailings impoundment area. And where will the contaminants from the bio-reaction facility go? Directly down into the ground water which will very fast end up in the Clark Fork river. (2026)

Response: A fertilizer company would need to determine whether or not the waste brine from the ion exchange system under Alternatives II-IV could be used in a fertilizer. If it was not suitable or if a company was not available, then the brine would be placed in drums and disposed as a regulated waste at a licensed landfill. The brine would not be applied to the land within the permit boundary.

The water treatment system proposed in Alternative II included the use of passive bioreactors for nitrate reduction. Under this alternative when mine waste water treatment was no longer required the passive bioreactors would be capped and abandoned in place. In response to the many comments received questioning not only this method of final disposal of the reactor substrate, but also the adequacy of the Alternative II water treatment system, the applicant and the Agencies developed an alternate waste water treatment system which is included in Alternate V (see description in Chapter 2) and is described in detail in the supplemental and final EISs. Under this Alternative, dissolved nitrate would be biologically converted (denitrification) in anoxic biotreatment cell to nitrogen gas or removed with other dissolved solids by reverse osmosis. Reverse osmosis would result in the production of a nitrogen-rich brine which would either be stored and then blended back into the waste water stream for biological treatment or reduced to a solid through crystallization and evaporation. This solid would either be used as fertilizer or disposed of as a regulated waste at a licensed landfill.

14. Revised Water Management Plan (ASARCO 1995), Appendix B. "Response to EPA comments…" # 16 Deposition of ion-exchange brines at Kalispell POTW which discharges to Ashley Creek upstream of Flathead Lake, and associated increased nutrient loads. This may be impossible considering CSK / TAS and their management of water quality on reservation. (1780)

Response: The destination of the sediment would depend on the concentrations of metals. Deposition of the ion-exchange brines (liquid or crystallized) at any particular publically owned treatment works (POTW) would be determined at a later date depending upon the facilities' requirements and restrictions. The analysis and suitability of the site of brine deposition is beyond the scope of this EIS.

15. Revised Water Management Plan (ASARCO 1995), page 3 - 27, What are the implications that by selling the waste brine to a fertilizer manufacturer it would NOT be subject to agency regulation? (1780)

Response: If possible, waste brine could be used in the manufacture of fertilizer but regulations pursuant to that industry would determine its suitability.

16. Revised Water Management Plan (ASARCO 1995), page 3 - 21. (a) How long is cell substrate good for and how often is it anticipated that substrate will need to be removed?? What kinds of substrate volume are we talking about?? How will it be removed and transported to the tailings pond?? How will the saturated substrate contents be kept from leaking all over during transport?? (b) Describe the cell life evaluation system?? Is it based on sight, smell, feel, taste? (1780)

Response: The applicant estimated that the passive bioreactor substrate would provide approximately 50 years of water treatment. However, in response to the many comments received questioning not only this estimate, but also the adequacy of the Alternative II water treatment system, the applicant and the Agencies developed an alternate waste water treatment system which is included in Alternate V (see description in Chapter 2) and is described in detail in the supplemental and final EISs. Under this Alternative, dissolved nitrate would be biologically converted (denitrification) in an anoxic biotreatment cell to nitrogen gas or removed with other dissolved solids by reverse osmosis.

17. If at all possible we believe the location of the approved off-site facility for waste water treatment plant sludge disposal should be identified to fully evaluate environmental effects of sludge disposal (page 2-44). (1214)

The EIS must detail disposal of treatment residues. (1740)

The bioreactor process produces a toxic sludge that has to be disposed of. I know for a fact the company is searching high and low along the river. The waste water treatment plant claims now it's talking to the Missoula Waste Water Treatment people to handle this toxic sludge. Again, there is no analysis in the Environmental Impact Statement as to when those treatment systems fail what the effects will be to our waters. And that system needs to be in the document and disclosed to the public. (1957)

Page 2-43. "Spent substrate from the cells would be disposed in the tailings impoundment, unless the metals content was extremely high." What is to be considered extremely high? This substrate will also contain heavy concentrations of nitrates? What is the sense of removing polluting constituents from the water in one place only to deposit them in another facility that is designed to leak into ground water? (1780)

What will be done with the toxic sludge produced in the water treatment processes? (1384)(1778)

Response: Under Alternatives II-IV, the sludge generated by the passive biotreatment system would be tested prior to placement in the tailings impoundment. Alternative disposal methods would be required should the material prove to be unsuitable for placement in the impoundment. Under Alternatives III and IV the sludge would be encapsulated within the tailings to minimize contact with seepage. Under Alternative V there would be no sludge generated by the anoxic biotreatment facility although the brine generated by the reverse osmosis unit would be crystallized and then disposed in an approved landfill or sold as a component of fertilizer if suitable.

18. Page 2-36 - water management: sewage septic tanks and drainfield systems designs and locations concern: not presented to public for public review. (1504)

Page 2-36: goes on to state that if the drainfields are not approved by DHES, then a holding tank would be built and pumped periodically, with sludge and wastes hauled to a municipal sewage disposal facility. The revised DEIS must disclose where these sludges will be disposed of. Many of the municipal waste water treatment plants in the basin are at or near capacity. In addition, all of them are subject to TMDL restrictions on nutrient discharges. The Agencies must disclose where the sludges will be disposed and what environmental impacts they cause.

Page 2-44: states that a sewage treatment facility would be incorporated into the mill complex design. This package facility would contain the standard aeration tank with activated sludge, a settling tank with a sludge return to the aeration tank, and a chlorine contact chamber. Effluent from the contact chamber would be directed to the tailings disposal system, and sludge would be disposed of at an approved off-site facility. This discussion is inadequate. What impacts will increased nutrients have on ground and surface water quality and ecology in the tailings impoundment area? Also, where exactly will the sludge be disposed of? Does ASARCO have a facility that is committed to accepting it, or are they just hoping they find one? (1223)(1288)

Response: As indicated in the draft EIS, if suitable locations are not present for on-site treatment of sewage from the adit shop, offices, and mine dry, holding tanks would be installed and sewage hauled off site for treatment in a municipal or privately owned treatment facility.

The design and operation of all sanitary wastewater treatment facilities must comply with State and local law and regulation, and must obtain State and local approval prior to construction and start of operation.

19. I also question ASARCO's methods for calculating the reduction of total dissolved solids, heavy metals, ammonia nitrogen and nitrate/nitrate through water treatment on page 4-56, last paragraph. It is stated that "...the system would remove up to 80 percent of the total dissolved solids, 80 percent of the heavy metals, 95 percent of the ammonia nitrogen, and 95 percent of the nitrate/nitrogen." How were these percentages derived, are they guesses or do they have some scientific background, based on past experiments? The final EIS should address these questions. If these calculations are incorrect the estimates of the quality of the effluent discharged to the Clark Fork will be too. (1594)

Response: The removal rates cited for various constituents of the mine wastewater are based on treatment results at other similar treatment facilities.

20. Page 2-43, last two parag: In-stream diffuser: Evaluation of the efficacy of the diffuser system and its environmental impacts cannot be evaluated before the design study is performed. The study should have been done and data presented in this DEIS for evaluation and critique by the public. Why was this not done? (1288)

Response: The final design of the mine wastewater treatment system, including the effluent diffuser, would have to be reviewed and approved by the State before construction and start of operation. More information is contained in the Statement of Basis in Appendix D.

21. Can the mine water be treated at the mill site and be discharged into the West Fork of Rock Creek? (1438)

Response: Inadequate suitable area is available at the mill site for all of the necessary mine wastewater treatment facilities. The purity of the West Fork of Rock Creek precludes it being considered for receiving treated water.

22. Dewatering of the Creek is a real concern and it is believed that the technology exists to be able to treat the water to a satisfactory level so as not to degrade the West Fork. (1438)

Response: There would be little risk of dewatering Rock Creek as no water supply wells would be installed in alluvium that recharges Rock Creek. The purity of the West Fork of Rock Creek precludes it being considered for receiving treated water.

23. Could the tailings impoundment water be treated and discharged instead of piping it back up to the mill site? This would eliminate one pipe that has the potential for leaks, spills, etc. (1438)

Response: Almost 90 percent of the water contained in the tailing slurry will be recycled and returned to the mill site under Alternative II-IV. Recycling of this water reduces the amount of water requiring treatment.

24. Page 3-22: Conventional Biotreatment: Why is this in the RWMP? Is it being proposed for Rock Creek water treatment? Why doesn't the document discuss the volatility and toxicity of methanol? (1288)

Response: Conventional biological denitrification was discussed in the revised Water Management Plan as a potential alternative to the passive biotreatment system described in the draft EIS. Conventional treatment was considered but dismissed from further study in Chapter 2 of the final EIS.

25. In a stable, well-oxygenated aquatic system, the conversion of ammonia to nitrite is usually a rate limiting step, and nitrite is easily converted to nitrate (Rand and Petrocelli, 1985). Since nitrate is a plant nutrient which can stimulate undesirable algal growth, it must be denitrified to N gas by some treatment process. ASARCO must demonstrate that their treatment option will be able to denitrify mine waste water in the presence of high levels of ammonia.

Ammonia's characteristics make it a likely substance to disrupt the denitrification process of a passive biotreatment plant. Ammonia (NH3) has been shown, along with nitrous acid (HNO2), to inhibit the denitrification process (Anthonisen et al. 1976). This occurs when the pH of the waste water increases, which causes the increase of un-ionized ammonia, which inhibits nitrobacters at 0.1-1.0 mg/L (Rand and Petrocelli 1985). Nitrobacters convert nitrite to nitrate. This is especially important for ASARCO and the I.D. team working on the EIS to consider: how effective will the treatment plan of choice be in removing soluble nitrogen compounds, not to mention toxins such as reagents and heavy metals, from the mine discharge? (1223)

Response: In response to the many comments received questioning the adequacy of the Alternative II water treatment system, the applicant and the agencies developed an alternate waste water treatment system which is included in Alternative V (see description in Chapter 2) and is described in detail in the supplemental and final EISs. Under this Alternative, heavy metals and ammonia would be removed from the mine wastewater prior to treatment in the anoxic biotreatment cells. Heavy metals would be removed by clarification and filtration. Ammonia would be biologically converted (nitrification) to nitrates in a trickling filter.

26. Page 3-60. Total algal biomass. Estimates need to be done on the contribution that fugitive nitrates from mineral development will make towards this biomass. This is critically important as it is proposed to deposit bio-reactor substrate in the tailings pond from where its nitrate load will eventually make its way to the Cabinet Gorge reservoir. (1780)

Response: The bioreactive substrate under Alternative IV would have been encapsulated within the tailings in a geomembrane with a 6-foot compacted layer of tailings mounded above it and the 24 inches of soil above that. The liner and mounding of the surface above the fill would be sufficient to prevent seepage of nitrates out of the fill and then into ground water beneath the tailings. However, the wastewater treatment facility has been modified under Alternative V and there would be no biotreatment system sludge. The proposed alternative wastewater treatment system will be designed to remove nitrates below the requirements of the MPDES discharge permit.

27. Another major issue pertinent to all water quality issues: Where in the DEIS is BOD (biochemical, biological oxygen demands) discussed? (Is the meaningless insertion of BOD in a sentence on p. 3-57 the only mention of this key parameter?) BOD values in the Clark Fork River at the diffuser site and downstream and in effluent from the

bioremediation system are key to understanding aquatic impacts of every aspect of the mining project. Where are the data? When will baseline BODs be obtained for all waters involved? Where will monitoring stations be established? What panel of unbiased experts will monitor them? How will excesses be prevented. Who will enforce necessary remedial action for BOD and all other monitored parameters listed in the DEIS? How will the public be appraised of the monitoring process and enforcement of standards? (1288)

Response: Biological oxygen demands (BOD) in the mine wastewater should be minimal. The agencies are responsible for enforcement monitoring and enforcement information is public and available on request for the cost of copying. BOD monitoring has been added to the proposed MPDES permit in Appendix D and is also in the water resources monitoring plan in Appendix K.

28. Please explain why the agencies and ASARCO rejected the judgment of PRC Environmental Management, Inc that biological denitrification, whether using cow manure, etc as a carbon and hydrogen source or methanol, is unfeasible for the Rock Creek project. (1288)

Response: The feasibility of certain methods of biological denitrification at the Rock Creek project has been questioned, not all methods of biological denitrification are unfeasible at the Rock Creek project. Sterling's new proposal used in Alternative V has an aeration pond included for removal of excess methanol hydrogen sulfide and biomass, which addresses the concerns raised by PRC.

29. We suggest this expanded discussion include an evaluation of the passive bioreactor system at the Levithian Mine in Alpine County, CA. This system has a design very similar to the one proposed for Rock Creek, in that it uses manure and alfalfa as the substrate and has the same operational characteristics. Unfortunately, three years of experience at that site have demonstrated that, although potentially useful, this type of system is far from capable of treating flows of the magnitude expected a Rock Creek.

We request the Agencies review the design specifications, operational data, and treatment efficiencies at other passive bioreactor systems of similar size and scale, including the Levithian Mine, and that they present those findings in the revised DEIS.

The WMP's brief discussion of ASARCO's pilot bioreactor in Missouri does not meet the requirements of 16.20.1310 (10)(f). For example, the WMP lacks any mention of the Leviathan mine project in California that also has a small-scale test bioreactor. As noted by the Coalition in our DEIS comments and herein (and as known by ASARCO), the problems associated with the Leviathan project raise serious doubts about the effectiveness of the proposed Rock Creek bioreactor. At a minimum, ASARCO's lack of discussion of this important test project raises doubts about the credibility of their technical evaluation of the feasibility of using a bioreactor at Rock Creek. (1223)

Response: In response to the many comments received questioning the adequacy of the Alternative II water treatment system, the applicant and the agencies developed an alternate wastewater treatment system which is included in Alternative V (see description in Chapter 2) and is described in detail in the supplemental and final EISs. Treatment processes proposed to be used in the Alternative V water treatment system has been successfully used to reduce nitrogen compounds in mine waste water at several mines in Montana and South Dakota as discussed in Hydrology section of Chapter 4.

30. RWMP (ASARCO 1995), Appendix B. Response to EPA comment # 14 What about bio-treatment data from ASARCO Colorado Leadville operation?? (1780)

Response: Information in the 1995 Revised Water Management Plan was for the waste water treatment system proposed in the draft EIS and Alternative IV. The passive system proposed for Alternative IV and the original MPDES permit application was similar to that used in ASARCO operations in Leadville and Missouri. However, since that system has been replaced in Alternative V and the current MPDES permit application with a semi-passive anoxic biotreatment system and a reverse osmosis system, ASARCO then, and Sterling now, do not believe that additional information

about a system that would not be used is necessary even if it was retained for some of the action alternatives. Regardless of the waste water treatment system used, the discharge must comply with the limits in the proposed MPDES permit (see Appendix D). If the system installed could not clean up the water enough to meet the limits, then Sterling would have to halt the discharge and develop an alternate system or systems, or revise the approved system such that the discharge would comply with the limits.

31. It is very difficult to assess the effectiveness of proposed treatments and mitigations for this project, as the document does not give comparative information from other mines. The public should have it clearly laid out how other mines of similar design have fared. We keep hearing that the technology is there now to make this mine "safe". Please give examples of similar situation explain how they are similar and how they differ, and disclose the condition of water quality - (surface) for all parameters in State regs ground water quality fisheries & aquatic life wetlands & stream channel characteristics what percentage of mines with similar hauling routes (stream side) have had toxic or other damaging spills what percentage of mines with similar tailings pile location, on clay layer (thin in spots) with pumping of seepage as discussed for Rock Creek, actually kept ground water from becoming contaminated. What happens in the other cases? With these and other appropriate comparisons, the public & the decision maker can more adequately see the potential impacts. (1637)

Response: There are some similarities between mines but more often there are differences, especially the geologic setting. The agencies have looked at other mines which are beginning to use the anoxic biotreatment cells system. This information was included in Chapter 4, Hydrology: Alternative V: Surface Water Quality.

32. Paragraph 4: Mentions that water balance at the tailings impoundment would fluctuate seasonally, but there is no follow up describing potential seasonal highs in the impoundment, and how potential overflows would be handled. Overflows will largely become part of the surface runoff into the Clark Fork River. This must be addressed with ways that overflows will be prevented. Page 2-42 and Ch 4, Hydrology state that the passive biotreatment system (PBS) would remove 80% of the nutrient load. But these are totally unfounded speculations. Nowhere in the DEIS are any data presented to substantiate these or any other claims about the effectiveness of the PBS. Where are the data? Where are they published? Publication in referenced professional journals (not ASARCO reports) is essential to ensure credibility. The section on Hydrology in Chapter 4 only adds unfounded speculations to those on p. 2-42. Paragraph 6 page 2-42 mentions data presented in the revised Water Management Plan concerning a PBS at "another" ASARCO facility. Key data are missing: How many gpm are treated successfully at the other facility? Without this info, and with statements I have obtained from researchers at Univ of Nevada (Reno) and Michigan State University that indicate PBS failure, one can suspect that the system is not working and will not process the quantities of water (approx 1500 gpm; extrapolations based on data in Table 202 predict that treatment inflow actually projected to reach approx. 1500 gpm by year 23 and about 2005 gpm by year 30) in the Rock Creek project. The DEIS uses a select list of line numbers in Table 2-2. Why and how were these specific lines selected? Do the numbers represent unreplicated or replicated lines. If replicated, how many lines are there? If these are average yearly project flows, why are individual lines listed? Or are these average yearly flows per line? And they should be multiplied by the total number of lines (138?) to obtain the total average project flows expected per year? Even if Table 2-2 provides an accurate picture of the total flows, knowledge of typical rates of gravity flow through bacterial mats, such as those proposed for the PBS, predicts that the system will fail.

The statement in the DEIS that a full-scale PBS (200' X 300') would treat 500 gpm much less 1500 gpm is totally unfounded. The numbers 200' x 300' mean nothing in terms of the total flows that the PBS can effectively treat. What will be the effect of the passive biotreatment cells to ground water after they are capped and abandoned, as stated on p. 2-43? These are massive containers. How will the effect of their deterioration on ground water and the Clark Fork River over time be evaluated? Who will pay to mitigate problems after capping and abandonment? Why is it acceptable to allow ASARCO to abandon these facilities? (1288)

Response: The change to tailings paste facility would negate the development of water impounding on the site and any subsequent overflow. Water landing on the paste disposal site will be routed back

to the reclaim water circuit. Please see response to the first set of comments in this section regarding the Alternative II and IV water treatment systems.

Table 2-3 and Table 2-15 summarizes the data developed in the water balance models, as presented in the water management plan for Alternative II and V respectively. The selected lines represent the more important results of the water balance model. The water management plan is on file with the Agencies.

Information in the 1995 Revised Water Management Plan was for the waste water treatment system proposed in the draft EIS and Alternative IV. The passive system proposed for Alternative IV and the original MPDES permit application was similar to that used in ASARCO operations in Leadville and Missouri. However, since that system has been replaced in Alternative V and the current MPDES permit application with a semi-passive anoxic biotreatment system and a reverse osmosis system, ASARCO then, and Sterling now, do not believe that additional information about a system that would not be used is necessary even if it was retained for some of the action alternatives. Regardless of the waste water treatment system used, the discharge must comply with the limits in the proposed MPDES permit (see Appendix D). If the system installed could not clean up the water enough to meet the limits, the Sterling would have to halt the discharge and develop an alternate system or systems, or revise the approved system such that the discharge would comply with the limits.

The mining company would be responsible for reclaiming the water treatment site whether the sludge was reclaimed in place of data indicated that was acceptable or encapsulated in the impoundment if not. The reclamation bond would be calculated to cover either option should the operator abandon the site prior to reclamation.

33. Worst-case mine water discharge treatment failure conditions should be estimated and evaluated as a possible unacceptable risk. (2082)

Response: Discharge of untreated mine wastewater would be a violation of the MPDES permit, and would not be allowed.

34. Revised Water Management Plan (ASARCO 1995), Appendix B. Response to EPA Comments #18. Do we equate design phase with final permitting approval here? (1780)

Response: No. The Agencies would have an opportunity review the final design prior to construction after and if the MPDES permit was approved.

35. What are the gaseous byproducts expected to be generated by the bio-reactor??? Are these by-products considered in the calculations for the air quality permit??? Annual calculations on carbon consumption are irrelevant if performed during the summer season and carried over to the winter season, or similarly conducted during times of high precipitation and no precipitation. Evaluation must take into consideration all seasonal variations. (1780)

The products of the bioreactor will stink so we assume you plan to cover it. When you uncover the bioreactor to replenish the constantly used up alfalfa and manure, what will you do about the odor that is emitted? (1248)

Even if the company plans to cover the bioremediation cells, and there's no mention of that in the DEIS, the odor has to be vented somewhere. That would be a lot of very smelly gas. It's likely that the residents up and down river, including the Town of Noxon, will smell. People are disgusted by sewage odors. On the other hand, grizzly bears are attracted to them. And the effect of grizzlies being attracted to mine sites for this reason are not addressed. (1288)

What about the environmental effects of the PBS? As described, the PBS depends on anaerobic decomposition of mine wastes and organic matter. Anaerobic systems give off ammonia and a number of volatile amines (e.g., putricene, scatol, cadavarene) that have a very foul odor detectable in minute amounts by the human nasal epithelium. Where will these gases be vented? How much odorous gas will be produced? The PBS site is adjacent to the tailings impoundment which is close to the Clark Fork River and Noxon. What effects will odorous gases vented into the ambient air have on local communities? On recreationists? Odors of decomposition are attractants for bears. Will Grizzly Bears be attracted to the gases PBS site? Projected disposal of spent PBS substrate into the tailings impoundment would be an added source of foul odor. (1288)

Response: In response to the many comments received questioning the adequacy of the Alternative II water treatment system, the applicant and the agencies developed an alternate waste water treatment system which is included in Alternative V (see description in Chapter 2) and is described in detail in the supplemental and final EISs. Under this Alternative, dissolved nitrate would be biologically converted (denitrification) in an anoxic biotreatment cell to nitrogen gas or removed with other dissolved solids by reverse osmosis. Nitrogen is a naturally occurring, odorless gas that is not a regulated air pollutant under the Clean Air Act and therefore does not require an air discharge permit. The release of nitrogen gas from the water treatment system will not attract grizzly bears or other wildlife to the treatment site.

WTR-306 MPDES Permit and Process

1. The draft Montana Pollutant Discharge Elimination System (MPDES) Permit for the mine wastewater discharge should be included in the FEIS to allow for full review and evaluation of the wastewater discharge permit (similar to inclusion of draft 404(b)(1) Evaluation). (1214)

Insufficient steps were taken to make the permit application available to the public. The agencies acknowledged a high degree of public interest in the proposal but only made the MPDES permit application available at limited locations or for $36 fee to people requesting copies. The entire document is very large but support data and some of the appendices could easily have been eliminated for a far more manageable document. An 8 page summary is hardly an adequate or useful compromise. (1196)

Much of the discussion in the wastewater discharge permit application should have been an integral part of the DEIS. Instead, it was deferred in an apparently "fast tracked" DEIS document to the MPDES application, making the public and agency review process fragmented and confusing;. (1638)

The permit document drafting the criteria for waste water discharge is next to impossible to locate bringing up questions about public disclosure rights. (2076)

Response: The MEPA/NEPA and MPDES processes are not required proceed concurrently. All water quality analyses in the draft EIS used the same data and information used for the draft MPDES permit released a couple of months later. However, the agencies decided (1) that due to public concern about the perceived separation and (2) the fact that the MEPA/NEPA analysis and the MPDES process were proceeding at about the same pace that the MPDES permit and its Statement of Basis would be included in the supplemental and final EISs.

There is nothing in state law that requires that a company's permit application be made available to the public free of charge. The application was available for review at DEQ and Kootenai National Forest offices and could be obtained for the cost of copying and postage just like other documents from state agency files. On the other hand, we are mandated to provide copies of current EISs and permit analysis, such as the MPDES Statement of Basis to interested parties without charge. Those documents were so provided.

2. The S.O.B. at p. 23 states that "the environmental impacts of the Rock Creek Project are analyzed in the DEIS." However, that is an ongoing process and an inadequate document. In addition, the DEIS contained no discussion of the environmental impacts of the discharges, only that they would be addressed in this MPDES permit, which they are not. Therefore, until those issues are resolved, the environmental impacts have yet to be adequately discussed.

Since the DEQ's NPDES/MPDES review must comply with MEPA, and since its NPDES/MPDES review must encompass the entire mine according to EPA policy, the required MEPA review should encompass the full scope of the Rock Creek project's impacts. However, without knowing the final designs of the project's facilities (and hence their environmental impact), it is impossible to adequately review the project under MEPA for the purposes of the MPDES permitting action. Thus, an adequate MEPA review for the MPDES permit cannot be completed until the final project designs are submitted for public and other agency review and comment. (1223)

Response: The impacts of the proposed discharges are discussed in the hydrology section of Chapter 4 of the EIS. Final designs are not necessary for MEPA/NEPA analysis.

3. In order to assure full public and agency review of the draft permit, we request that DEQ suspend the MPDES permit review process until it completes the EIS/NEPA phase of the project, identifies a preferred alternative in the Record of Decision, and evaluates the engineering and design specifications for that preferred alternative in a revised draft permit.

If an alternative including a paste backfilling component is selected in the Final EIS, then discharges from the tailings impoundment will be completely different than those described in the S.O.B. and the Draft Permit. Importantly, ASARCO representative Dave Young stated at the April 8, 1996, Question and Answer session that the company is currently reviewing the paste backfill and other alternatives to the proposed tailings management system. This admission highlights the fact that the as-proposed project (even under alternative 4) will likely not be built in the form reviewed in the Draft Permit and DEIS.

Since at this point all feasible alternatives are possible, the Draft Permit cannot discuss potential discharges from only one scenario. If there is any change to the scenario on which the draft is written, it must be revised and sent out for full public and other agency comment. Since it is very likely, if not certain, that the final project design will be different from the scenario upon which the Draft Permit was issued, the Draft Permit is premature. (1223)

Response: The proposed draft MPDES permit incorporates the engineering and water management changes that reflect Alternative V, which is the preferred alternative. See previous response regarding timing of MPDES and MEPA/NEPA processes. There was a preferred alternative in the draft EIS, however it was changed in the supplemental EIS and the draft MPDES permit was revised accordingly. The proposed MPDES permit also based on Alternative V is included in Appendix D of the final EIS.

4. It is inappropriate and illogical for ASARCO to be applying for, and for regulatory agencies to be processing, a wastewater discharge permit at this early stage of the Rock Creek project NEPA/MEPA review process. With the DEIS only recently issued, the proposal is still very much in flux and subject to major changes. Consideration of a wastewater discharge permit is premature. Note for example on page 2-7 of the NPDES permit application , where critical water balance assumptions are discussed, it is stated that: "The water balance model examines individual hydrologic components of the project... Numerous assumptions are made to quantify these water balance components, however, there are two principal components effecting the rates of mine water discharge: estimated rates of inflow to underground workings and the schedule of mine operations." At this stage of the review process, such key assumptions and components are nothing more than conjecture and yet they have become part of the basis on which a wastewater discharge permit is now being contemplated. (1638)

Response: The water balance was devised as a management and design tool. For example, the water balance was run using extreme climatological values such as a 25-year, 24-hour storm on a maximum snowpack and assuming 48-hour pump shutdown so that volumes required for total containment and storage could be estimated. These values were then used to assist in the sizing of structures. If the proposed project proceeds, the water balance and its variables would constantly be adjusted so that it could be used for day to day management of flows and volumes and to be certain that storage was available for containment of the volume of water associated with the probable maximum precipitation event. If actual discharge volumes varied slightly from the projected values, the applicant would still be required to meet effluent limitations in accordance with an MPDES permit and meet acceptable discharge quality in accordance with a storm water permit from DEQ.

The water balance was revised along with the water management plan for Alternative V. Please see Alternative V description in Chapter 2 for more information. The proposed MPDES permit in Appendix D is based on Alternative V, the preferred alternative.

5. It should be noted that the final MPDES permit cannot be issued until a Clean Water Act Section 401 certification has been made regarding the federal permits involved. ARM 16.20.1306. Since a complete 401 application cannot be submitted until the FEIS is done, an MPDES permit cannot be issued until the complete NEPA/MEPA process is completed and the 401 certification issued. (1223)

Response: The department is aware of this prohibition in the rule and will act accordingly. The 401 certification will run concurrently with the 404 process.

6. Postpone issuance of water discharge permits to ASARCO for their proposed Rock Creek project until they (and you) have done adequate on-site data gathering and they have submitted permit requests that spell out, based on adequate site-specific data, water treatment proposals that have been designed based on that data (at peak daily flow rates, not average monthly or annual rates as their present proposals are) and with a serious intention of providing protection from contamination of all discharges. (1744)

Response: The agencies consider the available water resources baseline data to be adequate to prepare an EIS based on the Council of Environmental Quality guidance for preparation of NEPA/MEPA documents. All discharges from the project would meet the water quality requirements identified in the proposed MPDES permit regardless of the type of treatment system constructed.

7. Throughout the draft MPDES permit there is a tremendous amount of uncertainty expressed by the state of Montana regarding the design and implementation of the impoundment seepage collection system. (See the following citations: page 2, Section 2. Outfall 002; page 2, Summary of Basis, Section 002; page 14, Summary of Basis, Section II. Outfall 002; A, Compliance Limitations; page 17, Summary of Basis, Section E. Nondegradation Determination.) These areas of uncertainty raise questions regarding the completeness of the document, information available to make a professional evaluation of data, and finally assurances that protection of the water resources will actually be safeguarded by the state of Montana. (1991)

Response: Some degree of uncertainty is inherent in predicting impoundment seepage quality and quantity and the resulting ground water quality, mixing environment and flow path. All ground water systems, as well as other natural systems, exhibit some degree of variability. The network of baseline wells provides sufficient data to make initial predictions and define the existing ground water system. The operating permit and MPDES discharge permit would require additional ground and surface water evaluation as final plans and specifications for the facility were developed. The proposed permit establishes compliance limits in ground water at the perimeter of the mixing which are based on water-use classifications and water quality standards and are not dependent on the exact ground system.

8. Page 17 of the S.O.B. states that "the permittee has proposed a seepage collection system to maintain the facility within the criteria for non-significance ARM 16.20.712. The Department believes that a seepage collection system, properly constructed, operated, and maintained, will be affective (effective) in preventing degradation of the potentially affected aquifers. Accordingly, the Department finds that the discharge from Outfall 002 is nonsignificant."

The applicant has not provided any meaningful data to support the contention that the seepage collection system and capture wells will prevent ground water degradation, or comply with the requirements of the permit. Detailed information on the spacing and location of the capture wells must be presented to support this claim. In order to assure tailings impoundment seepage cannot flow past the capture wells, there must be a sufficient number of wells that are close enough to one another that their cones of depression overlap. The number of wells needed could easily be over one hundred. The14 pumpback wells shown in Figure 6-1, Appendix D of the WMP cannot be expected to meet this requirement.

This issue is particularly troubling because recent efforts at the Zortman Landusky mine to construct and operate an extensive collection and pumpback system for the mine drainages at the project have been largely unsuccessful. Surface water data collected since the installation of the pump back system continues to show deteriorating water quality. Because of the limited knowledge of site hydrology, it remains unclear whether the pumpback system is adequately preventing degradation of ground and surface water quality.

An appropriate means to determine the optimum spacing and location of capture wells is through ground water modeling and field pilot tests. The well installation and pumping tests would provide needed information on the geology, optimal pumping rates, and capture zones of the wells. Until this data is provided, no meaningful evaluation of the pumpback system can be made.

The applicant claims the tailings impoundment seepage will be collected, treated, and discharged, yet there is no discussion of what effects the metals and other pollutants present in the tailings impoundment seepage will have on the effectiveness of the passive bioreactor. The system is only designed to remove nitrates, and the metals will most certainly disrupt the system. (1223)

Response: The pump back system is only proposed under Alternatives II – IV. Modifications made under Alternative V to eliminate the tailing impoundment in favor of a paste storage facility would reduce the amount of seepage by an order of magnitude. Since the metals would primarily be contained in the suspended sediments, settling ponds and filtration would remove the majority of the metals. If additional metals needed to be removed for compliance with MPDES limits, additional treatment in the reverse osmosis system would be required.

9. RWMP (ASARCO 1995) Appendix B. Letter B. Thompson to Tom Reid 12/20/94, page 2(2) Has ASARCO provided technical evaluation of the West Fork Cell Pilot Project in Missouri, sufficient to satisfy requirements of ARM 16.20.1310 (10) (c) & (f)? (1780)

Response: Sufficient information had been provided to allow the passive biotreatment system to be considered and included in the draft EIS and for the draft MPDES permit, but public comments and continued agency concerns about this system led to the alternative semi-passive anoxic biotreatment and reverse osmosis systems incorporated into Alternative V. Information on this alternate system was provided in a report entitled "Water Treatment System for the Proposed ASARCO Rock Creek Mine: Phase III Treatment System" (Hydrometrics 1997).

10. RWMP (ASARCO 1995) Appendix. D. page 23, 3.3. The detailed geologic and geotechnical site characterization mentioned in the last paragraph of this page is the kind of information that both the public and the decision making agencies need in evaluating the merits of this proposal. This kind of permitting first and designing later has been a core issue in this project. This flies in the face of the disclosure requirements of NEPA requirements under Part 1500.1 (b). That the total horizontal and vertical seepage that will not be captured will ultimately be determined by final designs that are not available for public and agency review until after a permit is issued is totally unacceptable. This may also violate ARM 16.20.1010 (2) & (3) in that the requisite data has not been provided adequate to make such a determination, the burden of which is upon the applicant and clearly so stated. (1780)

Response: Responses to other comments relating to a perceived lack of data and final designs can be found in NEPA-800. With regards to MPDES permitting requirements, ASARCO provided adequate information to satisfy the rule.

11. The MPDES permit application is based on incomplete or non-existent site-specific baseline data. (1780)

Response: Site-specific surface water resources baseline data were collected over a period of several years for the Clark Fork River, Rock Creek, and Miller Gulch. All available data are summarized in Chapter 3 of the EIS.

12. Well accepted models, using adequate data, should demonstrate that there is only a slim chance that water quality violations will occur. (1223)

Response: Discharge requirements are set such that water quality violations will not occur. The MPDES permit relies on the standard wasteload allocation (WLA) model. The WLA model uses the minimum expected Clark Fork River flow, which incorporates shut down of the Noxon Rapids facility. The WLA model is explained in detail on page 13 of the Fact Sheet/Statement of Basis for the MPDES permit (see Appendix D).

13. Like the DEIS, analyses in the MPDES waste water permit application are based far too much on experience at the Troy Mine. This in not sound science as Troy is a different site many miles and a river system removed from the Rock Creek site. And the Troy project is in litigation right now for impoundment leakage and contamination of adjacent Lake Creek. Not precisely a reassuring model facility. (1196)

See site-specific studies done right in this location instead of trying to apply Troy data for the Rock Creek site. (1998)

The permit does not include or cite enough applicable information which describes similarities or dissimilarities between the proposed wastewater impoundment system and associated waste stream and that of the ASARCO Troy Unit. Without additional information to the contrary, we would expect treatment performance of these facilities to be similar prior to polishing at the proposed PBT or ion exchange system. Water quality data from the ASARCO Troy Unit may be useful in characterizing effluent variability, treatment efficiency, and surface and ground water pollutant concentration discharge levels for the proposed Rock Creek facility. Provided fundamental similarities between these facilities exist, we would expect available Troy Unit water quality information to be used to a greater extent in the current proposal for determining reasonable potential for water quality standards excursions as well as effluent characterization. (2067)

Like the DEIS, assumptions and calculations in the Rock Creek wastewater discharge application are being based in part on experience at the Troy Mine. Note for example page 2-8, where "ground water inflow has been adjusted to a seasonal profile based on data from the ASARCO Troy Mine." Similarly, on page 2-15 we find that "Monthly fluctuations in discharge reflect expected seasonal changes in ground water inflow to the mine workings based on information from the ASARSO troy Mine..." The proponent's decision of "choosing rather to depend on performance at their Troy Mine" (from DEIS), which is many miles and an entirely different river system removed from the Rock Creek site, is not sound science. Responsible contemplation of any Rock Creek MPDES permit requires comprehensive site specific analyses. (1638)

Response: The geology, ore bodies, mining methods, and explosive types are similar for the Troy Mine and the proposed Rock Creek Mine. The Troy Mine deposit is a 64 million ton deposit that was mined at a rate of 10,000 tons per day. The Troy Mine produced 4.2 million ounces of silver and 18,000 tons of copper per year. The Rock Creek deposit is a 145 million ton deposit proposed to be mined at a rate of 10,000 tons per day. Both deposits are in the quartzites, argillites, and siltites of the Revett Formation. The geotechnical characteristics of the lithologies, zonation pattern, and mineral abundances of the ore deposits and surrounding zones are essentially the same (see Chapter 3 and Balla 2000). Therefore, geochemical data from the Troy Mine deposit and water quality data from the Troy Mine discharge can be used for assessing potential impacts of mining the Rock Creek deposit.

14. Effluent characteristics as outlined in the water discharge permit application rely on allegedly similar parameters at the Troy Mine operation. How have Troy water discharges compared in actuality with what was predicted? (1638)

Response: The Troy mine is the best predictive model available for the Rock Creek project due to the geologic and mineral similarity of the ore deposits. In the 1978 Troy Mine EIS, some water chemistry for discharges from pre-existing adits was presented. The Troy EIS stated that this water quality "should be representative of water quality that will be encountered in additional mining of the ore body." This statement has proven fairly accurate for the parameters tested at that time. Copper concentrations, on average, are slightly higher from the Troy Mine workings than from the old adits.

15. RWMP(Revised Water Management Plan) p. 4-4: par 4: Please explain the value of the first quote from Parametrix (1994), stating that the water quality and invertebrate data were collected in the nine years prior to 1994. When did the Troy mine begin operation? Several years before 1985? Baseline data that would provide any meaningful evaluations of changes in water quality or aquatic life in Stanley and Lake Creeks would have had to

have been collected prior to tailings water production at the site. Please explain why the permitting agencies think that nine years of minimal sampling begun years after commencement of mining and tailings deposition at Troy says anything about the overall effects of the Troy project on these creeks. Where are your data illustrating species diversity and other key elements of baseline data (collected prior to mining operations) for aquatic invertebrates for these creeks? (1288)

Response: Data is in the company's annual monitoring reports. There is very little pre-mine data at Troy and no aquatic biology data. The agencies use upstream and reference streams for comparison.

16. RWMP (ASARCO 1995) Appendix B. pg. 4 of above. Why wasn't Troy adit water monitored? (1780)

RWMP (ASARCO 1995) Appendix B. # 24. Last sentence. How can the water quality data collected from Troy represent seasonal in-mine storage at Rock Creek, when response # 9 made to DHES indicates, "The Troy adit water quality was not sampled as part of responses to EPA comments any routine monitoring at the Troy mine and so no additional data are available?" (1780)

Response: Please see Chapter 4 - Hydrology for summary of available data. During operations at the Troy Mine, adit water and other mine inflows were used in milling and/or discharged into the tailing impoundment. This mixed mine water was regularly sampled at the tailings decant pond, but was not representative of adit water quality. Since closure of the mine, both adit water and mine pool water have been sampled separately on several occasions.

17. Page 15 of the S.O.B. indicates that the permittee shall submit to the Department plans and specifications for the tailings seepage recovery system, recommendations for additional seepage capture wells, and the collection of additional baseline ground water quality data.

This statement demonstrates there is a lack of baseline information, the ground water system is poorly understood, and that the tailings seepage recovery system has yet to be designed. As mentioned previously, these shortcomings must be corrected in the revised Draft Permit. (1223)

Response: In addition to the water resources baseline data collected to date, the proposed MPDES permit, which contains the statement of basis, includes requirements for further monitoring of new seepage collection and monitoring wells when they are installed. The proposed permit is based on Alternative V and the paste facility; not on Alternative IV and an impoundment.

18. Several statements in the S.O.B. and draft permit demonstrate that the department's nonsignificant determination for seepage from the tailings impoundment (p. 17 S.O.B.) is premature, and incorrect.

Page 15 states that "the permittee shall submit to the Department for review and approval, a Work Plan specifically addressing the items contained in Section II.G of this S.O.B. The work plan shall be submitted to the Department in sufficient time to allow for collection of additional baseline data."

Page 20 states that "to ensure that a suitable baseline monitoring program for the proposed compliance surface monitoring wells are developed in a timely manner the permittee will submit a work plan to the Department for review and approval. The Work Plan must contain recommendations for the location, design, installation, and development of monitoring wells to delineate the spatial and temporal variability and in water quality parameters downgradient of the proposed tailings impoundment. The Work Plan must also address upgradient of (or) reference wells to be located in the same hydrostratigraphic units outside of the influence of the tailings impoundment. "

Is this baseline monitoring program for surface water or ground water? The first sentence above states surface water, yet the explanation talks about ground water downgradient of the tailings impoundment. Which one is it?

How were baseline conditions and a nondegradation determination made without this information, since this type of information is critical to making a significance determination?

This request for additional baseline water quality demonstrates that the applicant has not provided sufficient baseline data to characterize water quality and surface/ground water flow regimes in the project area - data that is supposed to be collected during the completeness review. Consequently, the department's non-significance determination is premature and should be re-evaluated once the additional baseline data has been collected, analyzed, and interpreted.

This issue is a particular concern for arsenic and mercury. Specifically, the S.O.B. assumes the background concentration for is 9 ppb, and compliance with the "no increase" requirements will be based on that concentration. The baseline data presented indicate this "background" level in the permit is higher than concentrations on the ground. This must be corrected. (1223)

Response: The text refers to ground water monitoring wells. The typographical error will be corrected. Baseline conditions were evaluated using the wells that have been monitored as part of the annual water resources monitoring program. For MEPA/NEPA purpose, the data was adequate to characterize the existing environment. For purposes of the MPDES permit, additional monitoring data is required to determine compliance. The proposed MPDES permit was revised based on comments received on the draft permit. The 9 parts per billion (ppb) estimated background level for arsenic is for the lacustrine aquifer while the basal gravel aquifer has an estimated background level of 2 ppb. The company would not be allowed to degrade the higher quality aquifer to the level of the lacustrine aquifer.

19. Page 10 of the S.O.B. states that "background water quality was developed from two primary sources: STORET station 5403CL01 located on the Clark Fork River below Noxon Rapids dam at the USGS cable; and baseline data collected by ASARCO at various sites in the Clark Fork near Rock Creek and are given in ASARCO's WMP (June 1995) and baseline reports (Hydrometrics, Inc. 1992 and 1994)."

"Values for the remainder of the metals (aluminum, cadmium, mercury, and chromium) were based on ASARCO (June 1995) and Hydrometrics, Inc. (1992 and 1995). Since fewer samples were taken at this site, 5 or less, the median was used to estimate the background condition."

This is an inadequate number of samples to adequately characterize baseline conditions in the Clark Fork River for those metals. Of particular concern is cadmium and mercury, two bioaccumulators. Another major problem with this discussion is there is little to no discussion of baseline water quality in Rock Creek and Miller Gulch - two streams that will be impacted by discharges from the project. This data must be presented. Without this information, the draft permit and DEIS are inadequate.

Page 20 states "baseline monitoring will be required to better define parameter concentrations at the compliance surface." This data must be provided in the revised draft permit. (1223)

Response: The concentrations of mercury and cadmium in the Clark Fork River near its confluence with Rock Creek are below the detection limit value. Even though fewer samples have been analyzed for these constituents, the conservative assumption is made that pre-mining concentrations of these constituents are below detection. The existing water quality of Rock Creek and Miller Gulch is discussed at length in Chapter 3 of the EIS.

20. MPDES Permit) p. 26 states "to ensure that a suitable baseline monitoring program for the proposed compliance surface monitoring wells is developed in a timely manner, the permittee will submit a workplan for Department approval. Sampling of monitoring wells completed in the lacustrine aquifer shall be conducted on a monthly basis, sampling of wells in the basal gravel aquifer shall be collected twice per month. Baseline monitoring must begin 180 days prior to activities related to construction of the tailings impoundment. The permittee shall submit a Draft Summary Report explaining the results of the work plan."

The first sentence indicates that there is not adequate baseline information for the tailings impoundment area. If this is so, how were ground water resources in the area characterized for effluent/compliance limits, and how was a nondegradation determination made? The second sentence discusses this on a monthly or twice-monthly basis - for how long?) If the plan is for sufficient to accurately determine baseline conditions, seasonal variations over several years is needed, not 6 months worth of data. (1223)

Response: For purposes of the MPDES permit, additional monitoring data is required to determine compliance. Compliance limits are based on state water quality standards and nondegradation criteria which are specific to the water use classification of the effected aquifers. The nondegradation determination was based on these standards and effluent and receiving water quality as established by baseline measurements. The supplemental baseline program has been modified please refer to the proposed permit in Appendix D.

21. We are concerned that the water balance model used to predict inflows into the water treatment system is flawed, a situation that will result in a number of operational problems and negative environmental impacts at the project.

Page 1 of the S.O.B. states that "excess water from the project requiring discharge is predicted to range from 4 gpm to 1,700 gpm (annual average), with predicted peak flow of 2,300 gpm.F The model used to make this prediction is flawed for a number of reasons. First, it is based on monthly and average annual flows, and fails to consider the higher daily peak flows that the system must be able to effectively treat. Second, it is based on very little field data and no use of flow meters, water level recorders, and weather stations. Lastly, it is based upon inadequate geologic, hydrologic, and geochemical information.

These concerns are recognized on page 2-16 of the WMP, which states "discharge values in Tables 1 and 3 and Figures 6 and 7 are considered preliminary estimates only, since they are heavily dependent on theoretical calculation of ground water inflow to the proposed adits and underground workings." We believe a water balance model must be developed for the Rock Creek site, one that is based on comprehensive, site-specific information, the type of information absent in the WMP. Pump tests, drawdown curves, and the creation of a site-specific model are all needed to assure the water balance model can adequately predict inflows to the treatment system.

These shortcomings with the water balance model are compounded by the fact that the model fails to consider a significant component of inflow to the water treatment system. Specifically, the model fails to account for the contribution of water captured from the tailings impoundment pump back system to treatment plant. The model estimates that water will seep from the impoundment at a rate of 241 gpm. In addition, another 131 gpm of ambient ground water will be pumped back into the biotreatment system as well. These additional flows must be accounted for in the revised water balance model and in the final design of the water treatment system. (1223)

Response: Discharge of water from the mine would be controlled to minimize peak daily flows by using water storage in the mine to provide flow attenuation.

Questions as to the accuracy of the water balance model could be minimized through additional monitoring and annual updating of the water balance model, as outlined in Alternatives III, IV, and V.

Tailings pond seepage pump back, including ambient ground water capture, has been included in the water balance model for Alternative IV.

22. RWMP (ASARCO 1995) Page 2 - 8. Inflows based on an adjusted seasonal profile of Troy. Is Noxon weather similar or wetter than Troy? (1780)

Response: Noxon weather is similar to Troy Mine weather.

23. S.O.B. Page 7 - Other Limitations (C.1.b.1) This statement (and the identical one on page 4 of the Statement of Basis) needs further clarification, does not contain the correct cite to the Federal Register and may not even be appropriate. We would suggest that you review pages 504-506 of the Development Document for Effluent Limitation Guidelines and Standards for the Ore Mining and Dressing Point Source Category, dated November 1982 (copies attached). This document explains EPA's intention when the regulation was implemented.

The Development Document suggests using the Climatic Atlas of the United States to determine whether precipitation exceeds evaporation. Based on that document, we cannot verify that precipitation does actually exceed evaporation at the Rock Creek site. Nor does the document verify the precipitation and evaporation information provided on page 3-5 of the Rock Creek DEIS. This information needs to be verified; otherwise, Rock Creek does not qualify for this general relief of the requirement of "no discharge of process wastewater".

If the Rock Creek site is verified as a net precipitation area, we would suggest that the Development Document approach be followed and an actual amount of allowed discharge based upon this criteria be calculated. This calculated allowed amount of discharge would then be written into the permit as a limit of the amount of wastewater from the tailings impoundment that could be treated and discharged annually. As part of this limit, a requirement for monitoring the amount of wastewater that was sent to the treatment facility would need to be included in the self monitoring requirements of the permit. Your calculation of the allowed amount of discharge should be based upon the surface area of the tailings impoundment, not including the shoulders of the impoundment.

For site specific purposes, both precipitation and evaporation needs to be recorded on a daily basis and summarized monthly, as you have stated on page 10 of the Statement of Basis. This would then provide the basis for the process wastewater discharge allowance for the next permit cycle.

All of these requirements need to be included in the self monitoring requirements (Section 1.D) of the permit, not just in the Statement of Basis.

The discharge of any process wastewater must be in accordance with the limits for Outfall 001. The permit should state this.

The correct cite for this only allowable method of process wastewater discharge is 40 CFR 449.104(b). Both subsections (b)(1) and (b)(2) are applicable. (1214)

Response: The language was clarified in the proposed MPDES permit.

24. The permit limits do not comply with the requirements of 40 CFR 440.104(b)(1). Page 4 of the S.O.B. states that "there shall be no discharge of process wastewater from the mill facility except for an amount equal to the excess between annual precipitation and evaporation for the area of the impoundment." Page 10 states that "NSPS require that there shall be no discharge from flotation mills except for the volume of water equal to the difference between the annual precipitation falling on the facility and annual evaporation. Since ASARCO's treatment system will receive excess water from the mill-impoundment circuit, Outfall 001 will be subject to the limitations of 40 CFR 440.104(b)(1) as combined waste streams." (PPT exceeds ET by 3").

This discussion ignores the discharges to Outfall 002, the ground water below the tailings impoundment. The S.O.B., at p. 10, states that the approximately 3 inches of "excess water" goes to the bioreactor - with no mention of the tailings seepage water. Therefore, since the 3 inch excess is all sent to Outfall 001 (the bioreactor), any discharge from the tailings impoundment that is not entirely captured violates 40 CFR 440.104(b)(1).

Since the applicant admits that there will be seepage/discharge to surface waters from the tailings impoundment (i.e., ASARCO can only "minimize the volume of effluent downgradient of the capture system. The underlying aquifers are hydrologically connected to the Clark Fork River." S.O.B. at p. 2), the proposed operation violates federal regulations and cannot be permitted.

In addition, it appears various wastestreams will be co-mingled. Subpart L of the NSPS only allows for combined streams when it is shown that the combined discharge is subject to effluent limits that won't exceed the quantity and concentration of each pollutant that could be discharged separately. This issue is of particular concern due to the fact that municipal wastewater from the mine workers will be discharged to the tailings impoundment, apparently untreated. The applicant must assure this domestic wastewater will in fact receive secondary treatment prior to discharge. To date, they have failed to do so. To meet this requirement, the applicant must characterize each waste stream and demonstrate they are in compliance with this requirement. (1223)

Response: The proposed permit incorporates changes in the water management plan which reflect the change from a tailing impoundment to a paste storage facility. All process water from the paste facility would be recycled to the mill except precipitation events which exceed the capacity of the collection pond which would be constructed and maintained in conformance with 40 CFR 440.131(b) as described in Outfall 003 in the proposed MPDES permit.

25. I would implore that your agencies consider the downstream drinking water users in your deliberations regarding the water management plan and MPDES for the proposed project. (1225)

Response: All uses of water will be considered in developing the associated permit limitations.

26. The permit application relies on unknown geology and seriously underquantified seepages along with dilution flows in the Clark Fork River to achieve compliance with water quality parameters. (1780)

Response: The maximum expected concentration of constituents and the lowest flow in the Clark Fork River were used in loading calculations for the purpose of compliance with water quality regulations.

27. Table 3 in the Statement of Basis uses the "<" symbol to denote mean values calculated from data sets where some or all of the values were less than detection. The "<" symbol is carried out further in the receiving water calculations and load percent increase calculations. This form of data presentation is misleading because it implies that the mean values are less than detection without supplying reasonably low detection limits for the various parameters. In the case of ammonia and nitrate, the tabulated values before and after discharge could be above a reasonable detection limit such as 0.01 mg/l for both parameters. In addition, it is not clear how values presented in column 6 "Load Percent Increase" were calculated. As an alternative procedure to evaluate data that includes values at or below detection levels, means could be calculated from values reported as 1/2 the detection limits or "zero" for those values below detection. Mean values in Table 3 should only be accompanied by the "<" symbol if it is below reasonable detection limits. In addition, individual data used to support mean values for permit constituents should be presented to help illustrate background data sets. We generally noticed higher concentrations of ammonia, nitrate, zinc, lad, and copper measured in the Clark Fork River at the USGS gage station below the Cabinet Gorge Dam and higher nutrient levels measured by Washington Water Power Company at one of their recent water quality stations located near Rock Creek. In general we would expect to observe decreased metals concentration on the Clark Fork River at locations down stream of Cabinet Gorge Dam which can act as a sink for water quality contaminants. (2067)

Response: Thank you for your comment. Appropriate statistics would be generated during compliance monitoring.

28. MPDES Permit, Page 8 - Limits for Outfall 002 An ammonia limit is proposed for Outfall 001 but not for Outfall 002. The DEIS reported that the Troy tailings impoundment exhibited significant levels of ammonia (8.8 mg/l on average and 96 mg/l max). We feel that ammonia should be included in your limits for Outfall 002 and appropriate monitoring required in the self-monitoring section. (1214)

Response: Effluent limits are based on water quality standards. Montana, and other states, do not have ground water standards for ammonia. The nitrogen component of the discharge would be monitored as nitrate.

29. S.O.B. Page 8 - Table 1 Please explain how you arrived at the value of 0.09 mg/l for total nitrogen in the Nondegradation Criteria of Table 1. Page 9 - Table 2 Likewise, please explain how you arrived at 42 mg/l for total nitrogen in the nondegradation/water quality based limitations in Table 2. (1214)

If aquatic invertebrates and plant communities will be impacted from nitrogen content, what exactly will be the concentration of nitrogen released to surface and ground water? (1207)

Response: Please see revised statement of basis in the MPDES discharge permit in Appendix D for a summary of the allowable concentrations and loading of constituents.

30. Page 9 - Other Conditions Section 3(a), 3(b) & 3(c) We very much like your trigger approach that you are using here. However, we think that you should explain somewhere in the Statement of Basis, your reasoning behind selecting nitrite plus nitrate, TDS, potassium or sulfate as the indicator parameters.

You are using the average of any 3 samples per year for each of the above parameters as a trigger. "Any" three samples needs to be defined. Three consecutive? three lowest? three highest? three during Christmas?

Your potential trigger of 500 mg/l for TDS would actually be an exceedance of the limit shown of page 8 of the permit. The trigger needs to be less than the limit. (1214)

Response: The discussion and justification for trigger levels (action levels) has been expanded in the proposed MPDES permit. The action levels for total dissolved solids (TDS) was dropped due to the wide range of dissolved solid concentrations in the receiving waters.

31. Ammonia, a soluble nitrogen compound, has been shown to be clearly toxic to aquatic life (Laws 1993; Rand and Petrocelli 1985). The toxicity of ammonia is primarily due to the un-ionized form (NH3), and the ration of NH3 to total nitrogen apparently depends in part on ph of the water (Arthur et al. 1987). Ammonia may also have enhanced toxicity in conjunction with heavy metals, such as copper and zinc (Herbert and Vandyke 1964; Ministry of Technology, UK, 1962). (1223)

Response: Limits for ammonia have been included in the proposed MPDES permit in Appendix D.

32. Page 11 of the S.O.B. states that "the proposed discharge will cause minor increases in the concentration of several parameters, including inorganic nitrogen, but should will not cause exceedence of the instream target for total nitrogen or any other state water quality standard."

Should this read "should not" or "will not" cause exceedences..., there is a difference. There must be firm guarantees in the system design that will prevent such problems (i.e., "will not"). Unfortunately, the S.O.B. and draft permit lack any such required assurances. (1223)

Response: Typographical error will be corrected.

33. The draft MPDES permit explains that a discharge of approximately 0.5 cfs from the tailings impoundment will seep into underlying ground water. The applicant proposed to capture some portion of this seepage flow. We would like surface discharge numeric limits for nitrogen and metals to account for a reasonable portion of the expected seepage volume which will be ultimately discharged to the Clark Fork River via ground water inflow. We recommend adjusting the receiving water dilution rate accordingly and recalculating limits where needed. (2067)

Response: The tailings storage facility has been modified in Alternative V to reduce the volume of seepage entering ground water and ultimately the Clark Fork River system (surface and ground water). Basing the ground water compliance limits on ultimate return to surface water would increase the compliance limits up to several orders of magnitude.

34. The S.O.B. calls for analysis of the dissolved portion of the sample for metals determination while the draft permit calls for Total Recoverable. Which one is it? (1223)

Response: Surface water discharges require monitoring of total recoverable metals while the dissolved portion of the sample is analyzed for ground water discharges.

35. Water quality parameters would be exceeded for copper and lead since existing ambient is not to be degraded. (1221)

Please reconcile the statement in the second para.pg. 29 of the S.O.B., "Dissolved copper data for the Troy adit water were used because only total recoverable copper data was available from the Troy tailings water database." With the response made by Hydrometrics to the DHES on April 1, 1994, as listed in Apndx B, "The Troy adit water quality was not sampled as part of any routine monitoring at the Troy Mine and so no additional data are available"? Where are these numbers coming from relative to that statement? Dissolved is a lot less than total and would make a distinct difference in the calculation. Please explain? NO DATA is an insufficient premise to be formulating or granting a permit upon. (1780)

Response: Additional data was collected for MEPA/NEPA analysis. The data summary and tables have been revised in response to public comments. Please see Chapter 4 - Hydrology. MPDES permits are based on the quality of the receiving waters and not the quality of effluent. Those limits must be met regardless of the quality of the discharge prior to treatment.

36. RWMP (ASARCO 1995) Appendix B. # 3 Response to elevated copper levels & acute toxicity of decant water at Troy being returned to mill circuit. Decant pond water was not returned to mill circuit at Troy when floculants added in first round started interfering with mineral recovery process. (1780)

Response: The agencies developed Alternative V to eliminate the need for a tailings impoundment. Tailings would be deposited as a paste and excess water from the paste plant would returned to the mill for reuse. To alleviate the problem of accumulating metals in the mill circuit waters, provisions were made to allow for bleeding ten percent of that water to the water treatment plant and replacing it with fresh water.

37. RWMP (ASARCO 1995) pg. 5 - 5, para. 3. Just because Montana does not have chronic aquatic life criteria for aluminum and barium is no reason to drop these metals from further discussion. This is particularly grievous. (1780)

Response: In addition to Montana not having chronic aquatic life criteria for aluminum and barium, there are two other substantial reasons for discontinuing discussions related to aluminum and barium. Table 4-21 titled “Operational Adit Water Quality for Troy Mine” shows that water quality samples of Troy mine operational adit water were less than the detection limit for dissolved aluminum and barium. Table 4-23 titled “Characteristics of Tailings Solid and Waste Rock” shows that while the Troy deposit and the Rock Creek deposit are similar in many ways, the Rock Creek tailings solid and waste rock analysis and the extraction procedure toxicity test method results show substantially lower concentrations of aluminum and barium for the Rock Creek project than was observed at the Troy mine.

38. Please explain in the Statement of Basis why the manganese limit in the lacustrine aquifer is different from the manganese limit in the basal aquifer. (1214)

Response: The manganese limit differs in the two aquifers because the background concentration is significantly different. The Montana Water Quality Act gives consideration to natural background conditions [75-5-306, MCA].

39. It should be noted that the effluent limits must be based on the more protective of the New Source Performance Standards (NSPS) or Nondegradation requirements, whichever is more protective of water quality. Yet the effluent limits for cadmium, copper, and zinc appear to be based on NSPS. The department should recalculate these limits in light of the more protective water quality requirements.

There is no explanation why the effluent limits for silver are based on acute toxicity. The acute toxicity limit is most certainly less protective than the background/nondegradation concentrations in the project area. Please explain.

No effluent limits for arsenic have been established in the permit. The S.O.B.(p. 11) states that "arsenic is occasionally detected at low levels in tailing water samples and will be monitored for in the permit to determine if an effluent limit is warranted."

A review of water quality data from the Troy mine indicates that arsenic has been detected at levels exceeding state water quality standards, and thus, that it should be a regulated parameter at Rock Creek. Table 4-12 in the EIS shows arsenic concentrations ranging between 4 and 14 ppb in tailings impoundment water at Troy. Table 4-15 in the EIS shows arsenic concentrations of 27 ppb, a value exceeding state standards, has been detected in the Troy adit water. Consequently, the department must establish effluent limits treatment requirements for arsenic in the permit, as well as reconsidering the nondegradation determination in light of the project-related increases in arsenic in ground and surface water.

There is no discussion in the permit of how barium will be controlled by the applicant or regulated by the permit. Barium is a toxin that is seen at elevated levels in the project area, and that has also been detected in tailings and adit water at the Troy Mine. The permit must address how water quality violations for barium will be prevented.

P. 10 of the S.O.B. states "the parameters selected for regulation in this permit are based on the Department's knowledge of mine drainage effluent, monitoring at ASARCO's Troy unit, geochemical sampling of the ore body, and those parameters subject to regulation through adoption of federal effluent limitations for metal mines (40 CFR 440.100)." (1223)

It is not clear how your Reasonable Potential Determinations were made based upon data from the Troy mine. We understand that your standards do not allow discharges to contain levels of known carcinogens such as arsenic and mercury, that exceed background levels of the receiving waters, and that you have determined which of these carcinogens are not expected in the wastestream. Data which supports this conclusion should be presented. (2067)

Response: Table I.C.1 in Appendix D compares technology-based and water quality-based limits and identifies which limit of the metals mentioned is the most protective of water quality.

There are no chronic standards for silver, just acute standards. The proposed MPDES permit in Appendix D has a limit for arsenic. No limits for barium are proposed as there is no probability for barium to exceed non-degradation-based water quality standards.

Reasonable Potential Determinations were based on Troy adit monitoring data and estimated waste water treatment system efficiency. Table I.A.4.1 in Appendix D identifies the potential for discharge from outfall 001 to cause exceedence of non-degradation-based water quality standards. Limits were then developed for those parameters likely to cause exceedences based on that analysis.

40. It seems as if the department is basing it's evaluation of arsenic loading, and the degradation it will cause, on a 5 ppb detection limit. Arsenic can readily be detected to levels lower the 2 ppb, as demonstrated in Table 4-12 of the EIS (dissolved As concentration <.001). All arsenic monitoring at the Rock Creek Project should be required to achieve these lower detection limits so that degradation of high quality waters can be adequately assessed and prevented in the monitoring program. (1223)

Response: The Board of Environmental Review has established a minimum reporting value of 0.003 mg/L for arsenic. The department recognizes that arsenic may be detected but not necessarily quantified at levels below this amount.

41. We believe parameters that are inadequately covered with existing baseline data such as arsenic, chromium, mercury and selenium in tailings water and adit discharge should be added to the 21 parameters (page H-4) for analysis. (1214)

Response: Tailings water and adit discharge would be sampled and analyzed for the full suite of parameters.

42. MPDES Permit. Page 3 - Definition of 30-day (and monthly average) We suggest that you delete the references to fecal coliform and geometric means for calculating compliance with fecal coliform from this definition since they are not applicable to this permit. (1214)

Response: Those definitions have been deleted.

43. RWMP (ASARCO 1995) Appendix D. pg. 17, # 2.3. Make comment on ground water / hard vs surface waters soft? (1780)

Response: Water quality data for Rock Creek at Highway 200 (December 1988 through August 1993), as shown in Table 3-4 titled "Water Quality Data for Rock Creek at Highway 200 December 1988 Through August 1993" (Chapter 3), lists the average total hardness (as $CaCO_3$) as 10 mg/L. Table 3-9 titled "Range of Concentrations for Surface Water Monitoring Stations" (Chapter 3) which lists the range of concentrations for surface water monitoring stations on West Fork Rock Creek, East Fork Rock Creek, Miller Gulch, Rock Creek, and Clark Fork River also shows that total hardness was not measured in exceedance of 33 mg/L. Based on a generic classification of waters, total hardness in the range of 0 to 60 mg/L is classified as soft.

Table 3-11 titled "Ground Water Quality at Proposed Tailings Impoundment Site Lacustrine Wells" and Table 3-12, "Ground Water Quality at Proposed Tailings Impoundment Site Sand and Gravel Wells" (Chapter 3) list ground water quality from wells at the proposed tailings site location. Samples from these wells show the total hardness to be 270 mg/L and 194 mg/L. Based on the same generic hardness classification of waters, these would be classified as very hard (greater than 180 mg/L). Ground water quality at the proposed and alternate mill sites, however, are classified as soft with total hardness of 21 and 29 mg/L.

44. The data used to determine the ASARCO estimated concentrations for Rock Creek impoundment discharge should be cited in the Statement of Basis discussed in greater detail. (2067)

Response: The proposed permit contains a reference section which identifies all information used in the development of the permit.

45. All water at the tailings site should be reused at the mine or treated to complete purity before discharge. Absolutely no degradation should occur from the tailings site. (1485)

Response: No law requires treatment to produce pure or distilled water. Discharged water must meet the limits on the proposed MPDES permit in Appendix D.

46. Require that ASARCO can add no additional nutrients or toxins to the Rock Creek and Clark Fork drainages. (2052)

Response: Discharge must meet the proposed MPDES permit limitations. Please see Chapter 4 – Hydrology and Appendix D.

47. Discharge of inadequately treated mine wastes and a tailings pile calculated to seep are both serious threats. The permitting process should be predicated on the fact that it is more important to keep the water clean than it is to extract silver or copper from under the Cabinet Wilderness. (4475)

Response: A proposed MPDES permit has been developed that should protect the water quality of the Clark Fork River (see Appendix D).

48. Management, control, and treatment of water at a mine site is critical to the analysis and evaluation of environmental impacts. Effluent limitations for proposed Rock Creek wastewater discharges to the Clark Fork River are not yet disclosed. We have concerns about mine wastewater quality and quantity, and the reliability and effectiveness of the proposed treatment system. Discharge permit limitations are needed to adequately assess the potentially significant environmental impacts of the mine. (1214)

Response: A MPDES permit has been prepared by the MDEQ.

49. You apparently use a discharge permit limit calculation approach that is different from that given in EPA's "Technical Support Document - Water Quality Based Toxins Control." As such, Montana's approach for setting effluent limits for "high quality waters" is based on simple multiplication of nondegradation criteria or trigger values and the receiving stream dilution value. This approach apparently satisfies Montana's antidegradation provisions and results in conservative permit limits, however, there are two inherent disadvantages to the approach which don't seem to be appropriately accounted for the Statement. of Basis. These include: the limits and subsequent compliance monitoring frequencies are not determined based on expected effluent variability and confidence levels, and limits do not consider background receiving water concentrations of the various pollutants. A response to comments on the draft permit should provide support for proposed sampling frequency by explaining the statistical basis for the permit sampling design. We would also like to see specific portions of the technical support documentation used by Montana DEQ to calculate water quality based permit limits for toxins and to establish specific nondegradation trigger values. (2067)

Response: The effluent limits have been revised in the proposed MPDES permit to more closely conform with the references cited by the commentor. The trigger values are established in DEQ Circular WQB-7 (DHES 1998) and are based on Method Detection Limits. That is, changes in water quality below this level should not be analytically measurable.

50. The method used to calculated the instantaneous maximum concentrations (e.e. 30-day average concentration '1.5) should be cited in the Statement of Basis. (2067)

Response: The multiplicative factor of 1.5 is an estimate of effluent variability. The revised draft permit uses a coefficient of variation (CV) of 0.6 which is recommended by the U.S. EPA TSD (EPA/505/2-90-001).

51. Effluent limitations are based upon chronic toxicity to freshwater aquatic life, the most stringent criteria available. We understand that a 30 day average concentration will be used to determine compliance with the chronic limits, and that any one sample cannot exceed acute toxicity standards, represented by the term "instantaneous maximum" in the permit. (2067)

Response: Effluent limits for Outfall 001 have been specified in terms of average monthly and daily maximum. Compliance is based on achieving both of these limits.

52. Page 4-38; states that both surface and ground water in the vicinity of the project are considered high quality waters and are subject to Montana's Nondegradation policy (75-5-303). Discharges to high quality waters are

allowed provided that all existing uses of state waters are protected and the resultant change in quality is determined to be nonsignificant by the criteria in ARM 16.20.712. Why was a nondegradation approval not included in the list of permits and approvals needed for the project to proceed?

Page 1-6, 1-7: Table 1-1 fails to include a Nondegradation waiver from the MT DEQ as one of the required permits, licenses, and approvals. Discharges from mine workings and the tailings impoundment will lower the quality of high quality waters. Therefore, a nondegradation waiver must be discussed in the revised DEIS. In addition, what are the assurances that the downstream receiving state's waters will not be degraded? The Clean Water Act prevents any degradation to a downstream state's high quality water. The revised DEIS must discuss these issues and the required approvals. (1223)

Response: The agencies have determined from the review of the water management plan and proposed MPDES permit limits (see Appendix D) that the proposed discharge would meet nonsignificance criteria, and therefore a nondegredation waiver would not be required.

53. Response to Public Comment 41: The outline of Steps Necessary for ASARCO to Obtain a Variance, Obtain Public Input, and Monitor Water Quality given in the agencies response is very presumptuous as well as inaccurate. Response states "2. The probability is very high that the board [Board of Environmental Review] would grant ASARCO a variance [from nondegradation requirements]." There is no basis for this prediction. One would assume that the board would act upon the available information and make the best decision possible.

Step 3 states that upper limits would most likely be set at MCLs or MCLGs. Again this is presumptuous. The board would set the upper limits as they deemed appropriate. In fact, in previous hearings on nondegradation petitions the board has set upper limits lower than water quality standards.

Step 4. states that negotiations would take place between ASARCO and the Water Quality Board and could include input from the general public. This is clearly inaccurate. The Board of Environmental Review (formerly Board of Health and Environmental Sciences) would be required by law to conduct a public hearing to consider ASARCO's proposal and decide whether a variance (Authorization to Degrade) is warranted.

Step 5. states that existing water users would have no recourse or grounds to file an objection. This appears to be a legal conclusions made without regard to facts that may exist in an individual case. This comment is inappropriate and in some instances may not be true. It also should be noted that Authorizations to Degrade may be subject to review and modification every 5 years (75-5-303 MCA). Existing water users and others of the general public could provide input to review and modification of Authorizations to Degrade. (1589)

Response: The processes discussed in response to public comment 41 are accurate. ASARCO withdrew its Petition to Degrade on November 19, 1993.

54. The S.O.B. at p. 13 states that "pursuant of ARM 16.20.709, the Department finds the discharge from this facility nonsignificant" because "the effluent limits and load calculations proposed for outfall 001 are based on non-significance criteria, and therefore, would not cause degradation."

We believe this nonsignificance determination is flawed for several reason. First, the determination does not comply with the criteria for nonsignificant changes to water quality. A.R.M. 16.20.712(b) requires that "nonsignificant" discharges must contain concentrations of carcinogenic parameters or parameters with a bioconcentration factor greater than 300 at concentrations less than or equal to those parameters in the receiving water. Discharges from the Outfall 001 will violate this criteria for at least two parameters, arsenic and mercury.

Table 4-20 of the DEIS indicates that ambient arsenic concentrations in the Clark Fork River are below 1 ppb. Yet the water quality in the proposed discharge is only required to be below 5 ppb. This situation will allow the applicant to increase concentrations of arsenic in the receiving water by four times, a clear violation of the nondegradation rules. The department and the applicant must address the inconsistencies created by using different detection limits in the permit application.

The same can be said for mercury in the mine discharge to the Clark Fork. The ambient instream concentration of mercury is less than 2 ppb, yet the effluent limits in the permit will allow mercury discharges at 2 ppb. Consequently, the discharge will increase mercury concentration in the Clark Fork River, a clear violation of the nondegradation rules.

Page 13 states that "the load reduction to meet nondegradation-based limit is approximately 45% reduction or 386 pounds per day. ASARCO proposes to remove 80%, thereby reducing the load to 135 pounds per day through biological treatment. If the passive bioreactor will reduce N loads to 135 pounds, why is the effluent limit on page 4 and 13 of the S.O.B. listed as 193 pounds per day? That is over 70,000 pounds per year. (1223)

The MPDES permit sets the limit for certain parameters based on the nondegradation rules. It says there will be no degradation allowed. But rock strata cannot read and is hard to arrest. Once the geochemistry and hydrology of the area has been altered, if water chemistry does change and degradation occurs, there is no plan proposed to reverse such an effect. And it has happened elsewhere. Citizens find no reassurance in being told by the DEQ that water will not be allowed to degrade below the trigger levels since this has happened elsewhere and we have not a clue how to stop or reverse it once it occurs. Hence it would be more honest to admit that degradation may occur and address this head on. (2066)

Response: As stated in the EIS, the applicant must meet the requirements set forth in the MPDES permit.

55. It is unclear how the Agencies and the State would be able to determine whether the nondegradation requirements would be met, since the existing data base does not provide for an adequate assessment of existing water quality in relation to standards (page 4-38). (1214)

Response: To meet statistical needs, additional data would have to be collected where necessary. For the Clark Fork River and for compliance wells below the impoundment, criteria have been set in the MPDES permit based on conservative assumptions, more protective than the statistical data.

56. The DEIS and permit conclude that there will be no significant degradation, hence no petition to degrade state waters is needed. However, this conclusion was based on assuming that this unproven technology would achieve a certain level of removal. DEQ must not based such assumptions on unproven technology and then assume there will be no degradation. Degradation determinations must be based unproven technology or by assuming no treatment at all. (2066)

Response: Technology exists that would allow the mine wastewater to be treated to the levels required by the MPDES permit. See description of Alternative V.

57. Also, the DEIS, Draft Permit and S.O.B. contain inadequate discussions of how these ground water discharges will effect surface water in Rock Creek, Miller Gulch, and the Clark Fork and whether those changes in water quality will in fact be nonsignificant. (1223)

Response: Tailings seepage would not discharge to either Rock Creek or Miller Gulch. Part II of the MPDES permit has been modified to include a section on nondegradation. This section states that the discharge to ground water (Outfall 002 from the tailings facility) would not be significant.

58. Page 4-38 - Nondegradation Policy concern: Baseline data for Rock Ck, standards for Rock Ck, trigger values for Rock Ck, and releases of metals to Rock Ck. are not disclosed in this DEIS. This indicates that the agencies are using deception, denial and disinformation in an attempt to promote this project as clean and safe. It is clear that the agencies are asserting that this project will cause not (significant) degradation to Rock Ck. By omission, they are also asserting that this project will cause no (significant) degradation to Miller Gulch or to the E Fk Bull River.

Montana's Nondegradation Policy and the nation's Clean Water Act are being avoided by means of this refusal to look at the reality that metals levels will increase in Rock Ck. (and likely in Miller Gulch and E Fk Bull River also).

Page 4-39 - standards: Table 4-6 concern: As already discussed above, standards for Rock Ck, Miller Gulch and E Fk Bull R. should be presented. (1504)

Response: Baseline data for Rock Creek are summarized in Chapter 3 of the EIS. The complete baseline streamflow data record is presented in Sterling's permit application, on file with the agencies. Trigger levels are listed in the Table 4-13 in Chapter 4 of the EIS. Aquatic life standards are different for Rock Creek than the Clark Fork River and have been provided in the EIS. Further detail on Rock Creek, Miller Gulch, and East Fork Bull River is not provided since no discharges to these waters are proposed other than storm water diverted around facilities into Rock Creek and Miller Gulch.

59. Page 4-39, Table 4-6: Montana's current nondegradation trigger value for nitrate+nitrite(as N) in ground water is 7.5 mg/L. (1589)

Response: Montana Numeric Water Quality Standards (WQB-7) lists the ground water trigger value as 2.5 mg/L, not the value identified above.

60. We believe the department's determination that the Rock Creek Project will result in a "non-significant" change to water quality, as defined by the Nondegradation Policy 75-5-303, is unwarranted and incorrect. The project-related loss of over six acres of wetlands should warrant a significance determination on its own. When considered cumulatively with discharges from the mine workings, tailings impoundment, processing mill, and storm water, there is no question that this project will degrade high quality waters. (1223)

Response: The criteria of ARM 17.30715 have been applied to all discharges to determine if the project will cause degradation of state waters. The conclusion in the proposed permit is that these discharges will not cause degradation. Loss of wetlands have not been considered in the nonsignificance determination because Montana's nondegradation policy applies to state waters.

61. On p. 4 of the Fact Sheet, it states, "The effluent limits and load calculations proposed for in the permit are based on nonsignificant criteria, and therefore, will not cause degradation." Since no effluent limits nor load calculations were proposed for the discharges from the mill site and adit areas, how did the WQD decide that no degradation would occur to Rock Creek below the mill site? (1504)

Response: No discharges are proposed in Rock Creek below the mill site. See the proposed MPDES discharge permit for a description of discharges for the proposed project.

62. We are concerned by the cumulative effects of development on the nondegradation analysis. Particularly for the parameters that do not biodegrade, it appears that all of the degradation allowance in the Clark Fork River has been allocated to the Rock Creek Project. Considering all of the development in western Montana, it is unlikely that the Rock Creek Project will be the only new or increased source of degradation. While increases for the Rock Creek Project are only calculable increases, increases for future new or increased sources could also be only calculable increases. Eventually, cumulative calculable increases could result in a measurable increase in the Clark Fork River. We think a practical solution to this might be to conduct a waste load analysis and assign a percentage of the calculable increase to the Rock Creek Project with the remaining percentage being left available for future new and increased sources. (1214)

Response: Total maximum daily loads (TMDL) are currently being developed for sections of the Clark Fork River and a reopener clause has been included in the proposed MPDES permit.

63. On page 17, Statement of Basis, in the Nondegradation Determination Section, the state of Montana makes the claim it "believes that a seepage collection system, properly constructed, operated and maintained, will be affective in preventing degradation of the potentially effected aquifers." Standards for nitrite and nitrate should be reviewed for due to the use of ground water as a source of drinking water in Miller Gulch. We believe Montana should error on the side of protecting the ground water and surface waters of Rock Creek and the Clark Fork River. It will be

virtually impossible to economically restore the ground water and habitat of Rock Creek in the event of a failure of the collection system. Furthermore, it appears that Montana is ignoring its responsibilities in the protection of its water and fisheries resources. (1991)

Response: The seepage from the impoundment would not discharge to Rock Creek and therefore would not adversely affect habitat. The ground water aquifer is a Class I water and is protected for drinking water use. The nitrate standard (10 mg/L) and nondegradation criteria (7.5 mg/L) are intended to protect that use. Any seepage which reaches the Clark Fork River would be extremely dilute and will not significantly effect the quality of that system. Pumpback systems are commonly used to remove contaminated or polluted groundwater and the agencies believe they would be effective for seepage capture in Alternative II-IV and as a contingency measure under Alternative V.

64. Page 17 states that "the concentrations of constituents in the ground water down gradient of the tailings impoundment are based on compliance with Montana water quality standards and non-degradation criteria."

The significance of changes to water quality should be determined at the point of discharge, i.e., in the ground water directly below the tailings impoundment. It appears the department has granted the applicant 325 acres (plus 500-700' of mixing zone) to dilute their discharges before making their significance determination. This approach makes a mockery of Montana's Nondegradation policy. In addition, and as noted above, it violates the state Constitution. (1223)

Response: Nondegradation criteria for toxics, nutrients, including nitrogen and phosphorus, and harmful constituents are applied at the boundary of any applicable mixing zone (ARM 17.30.715). Discharges containing parameters which are classified as carcinogens or bioconcentrate (BCF > 300) are evaluated at the point of discharge.

65. ...ASARCO estimates that approximately 40 gallons per minute of tailings impoundment seepage will migrate beyond the pumpback wells. The degradation and impacts this seepage discharge will have on ground water quality and ecology inside and outside of the mixing zone have not been addressed in the DEIS. The Agencies appear to assume that if dilution in the mixing zone brings water quality back down to standards, significant degradation is avoided. We disagree and request a full disclosure of these impacts - including those to aquatic insects inhabiting the hyporheic zone near the tailings impoundment- to be quantified and disclosed in the revised DEIS. (1223)

Response: Regarding your statement that, “The Agencies appear to assume that if dilution in the mixing zone brings water quality back down to standards, significant degradation is avoided.” is not an assumption. This reflects current regulations and law. If ground water meets non-degradation standards, there are no impacts. Regarding your concern over the “hyporheic zone” near the tailings impoundment, there is no reason to expect such a zone exists near the impoundment under the alluvial conditions that exist along this stretch of river.

66. Page 6 of the S.O.B. states "the permittee shall monitor the volume of water reporting to the water treatment facility from each source and report that information to the department on an annual basis." We support this influent monitoring requirement. However, the permittee should also be required to monitor the quality of the influent to the water treatment facility as well. The effectiveness of the passive bioreactor will be directly controlled by the quality of the influent water, most notably, nitrate and metals concentrations (both dissolved and total). Influent water quality monitoring will provide the necessary information to evaluate the effectiveness of the sand filtration (for metals removal) and mechanical aeration (for ammonia conversion) steps in the treatment process. In addition, it will allow the applicant and the department to make a more informed evaluation of the passive bioreactor. Specifically, it will allow them to determine whether problems in the treatment system are due to influent water quality or the effectiveness of the passive bioreactor itself.

Also, the results of the influent volume and quality should be reported to the department on a monthly basis to assist in their own evaluation of the passive bioreactor. (1223)

Response: Thank you for your comments. These suggestions would be considered in the final water resources monitoring plan. These are issues relative to Alternatives II-IV and not Alternative V on which the proposed MPDES permit in Appendix D is based. Should a decision be made to permit an action alternative other than Alternative V, then these issues would have to be revisted.

67. S.O.B. Page 10 - New Source Performance Standards The third paragraph says that ASARCO will be required to record and submit the volume of inflow from each source contributing to the wastewater treatment system. We agree that this is needed. However, it has not been included as a requirement in the permit. (1214)

Response: The Agencies developed Alternative V to address public comments. The MPDES discharge permit has also been updated to reflect public comments. The only process water to be treated would be the mill bleed water, all other water would come from the mine workings. The volume of mill bleed would be continuously monitored and reported monthly.

68. Page 14 of the S.O.B. presents a table with compliance limits for pollutants discharged from the tailings impoundment. We believe the table is incomplete, and that it should include compliance limits for more of the "monitored parameters" mentioned on p. 16 of the S.O.B., including arsenic, chromium, and TSS. Arsenic is a carcinogen and a human health concern and has been detected at concentrations exceeding water quality standards at the Troy tailings impoundment. Chromium is toxic to humans. TSS sampling is needed to help determine the increased metal loads to surface water streams hydrologically connected to tailings impoundment seepage, most notably, Rock Creek, Miller Gulch, and the Clark Fork.

The S.O.B. p. 18 proposes there will be no increase for arsenic and mercury at the project. However, it appears this limit is applied after the mixing zone, and thus it is not really an effluent limit. The compliance point for discharges to ground water must be prior to the effluents entry into the ground water, especially if discharges of arsenic and mercury are to be considered nonsignificant.

The compliance limits presented in the Table on page 14 of the S.O.B appear to be based solely on human health standards only, with no consideration for aquatic life. These limits ignore the fact that the ground water below the tailings impoundment is hydrologically connected to surface water streams in the project area. Consequently, seepage of ground water to surface water must have limits based on aquatic life standards.

Consider the following: The zinc compliance level is 750 ppb, 6 times higher than acute toxicity aquatic life standard of 120 ppb. The copper compliance is 150 ppb, nearly ten times higher than acute toxicity aquatic life standard of 18 ppb. Cadmium is 2 ppb. Mercury is .5 ppb, an order of magnitude higher than the chronic aquatic life standard of .012 ppb. The permit allows these toxic concentrations of metals to be discharged to surface waters in Rock Creek and Miller Gulch, a situation that will certainly adversely effect beneficial uses in the streams.

To exacerbate the problem, these compliance levels are based solely on dissolved concentrations. The total metal concentrations in ground water traveling through the coarse, permeable basal aquifer can be expected to be much higher, causing even greater impacts to aquatic life in the streams receiving the tailings impoundment seepage.

It is clear that a portion of the ground water will seep past the collection system into surface water in the Clark Fork, Miller Gulch, and Rock Creek. The applicant must demonstrate that seepage from the tailings impoundment at these "compliance concentrations" will not cause degradation of surface water or exceedences of aquatic life standards in the receiving surface water. No such demonstration has been made. (1223)

Response: Monitoring for Total Suspended Solids (TSS), arsenic and chromium is not warranted at this time since the concentration of these analytes would not be present in the seepage in significant quantities, or they would be below receiving water concentration. The tailings paste would be monitored for these constituents and if this conditions changes monitoring requirements will be reassessed at that time.

Compliance limits for ground water are based ground water standards and nondegradation criteria. Because of the variability and potential for sampling error the use of sample average and check sampling is standard operating practice.

As discussed in the Chapter 4 of the EIS and previous responses, seepage from the tailings facility is not predicted to reach surface water in either Miller Gulch or Rock Creek. Operational monitoring of these waters is intended to verify these predictions.

69. RWMP (ASARCO 1995) Appendix B. Response to EPA comments, # 25. The reference to seepage analysis is not a conservative assumption when one considers that concentrated bio-treatment sludge/sub-strate will be dumped into tails pond, and will exit as seepage. (1780)

Response: In response to public comment, the method for water treatment has been revised for Alternative V. There would be no sludge or substrate to bury in the tailings under Alternative V. Additional data have been collected and are presented in the final EIS.

70. Page 4-56: states that the maximum concentrations of the treated effluent are carried forward into Tables 4-19 and 4-20 to estimate the reasonable worst case impacts to surface water quality. Average concentrations for treated effluent were also evaluated, maximum concentrations resulted in violations of water quality regulations. This discussion is confusing and misleading. The reasonable worst case impacts to surface water quality would occur if the passive bioreactor failed and the ion exchange system did not have the capacity to treat all of the discharged water. Also, the system's ability to achieve water quality standards must be based on the worst case scenario, not on average conditions as suggested on p. 4-56. This is especially true for ammonia where concentrations are expected to exceed trigger values unless average conditions are used. Agencies can only permit this mine if it will meet water quality standards under reasonably expected conditions such as the worst case scenario. Based on this discussion, and the unproven, experimental nature of the passive bioreactor and ion exchange system, the Agencies have no choice but to require a conventional water treatment system or deny the mine permit. (1223)(1220)

Response: Treated mine wastewater effluent would have to meet MPDES permit discharge limits regardless of the type of treatment system. An alternate plan for water treatment (semi-passive anoxic biotreatment and reverse osmosis systems) has been proposed under Alternative V. See Chapter 2, Alternatives Descriptions for more information.

71. The first sentence requires a work plan to be submitted for monitor well location, construction, etc. in order to allow baseline monitoring to begin 180 days before the start of construction of the impoundment. The Statement of Basis and the permit should require that this work plan be submitted at least 360 days before the start of construction of the impoundment in order to have ample time for review and comment. (1214)

Response: A full year of data would be required prior to construction of the paste storage facility.

72. Page 26, A1: The words are strong. I presume that the work plan must be submitted before the permit is issued. A2: Please add one line, a new line iii, and move the rest down: iii. Statistical significance of the sampling (based on outflow and number and depth of sampling wells). (1404)

Response: The development of a paste storage facility in Alternative V reduces the estimated amount of seepage from the tailing storage facility from 230 gallons per minute (gpm) to 30 gpm over a 325-acre facility. The low volume-diffuse nature of this seepage in Alternative V would minimize the possibility of "channeling" and potentially the number of monitoring wells required. Under any alternative, the permittee would be required to submit a ground water work plan (see Part V.1, MPDES Permit) which would better define the nature and extent of each of the hydrostratigraphic units. The actual number of wells would be determined after completion of this study.

73. A Reopener Provision which allows Montana DEQ to assess whole effluent toxicity (WET) based limits should be clearly stated in the permit. (2067)

Response: Whole effluent toxicity (WET) is specified as an effluent limit (2.0 TU_a). Exceedance of this limit is a violation of the permit.

74. We recommend that an anti-backsliding clause be added to the Reopener Provision under subparagraphs 1. and 3. to clarify that if Montana standards become less restrictive it will not alter this permit.

Reopener Provision #@, provides for modification of this permit in the event of Montana or the U.S. Environmental Protection Agency developing a mandatory TMDL or Wasteload Allocation for the Clark Fork River. We understand that this Provision does not recognize voluntary TMDLs such as the Voluntary Reduction Program of the Tri-State Council. (2067)

The discussion of the TMDL and VNRP for the Clark Fork River (p. 11 S.O.B.) does not seem to have direct implications to the Rock Creek project. The Clark Fork River VNRP only applies from the headwaters to the confluence with the Flathead River. Discharges from the Rock Creek project should be evaluated based in their compliance with the overall goal of the Tri-state Water Management Plan, which is to maintain and reduce nutrient loading to Lake Pend Oreille. In addition, the nutrient load from the project should also be evaluated for its effects on the development of the nutrient TMDL for Lake Pend Oreille.

Specifically, the lake TMDL is based on the assumption that nutrient loading to the lake from the Clark Fork River will remain the same or decrease over time. Therefore, the permit conditions should assure that the project will not cause an increase in nutrient loading to the lake. The fact that the permit allows an additional 193 pounds per day of N to the system - that's over 70,000 pounds per year seems to directly contradict the goals of the Tri-state Water Management Plan and the lake TMDL, which both call for the maintenance and reduction of nutrient loads to the lake.

Point source dischargers upstream of the Rock Creek Project, and the taxpayers that fund them, are being required to make substantial capital investments to reduce nutrient loading from their facilities. It seems wholly inappropriate to allow a new source to discharge additional nutrients to the system, effectively undoing the hard-fought, expensive efforts being made upstream. This issue must be addressed in any revised Draft Permit. (1223)

We are unfamiliar with the Reopener Provision regarding the Water Quality Management Plan. In what instances, other than those already addressed in this section, i.e. toxins, TMDLs, or standards, could the effluent limits of the permit be changed? (2067)

Response: There are several circumstances in which the discharge permit may be reopened and modified. These circumstances are described in great detail in Section IV of the proposed MPDES permit.

75. What happens if there is a violation of the discharge permit? What was the result of the last legislative audit on DEQ's enforcement record? (1248)

(MPDES Permit) p. 17 states that "the permittee shall report any serious incidents of noncompliance as soon as possible, but no later than 24 hours from the time the permittee first became aware of the circumstances." Who determines what is serious, the Department, the permittee, or someone else? The draft permit on p. 17 talks about "instances of noncompliance not required to be reported within 24 hours." Who determines those?

(MPDES Permit) p. 18 states that "the permittee shall take reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment." In any event, the possibility of these types of discharges must be reviewed in the DEIS and draft permit - a discussion which is currently lacking.

Who determines whether the violation has a reasonable likelihood of adversely affecting human health or the environment, the permittee the Department, or the public?

(MPDES Permit) p. 19 states bypasses are not forgiven "if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance."

This statement emphasizes need for the IX system to be on line, now. (1223)

Response: The permittee would make the initial determination and assume the liability for an incorrect decision.

76. We note (page 2-34) that the location of the ground-water pump capture wells should correspond to the downgradient end of a MDEQ-WQD permitted mixing zone and be compatible with non-degradation requirements for ground water as included in a ground-water discharge permit. It is important that a separate compliance point(s) be established for ground water and not a single surface water compliance point. How will the MGWPCS ground-water discharge permit address the issue of compliance or non-compliance with ground-water standards? (1214)

Response: The MPDES permit contains a ground water mixing zone beneath the tailings facility as well as two storm water outfalls and the outfall discharging treated mine water into the Clark Fork River. The pumpback wells while remaining a component of Alternatives II-IV are only to be installed under Alternative V if monitoring showed a problem was developing and it was needed to ensure compliance with the MPDES permit outfall beneath the impoundment. Numerous monitoring and compliance points would be used for monitoring both ground and surface water quality. See the Alternative Descriptions in Chapter 2 and the monitoring plans in Appendix K and the proposed MPDES permit in Appendix D.

77. RWMP (ASARCO 1995) Appendix B, Responses to EPA Comments # 26. The liberal use of the word DILUTION is offensive, and does this serve the purpose or reflect the corporate environmental policy of ASARCO towards the Clark Fork Valley community? The same goes for distributed, diffused, instantaneous mixing. (1780)

Response: The use of the word "dilution" describes what happens within a mixing zone and what is allowed under law to occur. Modeling described in the Statement of Basis for the proposed MPDES permit indicates that discharged effluent would be fully mixed, horizontally and vertically with water flowing in the Clark Fork River within 22 feet of the point of discharge at the critical low river flow of 365 cfs. Nondegradation-based water quality standards would be met when the effluent was fully mixed. Since this mixing would occur in less than the two river widths allowed under the regulations (ARM 17.30.502[7]), the mixing of the discharge with the river would be defined as nearly "instantaneous." The discharge would not be from a single point at the end of a pipe but would be "disturbed" and discharged into the river through a "diffuser" or submerged perforated pipe across the width of the river.

78. Do not allow a "mixing zone" for the mines discharge. (1627)

There is little discussion of the need, extent and analysis used to establish mixing zones for discharges. (1526)

Response: Mixing zones are allowed under Montana law. However, while standards may be exceeded within the mixing zone, an effluent in its mixing zone may not block passage of aquatic organisms nor may it cause acutely toxic conditions (ARM 17.30.602[14]). A mixing zone cannot exceed two stream or river widths and permit limits must be met at the end of the mixing zone. The discussion as to how the mixing zone in the Clark Fork River for outfall 001 was established is found

in the MPDES permit in Appendix D as well as the mixing zone for outfalls 002 and 004. Discussion about fish avoidance and how that relates to the mixing zone is also provided.

79. The public and decision-makers do not know where the discharge from Outfall 001 will occur or whether the proposed effluent diffuser will be able to achieve "near-instantaneous" mixing. Therefore, the significance, magnitude, and duration of impacts caused by discharges from Outfall 001 cannot be evaluated. (1223)

Response: Additional information on the design of the effluent diffuser was submitted (Hydrometrics 1999). Information has been incorporated into the statement of basis for the proposed MPDES permit (see Appendix D). Modeling showed that mixing would be nearly instantaneous (within 20 feet), that is, complete mixing would occur within less than two river widths (600 feet). This satisfies regulatory conditions about the mixing zone. The mixing zone would extend 100 feet below the point of discharge. Due to the quality and rapid mixing of the effluent, beneficial uses would not be impaired.

80. Page 13/14 states "ASARCO proposes to install an effluent diffuser which will be designed to reduce discharge velocities to less than 2 feet per second and facilitate mixing of the effluent and receiving water. Mixing will be nearly instantaneous, that is complete mixing will occur in less than 2 river widths. No instream monitoring is necessary since the effluent will be monitored prior to discharge."

We have several questions regarding this statement. First ASARCO has not submitted design specifications for the diffuser. The S.O.B. states on p. 13/14 that "final design of the diffuser will be based on site specific factors and must be submitted to the Department for final review and approval 60 days prior to construction." Without this information, the public and decision-makers have no way to determine whether this "near-instantaneous" mixing will occur, and therefore, whether the discharge will in fact be non-significant.

Second, the effluent limits and standards discussion seem to be based on the assumption that the effluent will mix with the entire volume of water in the Clark Fork. This assumption is unfounded. The Clark Fork River is a wide, slow-moving, dam controlled system near the Rock Creek project. A more likely scenario is that the discharged effluent will "hug" the bank and move downstream in a much more concentrated plume. ASARCO should be required to conduct a mixing test to analyze currents, flow paths, and the efficacy of the diffuser system and the results included in the revised draft permit.

Finally, the notion that no instream monitoring is necessary is wholly inappropriate. The only way to know if the effluent diffuser is working as expected, and that the effluent limits in the permit are in fact protecting beneficial uses in the river, is to sample water quality in the river. We believe a river/effluent mixing study and instream-compliance monitoring requirements must be added as "other conditions" to the revised draft permit. (1223)

Response: Surface water quality in the Clark Fork River would be monitored to evaluate the effectiveness of the diffuser and the potential impact on water quality. Please see the MPDES permit, Statement of Basis, Description of Outfalls, Section F Mixing Zone, for a complete discussion on the assumptions relating to mixing, and the requirements placed on the applicant regarding design submittal.

81. The diffuser...what size mixing zone is being requested? What do FERC and Washington Water Power have to say about a diffuser on their hydro project property? Last paragraph...the design study should be included in the DEIS. Where is it? (1196)

Response: The mixing zone would be 300 feet downstream from the diffuser, this is about one river width and the law allows up to as much as two river widths for a mixing zone. Avista's FERC license for the Cabinet Gorge hydroelectric project provides for the company to authorize certain types of activities within the FERC boundaries relative to their dams (FERC 2000b). Sterling will have to

request authorization from Avista to install the pipeline between the river and MT Highway 200, the make-up water well, and the diffuser.

The diffuser would be fixed at the bank on concrete thrust blocks and surrounded by cobble riprap to provide shoreline protection. It would lie in the river channel, perpendicular to the flow of the river (Hydrometrics 1997). The perforations of the diffuser system would be designed to reduce the discharge velocity to less than 2 feet per second, and allow mixing to occur across a broad cross-sectional profile of the river. This information has been added into the description of Alternative V in Chapter 2.

The final design for the diffuser will have to be submitted to DEQ for review and approval. USFWS expressed concern about providing clean access for bull trout past the mouth of Rock Creek to Noxon Dam in its Biological Opinion (see Appendix E). FWP has recently installed several fish traps below Noxon Dam that they will be using to capture fish to move them above the dam in an effort to expand the range of bull trout and other native migratory fish species. Hydrometrics did some modeling an showed that the water would mix with river water and reach below fish avoidance levels within 15 feet at high flow and 5 feet at low flow downstream from each port with a plume only about 2-5 feet wide from each diffuser port. As the diffuser ports would be between 10 and 14 feet apart, there would be large openings between the diffusers for fish to travel unhindered by the discharge. Nevertheless, the agencies would require that Sterling discharge the water from the southernmost ports first and gradually add ports to the north as the volume of water increased in order to leave a zone unaffected by any discharge along the north side of the river. Studies of bull trout in the Clark Fork River would help identify whether they were traveling only along the north shore or also over the diffuser. Revisions to the diffuser design and operation could be proposed at anytime, and the impacts, if any, would be reviewed routinely during the 5-year MPDES permit review cycle. Impacts to beneficial uses would have to be resolved either by reducing the discharge flow, treating to a higher water quality level, and/or some other solution to eliminate fish avoidance behavior should it occur. Changes to the approved permit would require some level of MEPA/NEPA analysis.

82. ASARCO proposes to discharge treated water to the Clark Fork River through an outfall and engineered in-stream diffuser downstream from Noxon Reservoir. Although no location for the outfall is indicated, the site would be within the Cabinet Gorge project boundary, possibly on WWP property, and would require approval of the Federal Energy Regulatory Commission. (1779)

Response: Thank you for your comment. The applicant would be required to obtain an easement from Washington Water Power (now Avista Corporation) after and if a decision was made by DEQ and Kootenai Nation Forest to permit the mine. Avista Corporation would consult with state and federal agencies as well as the Clark Fork Relicensing Team and then make a decision. This information has been added to Chapter 1.

83. We agree that use of a diffuser for the waste water discharge to the Clark Fork River is appropriate. We are concerned, however, about the establishment of effluent limitations using the full dilution value of the river (4,089 cfs 7Q10 or 3,100 7Q10?). We note that diffusers generally do not result in instantaneous mixing. The discharge is not likely to fully mix with the river for some distance. We believe a summary of the effluent limitations including appropriate mixing zone description and dilution flows should be disclosed in the FEIS. We also note that for unionized ammonia, dilution must take into account the change in pH and temperature of the river in relation to the discharge, and for metals must take into account hardness levels of the river. (1214)

Response: The proposed MPDES permit has been revised for a low flow of 365 cfs because of operational shutdowns of Noxon Dam at night and on weekends. Analysis showed upper concentrations would be below toxic levels within 6.5 feet and below non-degradation standards

within 20 feet at low flow or 243 feet at high flow. The mixing zone would be 300 feet below the diffuser. The applicant would be required to meet post-treatment water quality conditions presented in the MPDES permit. Hardness, temperature and pH are all considered in establishing permit limits.

84. Page 2-43: states that, prior to installation a design study would be performed to evaluate streamflow conditions and streambed characteristics at the selected outfall location. The diffuser design would be finalized after the study was complete, and an appropriate method of anchoring would be selected. (1223)

Response: Final design would be reviewed and approved by the Agencies to ensure that it met the parameters used in the analyses in this EIS.

85. Page 14 of the S.O.B. states that "because of the uncertainties involved in designing and implementing the impoundment seepage collection system, compliance with water quality standards will be monitored in compliance wells located downgradient of the capture system and mixing zone."

The statement would probably be more accurate if it read, "because seepage from the tailings impoundment will cause water quality standards violations in the ground water beneath the 325-acre tailings impoundment, compliance will be monitored downgradient of the capture system and mixing zone.F We believe the direct discharge of over 240 gpm of untreated, contaminated mine water violates of the Montana Water Quality Act, the Nondegradation Policy, the NSPS, and the conditions of the draft permit. Page 15 of the Draft Permit states that "samples taken in compliance with the monitoring requirements established under Part I shall be collected from the effluent stream prior to discharge into the receiving water." Discharges from the tailings impoundment do not satisfy this requirement.

Consequently, the tailings impoundment should be lined to prevent this untreated discharge, or compliance with water quality standards should be monitored in the ground water immediately below the tailings impoundment. The department appears to be permitting the degradation of high quality, Class I ground water in the 325 acres below the tailings impoundment, and in the 500'-700' feet of the mixing zone before samples are even collected. This type of unabated degradation violates conditions specified in the draft permit, and the constitutional requirements to maintain a clean and healthful environment, and therefore, cannot be legally authorized. (1223)

Response: The Montana water Quality Act authorizes the use of mixing zones [75-5-301(4), MCA]. Nondegradation criteria apply outside of a mixing zone. Please refer to the proposed discharge permit for specific compliance limits.

86. Page 1-11: "because of the design of the tailings impoundment and recovery well system, the discharge permit will specify a mixing zone in ground water in accordance with Montana's mixing zone rules (ARM 16.20.701 et seq.). These rules state that mixing zones must be the smallest practicable size, have a minimum effect on water uses, and have definable boundaries." An effective synthetic liner on the tailings impoundment would significantly reduce the size of the ground water mixing zone, and may possibly eliminate the need for one altogether. Therefore, in order to comply with Montana mixing zone rules of being the smallest practicable size, the Agency must evaluate a synthetic liner for the tailings impoundment. To reiterate, however, the Coalition believes that any mixing zone allowance violates the Montana State Constitution. Nevertheless, if the mixing zone law is somehow ruled constitutional, it must be explicitly followed by the Agencies. Any violation of water quality laws requires the Agencies to deny the project. ...36 CFR 228.8 mandates that all adverse environmental impacts be minimized, as long as the requirements placed on the operation to achieve that goal are "feasible." Neither the DEIS, nor the Agencies, can point to any evidence proving that a synthetic liner system is not feasible. Importantly, Courts have ruled that claims of economic hardship by a mining applicant do not suffice to invalidate Forest Service requirements imposed to protect the environment Clouser v. Espy, 42 F.3d 1522 (9th Cir. 1994). Despite these directives to prevent and/or minimize seepage to ground water from the impoundment, the Agencies admit on numerous occasions in the DEIS that seepage will occur and that it will degrade ground water quality:

Since there is a least a reasonable probability that the mixing zone will not be allowed, the revised DEIS must include an analysis of how 'the environment will be protected from the tailings seepage assuming that the mixing zone is not permitted (i.e. liner system, seepage treatment, etc.) Even assuming that the mixing zone is lawful (which the Coalition believes is not the case), the design specifications of the perimeter collection are critical because they will determine the size of the ground water mixing zone and the amount of ground water contamination it causes. The Agencies accept the fact that water quality standards will be exceeded within an "agency-approved ground water mixing zone". They also assume that downgradient ground water quality will not be affected beyond the mixing zone as a result of the ground water extraction and pump back system.

This assumption is unsupported by facts presented in the DEIS. The DEIS's discussion of the mixing zone and it's associated degradation of water quality is wholly inadequate. The Agencies have failed to disclose the size of the "agency-approved mixing zone" and the ecological impacts caused by degraded ground water in the vicinity of the 3254 acre tailing impoundment. (1223)

Response: Until the law is changed on the courts rule that mixing zones cannot be allowed, DEQ must review an MPDES permit application and develop a permit based on the existing laws. The liner issue was not dismissed based on economic hardships (see Chapter 2, Alternatives Considered but Dismissed). Alternative V addresses the same issues without some of the drawbacks (see Chapter 4) and the proposed MPDES permit is based on that alternative rather than Alternative IV in the draft EIS.

87. We question the assumed validity of the concept of "mixing zone" for "in ground water." When you mix poison water with clean water you get more poison water. The concentration of the poison, assumed to be non-toxic due to the mixing, would still be an unknown and therefore not in compliance with water quality laws. (2090)

Response: Please note that all discharge from the proposed mine would be required to meet effluent limitations in accordance with an MPDES permit from DEQ. These limits are set at levels to ensure compliance at the end of the mixing zone.

88. The permit application allows a mixing zone that is excessive of the norm, crosses the surface water reaches of Rock Creek and establishes monitoring wells an additional 250 ft. beyond its proposed delineation. (1780)

Response: The mixing zone complies with the requirements for a source specific mixing zone for ground water (ARM 17.30.518). It does not include Rock Creek.

89. RWMP (ASARCO 1995), Appendix D, Page 28-29, 5.1(d). A standard ground water mixing zone for leakage from an impoundment, has a designated boundary 500-ft. hydraulically downgradient of the source (MBHES,1994. Mar Notice # 16-2-449). The permit for Rock Creek indicates (pg. 4 fact sheet) "that the mixing zone shall not exceed 750 ft downgradient of the toe of the (ultimate) tailings impoundment footprint." Is this then an extraordinary sized mixing zone being requested? (1780)

Response: The comments refer to a standard mixing zone which may be authorized under ARM 17.30.517. The applicant had requested a source-specific mixing zone which is authorized under ARM 17.30.518.

90. RWMP (ASARCO 1995) pg. 3 - 30, 3.1.6 Tailings seepage recovery. The seepage collection system doesn't mean squat when you consider that the mixing zone for the tailings pond extends beyond portions of Rock Creek in the eastern perimeter. Is the mixing zone an area beyond the recovery wells responsibility? (1780)

Response: If required, recovery wells would need to be located just upgradient of the mixing zone boundary.

91. The mixing zone designated for the tailings pile is 750 feet, which encompasses parts of both Rock Creek and Miller Gulch. Why isn't a discharge permit required for the water from the tailings pond going into Rock Creek and Miller Gulch? (1248)

Response: Rock Creek appears to be perched on impermeable bedrock in the vicinity of the proposed tailings disposal facility. The static ground water level is approximately 40 feet below the creek.

Therefore, while there is a component of ground water flow towards Rock Creek, the creek is not hydraulically connected to the aquifer in this area. Likewise, the cone of depression from a hydraulic containment system should not interfere with the base flow in Rock Creek at reaches adjacent to and downstream of the tailings disposal area. Under Alternative II, there would be a large hydraulic head buildup in the proposed tailings impoundment. This increase in head could rise above the elevation of Rock Creek. In this case, there potentially could be flow into the creek. Under Alternative V, there would be no hydraulic head buildup in a tailings disposal facility because this alternative eliminates the need for ponding water on top of the tailings. Therefore, the hydraulic gradient would not be able to increase to levels that would cause ground water to flow into Rock Creek. In either case, compliance monitoring wells would be strategically located between the tailings facility and the river and Rock Creek to document water quality conditions in this area.

92. The 325-acre mixing zone proposed for seepage from the tailings impoundment contradicts the definition for mixing zones in the permit and violates the laws governing mixing zones, and therefore will be illegal if permitted as proposed. Consider the following: Page 4 of the draft permit defines mixing zone as "a limited area of a surface water body or aquifer where initial dilution of a discharge takes place and where certain water quality standards may be exceeded. The 325 acre tailings impoundment, plus 500-700' of mixing zone downgradient does not meet this definition.

The Montana Water Quality Act, 75-5-301-requires that mixing zones be "the smallest practicable size and have the minimal practicable effect on water quality." Because the tailings impoundment is unlined, and because the department will allow discharges from the impoundment to result in water quality standards violations beneath the entire tailings impoundment area, plus 500'-700' downgradient, the mixing zone does not comply with existing regulations and must be considered illegal if approved as proposed. To satisfy these requirements of 75-5-301, the impoundment must be lined.

Also, the 750 foot mixing zone discussed in the S.O.B. may actually intercept the channel of Rock Creek. The S.O.B. does not even consider discharges to Rock Creek, yet the proposed mixing zone may intercept it. The lack of adequate discussion of this issue violates MEPA/NEPA; the untreated discharge into Rock Creek system violates state and federal water quality laws and regulations. (1223)

Response: The mixing zone complies with all applicable water quality statutes and regulations. The mixing zone for Outfall 002 is in ground water; it does not effect surface water.

93. It is our position that any point source discharge of pollutants to waters of the United States, not directly associated with a precipitation or snow melt event, (i.e., dry weather flows), must be permitted under a "traditional" NPDES permit. This means that any dry weather flow from mine adits, seeps, french drains and culverts are mine drainage or process wastewater, and cannot be covered by a storm water permit. A "traditional" permit must be written for these discharges including both technology based and water quality standard based requirements where applicable. Water diverted around the mine without contacting any disturbed area, and does not mix with mine or process water may not require an NPDES permit. Also during wet weather flows, most of the areas at an active mine must be covered by "traditional" NPDES requirements... It is also important to note that these discharges can be covered by storm water requirements only if they do not combine with "traditional" sources prior to discharge.

... any discharge of pollutants, including acid mine drainage, must be regulated by a traditional NPDES/MPDES point source permit. This has not been proposed for the project's discharges to Rock Creek and Miller Gulch. At best, the draft permit proposes minimal storm water "best management practices" to meet the Act's requirements. However, the imposition of storm water only, rather than mine drainage requirements for seepage from waste rock, has been found to violate the Clean Water Act. As such, the permit must be modified and resubmitted, or rejected. (1223)

"Storm water" discharge to Rock Creek must be handled with a full MPDES permit. Waste rock discharges from all tunneling processes needs a permit, and a separate storm water permit for construction and shop runoff must be required. (1744)

Obtain additional discharge permits for mine process water, storage water, and tailings seepage and discharge into Miller Gulch, Rock Creek, and the Clark Fork River. (1925)

ASARCO should be required to obtain a MPDES permit for the discharge into the West Fork of Rock Creek.

An MPDES permit should be required in addition to a storm water permit for runoff from the pavement. (1936)

Obtain more discharge permits for the tailings, mine storage water, & waste water, & waste rock dumps. (1635) (1994)

With Rock Creek being one of the last holdouts of the bull trout in the Lower Clark Fork, this stream needs all the improvement it can get, not further aggravation by oil, slats, and whatever else is in "storm water" runoff. Please address this seriously in its own discharge permit. (1637)

ASARCO should apply for additional discharge permits for the tailings, mine storage water and waste rock dump sites. (1359)

A discharge waste water permit should be required for water from the adit and water contacting waste rock, both of which may be acidic, and may contain heavy metals, blasting residues, and sediment. (1196)

Response: To the best knowledge of the agencies, all wastewater which either contacts, or potentially contacts, or is derived from mining or milling operations whether or not those flows are dry or wet weather flows, have been addressed in the MPDES permit. Effluent limits are derived from the more stringent of either technology or water quality based effluent limits. The agencies have identified the potential for a separate storm water MPDES permit in the future for those areas not related to active mining or for run-on flow which is diverted from the site.

94. Ground water Percolation from the Mill Pad and Adit Areas: Seepage from the waste rock in the mill area and adit entrances is a discharge of mine drainage that must be regulated under a traditional point source permit. However, any release from these areas that is not hydrologically connected to surface water must meet all applicable ground water protections requirements under Montana law and regulation. These requirements must be included in the revised draft permit. It should be noted, however, that most, if not all, of the waste rock seepage will likely reach Rock Creek - requiring that it be covered under a traditional point source discharge water permit.

As indicated by the above discussion, we believe that discharges from 1) the mill site area, 2) seeps and springs associated with underground mine workings, and 3) seepage from all waste rock piles must be covered under the MPDES permit. The failure to include these discharges in the draft permit violates the Clean Water Act. Federal courts and the EPA have determined that polluted seepage from active (and historic) mining areas that eventually reaches surface waters must be covered under point-source NPDES permits. In other words, dischargers cannot avoid NPDES requirements by allowing pollutants released from mine workings to seep into ground water that is hydrologically connected to surface waters. (1223)

Response: The potential for seeps and springs, the potential quality of mine adit discharge, and the effects of residual nitrogen in waste rock associated with blasting activities are properly disclosed in the EIS. Please see MPDES discharge permit for details related to identified project outfalls. DEQ cannot add outfalls to the permit that have not been requested in a MPDES permit application. However, should mine seepage reach the surface at locations not included in a permit, the company would be in violation of the state water quality laws and would be required to permit those discharges.

95. Uncaptured seepage from the tailings impoundment will enter Rock Creek and Miller Gulch as well as the Clark Fork River. Why aren't the discharges to the surface waters of Rock Creek and Miller Gulch listed in the MPDES permit? (1248)

The permit application indicates that not all seepage from the impoundment will be collected. Again, the long term benefits of a lined impoundment must be considered. But given current suggestions that some polluted water will enter ground water connecting not only the Clark Fork River but also Rock Creek and Miller Gulch, discharge permits for flows to these lesser waters must also be required. (1638)

Maps indicate known ground water flow in three different directions, but the discharge permit is written only for the Clark Fork River. Additional permits for flows to Rock Creek and Miller Gulch need to be required. (1675)

Response: The maps are based on surface drainage patterns. The discharge from the tailing storage facility is to ground water which underlies these surface features and ultimately recharges the Clark Fork alluvial aquifer. There is no discharge from the tailing storage facility to either Rock Creek or Miller Creek, therefore, a permit is not necessary.

96. Apndx D. 9.0 pg. 45. para. 1. The first sentence here @ Rock and Miller Creeks is as bogus an assumption as can be made, and is akin to stating that Troy water does not reach Lake Creek. Rock and Miller Creeks must be designated as outfalls in the MPDES permit. There is NO DATA that effectively shows that they are NOT hydrologically connected to the ground water systems within the tailings impoundment. Ground-truthing while very limited in what it reveals about the area in question would tend to indicate otherwise. (1780)

Response: The hydraulic connection between the aquifer and the Clark Fork River is discussed in detail in Chapter 4, and is presented in several figures in the final EIS. All impact analyses assumed a connection between the aquifer and the river. See response to next comment.

97. Miller Gulch: Potentiometric surface maps and geologic data presented in the Draft Permit, S.O.B., and the WMP clearly indicate a component of the ground water flow system in the tailings impoundment area will reach the South Fork of Miller Gulch. In addition, p. 40 of the Evaluation of the Tailing Impoundment Seepage Study in the WMP states that "ground water contributions to surface water flow in Miller Gulch are limited to localized damp boggy areas along the South Fork of Miller Gulch" and that "the perimeter seepage collection system will intercept the shallow ground water that could potentially discharge to the South Fork of Miller Gulch."

These statements demonstrate that surface water in Miller Gulch is hydrologically connected to the ground water associated with the tailings impoundment. Consequently, any seepage from the tailings impoundment that reaches the S. Fork or mainstem of Miller Gulch must be considered a point source discharge in the draft permit. (1223)

Response: The MPDES permit process requires the applicant to specifically identify all discharge points and the receiving waters, discharge to other location is expressly prohibited in the permit. There is no information in the EIS that would support a conclusion that seepage from the impoundment would flow into the South Fork of Miller Gulch. The South Fork would receive storm water runoff, under certain storm events. The outfall is identified in the proposed MPDES permit.

98. Ground water below the tailings impoundment: The Draft Permit, the S.O.B and the WMP all recognize there will be mine-related discharges to the ground water system below and downgradient of the tailings impoundment. Yet the cover page of the Draft Permit only mentions the Clark Fork and the West Fork of Rock Creek. The alluvial ground water, and other receiving waters discussed in this section, must be covered by the MPDES permit, and thus should be listed as receiving waters in the Draft Permit in order to accurately reflect all discharges from the project area. (1223)

Response: The cover page of the MPDES permit has been modified to include ground water.

99. The permittee and the department have failed to account for several discharges that will occur during operation and after closure of the Rock Creek Project. To correct this problem, the department should designate outfalls, establish effluent limits, and conduct Nondegradation significance determinations for discharges state waters. These determinations, and all other water quality reviews, must be based on the 7Q10 flows: (1223)

Response: Please also see Chapter 4 of the EIS, specifically Tables 4-25A and 27A titled "Estimated Water Quality in the Clark Fork River at Average Flow Resulting From Proposed Discharge" and "Estimated Water Quality in the Clark Fork River at Low Flow Resulting from Proposed Discharge" for estimated water quality in the Clark Fork River at average and low flow resulting from the proposed discharge. These tables not only provide the estimated water quality, but also provide the Montana Water Quality Standards and the trigger values for each parameter.

100. The permit application is incomplete and does not record all outfalls necessary to show compliance with the CWA, specifically outfalls to Rock and Miller Creeks. (1780)

As discussed in my Dec. 4, 1995 comments, attention to the reality of metal loads increasing in Rock Creek form a variety of sources is wholly inadequate. MPDES permits for the mill site, for the waste rock dump, and for the mine itself should be required. (1504)

ASARCO should be required to; have a discharge permit for so-called "storm water". Since the mill would sit on waste rock from the Mine, run-off will pick up contaminants from the rock and should be treated like mine waste water. (1740)

State and federal law requires that all discharges to state waters within the project area must be authorized under the MPDES permit. The permittee and the department have failed to account for several discharges to state waters that will occur during the operation and after closure of the Rock Creek Project. These include discharges to the mainstream of Rock Creek, Miller Gulch, and the ground water aquifers below, and adjacent to, the mine workings.

In addition to the tailings impoundment seepage discharge to Rock Creek, mine drainage and storm water from the "confluence mill site" the Agencies preferred alternative (Alternative V), and adit area waste rock will be directly discharged at the confluence of Rock Creek and the West Fork, making Rock Creek a receiving water for the project. This point is emphasized on p. 3-7 of the WMP, which states that "there will be no discharge of mine water to Rock Creek with the exception of storm water runoff from the mill site and adit areas." It should be noted that this reference to storm water is in error since such discharges are considered mine drainage. Considering these facts, both the West Fork and the mainstem of Rock Creek must be listed as receiving waters for the project. (1223)

Response: Please see proposed MPDES discharge permit in Appendix D for effluent limitations for all outfalls.

101. A waste rock dump is planned at the mine adit and waste rock will be used as the building pad for the processing mill, shops, parking lots, etc. This rock is a result of mining, a byproduct of the mining process, so a full discharge permit should be required for the mill and mine adit water, not a storm water permit as proposed. (1675)

A discharge permit should be required for the mill and mine adit water. This water would be in contact with huge amounts of potentially acid generating waste rock. Oils, solvents and lubricants may be a part of mill site runoff. Water from both sources needs to be monitored and treated. Simply obtaining a storm water permit as proposed is inadequate. Because millions of gallons of mine workings water may be stored underground and could escape through rock fractures into ground water, a discharge permit for this water may be needed as well. (1638)

Response: All mill and mine water would be recycled and reused in the mill circuit, or would be treated to meet MPDES discharge requirements before disposal. Data that have been collected to date suggest that the waste rock associated with the mine is not acid producing, but would be characterized by elevated total suspended sediment and nitrogen compounds. Mine adit water and water that is

treated and discharged to the Clark Fork River would be monitored according to an Agency approved monitoring plan.

102. We note the potential for seepage from the proposed 18 by 18 by 40 foot (97,000 gallon) sump proposed for the exploration adit (page 2-36). There is a significant potential for discharge to ground water from this sump. A discharge permit should be considered for this sump and Montana ground-water nondegradation rules should apply. Ground water monitoring of this facility should be required. (1214)

Response: During construction of the underground reservoir and sumps, bedrock fractures would be grouted to minimize the potential for seepage out of the reservoir and sumps. Based on water quality data from the Troy mine underground reservoir, the concentration of metals would likely be low. The proposed underground reservoir and sumps would be beneath the Copper Gulch watershed. To ensure that seepage from the reservoir does not impact surface water quality, water quality monitoring sites would be added in the Copper Gulch and East Fork Bull River drainages. Also a 1,000-foot horizontal buffer along the north and south ore outcrop zones was added to Alternative V along with a 450-foot vertical buffer between mine workings and the ground surface. If impacts were detected, additional grouting could be conducted, or underground water storage discontinued.

103. Page 9 - Outfall 007 (or some such number) This outfall is not provided in your permit but is one that we feel is missing. The description of the discharge from Outfall 001 on page 2 of the Statement of Basis states that it contains "domestic wastewater". The DEIS indicated that a package sewage treatment plant would be included at the mill site to treat mill site sewage, and that this plant would discharge its treated effluent to the tailings impoundment. If the Rock Creek site is a net precipitation area, a certain amount of wastewater from the tailings impoundment could be treated and discharged through Outfall 001. If this happens, diluted domestic wastewater could be discharged through Outfall 001.

Dilution cannot be used to comply with technology based standards. If there is any chance that effluent from the sewage treatment plant will reach waters of the U.S., then that discharge must meet technology based standards prior to any dilution. If the Rock Creek site is a net precipitation site and if any wastewater from the tailings impoundment is allowed to be discharged, then secondary limits must be established for discharge from the sewage treatment plant at the point of discharge to the tailings impoundment. This would be an internal discharge point (Outfall 007?). The limits would be as required in 40 CFR 133.102.

These limits need to be placed in the permit in this section, appropriate monitoring requirements placed in the self-monitoring section and everything adequately explained in the Statement of Basis. (1214)

Response: Please see proposed MPDES permit.

104. Revised Water Management Plan (ASARCO 1995), pg. 3 - 17, plate. Emergency spillway pipe as noted in diagram must be considered a point source for discharge. Where it spills to must also be addressed. (1780)

Response: Please see proposed MPDES discharge permit.

105. The permit application does not list the overflow pipe and seepages from the proposed bio-reactor as point source outfalls. (1780)(2026)

Revised Water Management Plan (ASARCO 1995), pg. 3 - 29, plat map. The proposed treatment facility and the adjacent actual treatment contingency area need to be permitted under MPDES. Furthermore, as it appears that the borrow area is so close to these facilities, it is incumbent on ASARCO to prove that there will not be discharges from these facilities to Rock Creek. Would these facilities need their own, or come under the auspices of a "mixing zone"? (1780)

Response: Alternative V has been developed in response to public comment and the borrow area would not be used. There would be no discharges from the treatment plant to Rock Creek.

106. Regarding seasonal underground mine storage, will it be stored during high flows to prevent treatment system overload, or discharged to take advantage of high flows for dilution purposes? This must be specifically explained in the revised draft MPDES permit. In addition, the relation to water quality impacts from underground storage must be more fully analyzed. (1223)

Response: Excess ground water inflow to the mine would be stored for later use as makeup water to the mill, or for discharge during higher river flows, and treated to meet MPDES discharge permit requirements. See Chapter 4 for a discussion of the impact of mining on ground water quality and the anticipated quality of mine water prior to treatment.

107. RWMP (ASARCO 1995) Appendix B. Hydrometrics letter 3/10/95 , pg.1 para 3, non-deg.: Insufficient information on hydrologic analysis of potential effects of underground storage. Why not, they're storing water at Troy? (1780)

Response: Water is being stored in the underground workings at Troy. Please see Chapter 4 – Hydrology for more information.

108. RWMP (ASARCO 1995) Appendix B. LETTER B. THOMPSON to TOM REID 12/20/94, pg. 2. Water storage in mine.....question about quantity and concentration of the solution. (1780)

Response: The agencies collected additional samples for whole rock analysis as well as additional water quality data from Troy adit discharge. These data are presented in the supplemental and final EIS.

109. In addition, the draft permit violates a number of Clean Water Act provisions. Perhaps most importantly, the draft permit fails to consider mine drainage from seeps and springs associated with mine workings, as well as mine drainage from waste rock piles, as point sources that must be regulated by a MPDES permit. This directly contradicts national and Region VIII EPA policy and requirements. To correct this problem, the department should identify and designate outfalls, establish effluent limits and conduct Nondegradation significance determinations for all state waters effected by discharges from the project. (1223)

Response: A DEQ study conducted the summer of 2000 provided more information regarding the potential for the creation of springs and seeps from water stored in the underground workings during and after mining (DEQ 2001). As a result, some buffer zones have been incorporated into Alternative V to address this issue. A 1,000-foot horizontal buffer zone would be required along the north and south ore outcrop zones to reduce seepage downgradient of the mine workings. In addition, a 450-vertical buffer between the mine workings and the ground surface would be required to minimize the risk of hydrofracturing which could create new pathways to the surface and allow mine water to reach the surface and form new springs and seeps. These buffer zones would not be reduced unless Sterling could definitively demonstrate that lesser buffers would be as effective in preventing the creation of springs and seeps. If a new spring or seep did develop as a result of mine water reaching the surface, then Sterling would have to apply for a discharge permit for each spring and seep so created. Monitoring of springs and seeps in the vicinity of the mine would be required and identification of new springs and seeps would also be required.

110. Springs and seeps created by seasonal underground storage of mine water: Seasonal storage of excess mine water in the underground mine workings is likely to result in the uncontrolled discharge of contaminated mine water to area surface waters in the form of seeps and springs. The following statements from the DEIS demonstrate this point:

Page 4-36 states that "when mining is complete and the adits are sealed, the mine would fill with water until steady state conditions were reached. It is uncertain where outflow from the mine would discharge."

Page 4-44 states that "assuming that underground fractures or fracture systems intercepted the reservoir, the potential for seepage from the reservoir to ground water exists. The rate of seepage cannot be determined. Seepage could possibly exit to the surface at undetermined locations in the forms of springs or seeps."

Page 4-44 states that "if the mine water discharge did not meet permit requirements, ASARCO proposes to seal the adits following cessation of operations. Adit sealing is a technique used to control and redirect mine water flow; it does not prevent mine water discharge. Instead of the one or two point source discharges at the mine adits, mine water discharge would be more diffuse, occurring as springs and seeps, discharge to valley fill ground water systems and/or baseflow in streams."

The Draft Permit has not addressed any of the discharges that will be caused by underground water storage sealing the mine adits, or their associated water quality impacts. These outfalls must be included in any future Draft Permit, recognizing that newly created seeps and springs must be authorized under the traditional NPDES permit just like other mine water discharged from the project. (1223)

Response: The potential for seeps and springs and the potential quality of mine adit discharge are properly disclosed in the EIS. Mine adit discharge, if present, would require treatment to meet established discharge standards before release. The MPDES permit addresses post-treatment water quality requirements.

Table 4-22A displays the post operational mine water quality data from the Troy Mine where the mine water is currently being discharged to the tailings impoundment. This is the best data available for predicting the post-mining water quality at the Rock Creek project given the similarities between the Rock Creek and Troy Mine orebodies, tailings, and mining methods (see Chapters 3 and 4, Geology, for more information). As long as the mine water was being discharged to the Clark Fork River it would be treated until it could meet MPDES discharge limits without treatment. Seepage from the mine, however, would be subject to ground water standards, not surface water standards nor MPDES limits based on surface water quality standards. Background ground water quality data on which limits for the seepage could based would be obtained from water entering the evaluation adit and the mine after mining commenced. Water would be collected from drill holes prior to blasting to avoid nitrate contamination as well as from drill holes drilled below the adit and mine workings for the express purpose of sampling ground water along fractures encountered during adit and mine construction. There is no way to accurately obtain this information before the mine is developed given the random nature of the fracturing system through which the majority of the ground water moves through the bedrock and orebody.

The water flowing through the bedrock and orebody naturally comes in contact with the metals in the rock. The mine would provide a more oxidizing environment that did not exist naturally and would allow releases of some metals that would otherwise not occur. (Please keep in mind that most of the metals in the mine water would be in the suspended sediments and not dissolved in the water.) Sampling at the Troy Mine indicates that oxidation of mineralized mine walls is minimal, and that only copper would be present in dissolved form in concentrations greater than aquatic life criteria (a surface water standard). The water in the Troy Mine, however, meets ground water standards and might possibly also meet non-degradation standards with regards to ground water.

Collecting data during completion of the evaluation adit would improve the predictability of long-term seepage from the mine and our understanding of mine water quality. Nevertheless, the evaluation adit would intersect a limited number of fractures relative to the mine workings. Potential impacts of the underground reservoir to be used during mining and the post-mining pool of water are discussed qualitatively in Chapter 4, Hydrology. The impacts cannot be quantified but the agencies

acknowledge that there is some potential for impacts from the underground reservoir to existing downgradient springs and seeps and in the creation of new springs and seeps. Any water in the mine workings might eventually reach the surface through cracks and fractures already existing; ground water could have used some of those routes to reach the surface anyway over time had the mine not been built. Nevertheless, the mine would open new pathways of fractures not currently connected and so water could reach the surface at places it currently cannot get to. It is, however, impossible to accurately determine how much water, if any, would reach the surface and where it might surface, but it is reasonable to expect it (after decades or centuries) to eventually reach the Clark Fork River alluvium when it does not surface in springs and seeps as it probably does now. Some general concepts of ground water flow have been included in Chapter 4, but cannot be confirmed until additional hydrogeologic monitoring is done from within the evaluation adit and mine workings as described in Appendix K.

Due to low bulk permeabilities in bedrock, flow rates would likely be very low, although flow would be greater in the connected fractured pathways. During mine operation the reservoir in the mine is expected to be used seasonally and seepage would be minimized by grouting the floor and walls. The mine would also be regrouted prior to closure to minimize post-mining seepage. A 1,000-foot buffer zone would be maintained at the north and south ore outcrops to minimize the creation of new springs and seeps from mine water stored in the mine after closure; the buffers could not be reduced unless Sterling had demonstrated to the agencies satisfaction that a lesser buffer would provide the same level of protection. Potential impacts to ground water and to surface waters from springs and seeps would like be insignificant. No such impacts have been documented at the Troy Mine. All springs and seeps downgradient of the mine would be resurveyed during evaluation adit construction and would have to be regularly monitored during and after mining to determine if mine drainage was impairing any of these resources. Additional surface water quality monitoring sites would be added in the Copper Gulch and East Fork Bull River drainages as well. If surface water quality impacts were identified, it may be necessary to regrout the reservoir area or implement other new technologies that might have been developed to reduce drainage from the mine. Additional details regarding adit closure have been added to the Alternative Descriptions in Chapter 2.

111. Finally, the DEIS does not include a water management plan which is being developed separately to meet Montana requirements. Presumably, the water management plan will be helpful in elucidating what the potential for water quality problems are, and how catastrophic situations would be dealt with in the event they occurred. Absent this type of information, we do not believe the DEIS is complete, and unless it is included in the FEIS we do not see how all the necessary information would be available for choosing an action alternative. (1445)

Response: The water management plan was available for public review and comment before finalizing the EIS. A revised water management plan based on Alternative V has also been included in the final EIS.

112. Page 2-47: Erosion and Sediment Control: Storm water discharge permit: Why are storm management plans not in the DEIS? Storm water handling has direct bearing on the natural and human environment. The public must be allowed to evaluate and comment on adequacy of the plan. The DEIS states that "As part of this permit, ASARCO would be required to submit a storm management plan for DHES approval. This does not adequately ensure that the plan would be properly evaluated and rejected if inadequate. It also does not provide any idea how the DHES will evaluate the plan or any assurance that evaluation, if performed, would be adequate. The following statement is inadequate, "This plan would describe the methods to minimize and control runoff contamination." How will these concerns be addressed? (1288)

Hydrologic Measures. Where is this revised water management plan and why is not included for review along with this DEIS? (1196)

No Storm Water Pollution and Prevention Plan (SWPPP) is available for review. One is proposed at an undisclosed future time for department review and approval. The SWPPP is crucial part of this project. Without the SWPPP calculations, routing, and control for storm water, many of the most critical features, and potential failure areas, of the project will be based on assumptions and averages. (2084)

Page 2-49: see ASARCO's storm water plan. Is there one. Where can I find it? (1288)

As I understand it (p.2-48) a storm water management plan has not been submitted for approval. If this is true, how can the EIS be approved? The potential impact of storm water cannot be properly evaluated. (1914)

Response: Current law does not require the storm water plan to be prepared at this time. First, the EIS process must select which alternative if any, is to be developed. Then a storm water management plan would be prepared to address the site-specific details of a selected alternative. Finally, based on review of the application for a storm water permit, the DEQ determine if regulations are addressed and met by the submittal. Please note that the storm water permit process does not typically include a solicitation for public comments. These documents are a matter of public record however, and are available for public review and comments will be accepted by DEQ.

The storm water management plan was a component of the applicant's revised Water Management Plan (ASARCO Incorporated 1995) for the draft MPDES permit application which was based on Alternative IV as described in the draft EIS. The water management plan was further revised to reflect Alternative V requirements (ASARCO Incorporated 1997d) and incorporated into Alternative V in the supplemental and final EISs. Additional description of storm water management has been incorporated into the alternative descriptions in Chapter 2 and analysis into Chapter 4, Hydrology. Two storm water outfalls are included in the proposed MPDES permit (see Appendix D).

113. The description of the storm water runoff control plan to protect Rock Creek is inadequate. It is not possible to evaluate whether this will protect the creek or not. This must be spelled out more clearly. (2066)

Adequate storm water management is not provided. (1290)

Response: As detailed in Chapter 2 of the EIS, water erosion control measures are described in Sterling's permit application and water management plan on file with the Agencies. In addition, as part of the MPDES permit requirements, the applicant would not be allowed to contribute sediment to the Rock Creek system directly attributable to their facilities during the construction process or the life of mine operation. As part of the applicant's water management plan, a drainage plan has been devised to intercept, convey, and treat all runoff from the proposed facility.

Adequate storm water management would be required. Two storm water outfalls have been proposed (see Appendix D). Storm water control measures are discussed in Chapters 2 and 4 of the EIS. The

water balance was developed to be used as a tool not only for operational water handling and management, but for the handling and management of extreme water volumes based on climatic variations. In the case of extreme climatic conditions, the applicant has prepared a storm water management plan as part of its mine permit. This document is on file with DEQ. The proposed facilities would be designed so that runoff from the surrounding area is directed away from the mine area. The proposed diversions, as well as proposed mine facilities are designed to convey and contain runoff associated with the 100-year/24-hour event.

114. The applicant and/or the agencies have misclassified numerous "mine drainage" discharges as "storm water runoff" to be regulated in the Storm water Management section of the draft permit. As noted above, many of these discharges are in fact "mine drainage" that must be re-classified and treated as traditional MPDES discharges, including effluent limits and a Nondegradation significance determination. Specifically these include discharges from sub-basin A, C, and D, as presented in the S.O.B.:

Sub-basin D: Page 3 of the S.O.B. describes storm water discharges from sub-basin D to include the mill platform, underdrains, and associated structures. It also contain numerous sources of mine drainage, including 1) water in contact with the waste rock used to construct the mill pad, 2) the coarse ore storage area, and 3) tailings/water in the thickener and emergency dump pond.

Sub-basin A: Page 3 of the S.O.B. indicates these discharges include storm water from the adit entrances and service area. These also represent sources of mine drainage, particularly since the adit entrance platforms and mill pad will be made from waste rock.

The description of storm water outfalls in the S.O.B. is not consistent with the descriptions of the same outfalls presented in the draft permit and in the WMP. For example, the draft permit repeats the same description for all four storm water outfalls, saying that each one of them includes runoff from the mill area. In the S.O.B., sub-basin A includes storm water from the adit entrances and service area. In the WMP map, that area is referred to as sub-basin C. (1223)

Page 6 - Outfall 006 The description for this outfall states that it is non-effluent storm water from sub-basin C. A review of Exhibit 2 of the Revised Water Management Plan shows that an area around the service and conveyor adits is located within this sub-basin. If there is any ore, waste rock, etc. that is within this adit area that comes into contact with precipitation, the runoff becomes mine drainage, and if that commingles with non-effluent storm water from other parts of the sub-basin, it all becomes effluent guideline mine drainage and needs to be treated as was discussed for Outfall 003. (1214)

The permit application lists the water from sub-basins C and D incorrectly as storm water runoff when it should be listed as an outfall of process water to Rock Creek.

RWMP (ASARCO 1995) Appendix B. pg. 6, # 18. Discussion on outfalls. See conflicting info on permit application pg. 3 Outfalls # 003, sub-basin D.....outfall # 006, sub-basin C.....should not be considered storm water areas w/direct discharge sans treatment to Rock Creek. Also, outfall # 004, sub-basin A should be treated like the prior two if the adit and service areas are part of this outfall, this is not indicated as such on Hydrometrics exhibit # 2, map in RWMP/ MPDES pouch. (1780)

Page 5 - Outfall 003 We are not sure that we are in agreement with your conclusion that runoff being discharged through this outfall is strictly non-effluent guideline storm water. Based on Exhibit 2 (Storm Water Collection and Diversion - Mill and Adit Site) contained in the Revised Water Management Plan, it appears that sub-basin D contains coarse ore storage and secondary crushing. Any runoff coming into contact with these areas would be classified as mine drainage (see 40 CFR 440.132(h) and 440.104(a)). Any commingling of effluent guideline mine drainage with other non-effluent guideline storm water in the sub-basin would result in all of the discharge being

classified as mine drainage. Runoff from this sub-basin needs to be verified as being non-effluent guideline storm water or effluent guideline mine drainage.

Page 3 of the Statement of Basis gives a description of what is in sub-basin D, including the mill platform (not sure what this is), underdrains (from where?) and associated structures (coarse ore storage?) It states that storm water will report to a lined detention pond sized for the 10-year, 24 hour storm event, with flow in excess of this event to be "by-passed" to the West Fork of Rock Creek. If this is mine drainage, as we suspect, the size of the lined detention pond needs to be better described. You should also state the amount of precipitation that constitutes a 10 year, 24 hour event and the location where this event is to be measured. The "discharge" from this detention pond would still have to meet water quality standards applicable to Rock Creek.

The permit needs to also require that some sort of operation plan be developed outlining how the pond will be operated. Within 24 to 48 hours after each storm event of less than the 10-year, 24 hour duration, the pond needs to be emptied to the point that capacity is available for the 10-year, 24 hour event. Because the discharge from the pond will probably be permitted as mine drainage, the storm exemptions provisions at 40 CFR 440.131(b) should be included in the permit and explained in the statement of basis.

If this is mine drainage, specific effluent limits must be stated in the permit in Part I, Section C.3 for discharges from Outfall 003. (1214)

Response: All of the outfalls in the draft and proposed MPDES permits are considered either process water or mine drainage. Under the draft MPDES permit, water would only have been allowed to discharge in response to precipitation events from Outfalls 003, 004, 005, and 006; hence they were referred to as storm water outfalls. However, under Alternative IV the mine portal would be sloped such that all surface drainage would drain through the underpass to the mill site. Hence it appeared as an island between sub-basins C and D resulting in the need for several storm water outfalls.

Concerns about mixing storm water and process water as well as operational concerns resulted in several changes in the layout and water management plan for the mill site and the outfalls to be covered by an MPDES permit. The MPDES permit was modified as well. Under Alternative V, the mine portal has been moved west of FDR No. 150 and would be located at the north end of the mill site, eliminating the underpass and mine related disturbances within sub-basins C and D. The three of the four outfalls mentioned above were eliminated under the proposed MPDES permit based on Alternative V. Storm water falling on the mill site would report to the emergency dump pond sized for a 100-year/24-hour event. Water seeping through the mill site would report to the mill underdrain containment and storm water retention pond located below the mill site. Generally water in this pond would be pumped back up to the mill for use as process water. The pond would be sized to contain the maximum volume of waste water that would be generated and stored in the pond during a 24-hour period and the maximum volume of additional waste water and storm water generated by the 10-year, 24-hour event (2.8 inches of precipitation in 24 hours). Discharge from this pond (Outfall 004 in the proposed MPDES permit) would be limited to the period April 1 to July 1 or when a storm event exceeded the 10-year, 24-hour event to ensure sufficient flow for dilution. This outfall has conventional numeric limitations as well. See the proposed MPDES permit and Statement of Basis in Appendix D for more information.

115. I strongly recommend that the lined pond in Sub basin D be increased in size to accommodate the next higher precipitation event above the 10 yr 24 hr event. (25 yr 48 hr) If you would review the precipitation records over the last 30 years or more from Trout Creek to Heron reporting stations I believe you will find evidence supporting the increase in size of pond. Heron records are closer to the amount of precipitation Noxon receives. (1455)

Response: Water storage and conveyance structures have been increased in size, to handle a 100-year/24-hour storm event, although regulations can only require sizing for a 10-year/24-hour event.

116. RWMP (ASARCO 1995), Appendix B. # 13 Emergency dump pond located immediately downgradient of Mill site and designed to provide primary storage for emergency events / sized to contain 10-yr/24 hr storm is too close to Rock Creek! (1780)

The mill site emergency dump pond was stated in the water management plan to be sized for the 10-year/24 hour storm. In the DEIS it is stated that typically the worst events are the rain-on-snow events. Rain-on-snow events could result in considerably greater volume of runoff. How would this volume compare with the 10 yr/24 hr design volume? (1214)

Response: The emergency dump pond has been increased to handle a 100-year/24-hour storm event under Alternative V and is located within the mill site. The mill underdrain containment pond located below the mill pad is located outside of the 300 Streamside Management Zone (SMZ) which is considered adequate. Under Alternative V the MPDES limits discharges from this pond between April 1 and July 1 or when the storm event exceeds the 10-year, 24-hour storm event or its snowmelt equivalent.

117. The S.O.B. and draft permit designate the W. Fork of Rock Creek as the receiving water for storm water discharges, yet the WMP indicates the mainstem of Rock Creek will receive these discharges. To be correct, it should say both (with the majority of discharges considered as mine drainage, rather than storm water). (1223)

Response: The Water Management Plan was revised for Alternative V, including the storm water management component of the plan. Significant revisions were made to storm water routing and disposal at the mill site. The proposed MPDES permit reflects these revisions. The original draft permit states that storm water would be discharged to the west fork of Rock Creek. This statement was in error, the MPDES does not authorize discharge to the west fork. This error has been corrected in the proposed MPDES permit as found in Appendix D.

118. (MPDES Permit) p. 28 in the SWPPP discussion talks about a description of "outdoor storage of overburden, raw materials, intermediary products, or finished products." To be clear, overburden is waste rock by definition, therefore, water draining off of it or through it, is mine drainage, not storm water. (1223)

Response: Waste rock and overburden are two different categories of material and are treated separately for permitting purposes.

119. The ASARCO plan divides the mill site and adit areas into four sub-basins and proposes to discharge storm water from two of these sub-basins directly into the West Fork of Rock Creek. Any alteration of the landscape within these two sub-basins (for example, the construction of roads and subsequent use of the roads by heavy equipment and truck traffic) would result in an alteration of runoff characteristics. Both the content and quantity of the runoff should be described, as well as the impact of that altered runoff on the aquatic habitat of Rock Creek. Detention basins are high maintenance operations. No provisions for maintenance and disposal of sediments collected within the basin are described in the Water Management Plan or the DEIS. (1779)

Response: No waste rock dumps are proposed for Alternative V other than at the evaluation adit. Runoff from the waste rock at the mill site would be captured in large, lined storm water ponds, and would be tested. This water could be diverted to the impoundment under Alternative IV or treatment plant under all alternatives if not suitable for discharge. As part of a storm water discharge permit, storm water runoff would be captured, isolated from mine water if possible, and collected in storm water detention ponds. The detained water must then meet requirements for acceptable discharge. If this water does not meet requirements set forth in the storm water discharge permit, it must be routed to and mixed with mine water where it would undergo additional treatment prior to discharge.

120. Page 2-83 to 2-85 The DEIS indicates the mill site would be isolated from the two forks of Rock Creek by 300 foot wide buffer strips (where possible, according to p.4-35) under the preferred alternative. However, in order to

accomplish this at the confluence mill site, a small intermittent stream (two streams, according to p.2-50) would have to be re-routed around or through the mill site, a considerable amount of waste rock material would be placed as a base for the mill site, and three ponds would be perched over the confluence of the East and West Forks. We were unable to find discussion in the DEIS which thoroughly dealt with the issues of storm water runoff from the mill site, stability of the pad constructed for the mill site, or the potential for failure of the perched ponds. From the information provided in the DEIS, we perceive the potential for sloughing or sliding of the mill site embankment as a serious potential threat to water quality and aquatic habitat. (1445)

Response: All confluence mill site disturbances would be more than 300 feet from either fork of Rock Creek. Only the access road and pipeline would be closer than 300 feet to the west fork where they cross the drainage. All storm water would report to the lined detention pond below the mill site disturbances. There are no concerns with the stability of the mill site or pond site foundations. As detailed in Chapter 2 of the EIS, water erosion control measures are described in detail in Sterling's permit application in operation and reclamation plans. In addition, as part of the MPDES permit requirements, Sterling would not be allowed to contribute sediment to the Rock Creek system directly attributable to their facilities, during the construction process or the life of mine operation. As part of Sterling's water management plan, a drainage plan has been devised to intercept, convey and treat all runoff from the proposed facility. In addition, no discharges of effluent are proposed for the Rock Creek drainage other than storm water at Outfall 004.

121. ASARCO has no plans to capture and treat storm water run-off from sub-basins A and B. It will be discharged directly into the West Fork of Rock Creek. (2107)(2103)

ASARCO has no plans to capture and treat storm water run-off from sub-basins A and B. It will be discharged directly into the West Fork of Rock Creek. The storm water detention pond to capture run-off from a 10 year, 24 hour event does not provide for a worst case scenario in case of flooding. In order to ensure protection of the watershed, a worst case scenario must be planned for. (1486)

I'm also concerned about the "run off" into Rock Creek that shows no mention of treatment. (1865)

Response: No direct discharges from the mill site or disturbed areas are proposed for Rock Creek. The applicant's complete storm water management plan does not appear in the EIS. This document is on file with the agencies. The proposed diversions, as well as proposed mine facilities are designed to convey and contain runoff associated with the probable maximum precipitation event under Alternatives III-V and the 100-year//24-hour event under Alternative V. All discharges from the proposed mine would be required to meet effluent limitations in accordance with the MPDES permit.

The applicant would be required to manage and treat storm water coming from disturbed land. In many cases, the applicant proposes diverting runoff away from disturbed areas and preventing what is called "run-on" from undisturbed areas. Sub-basins A and B would be undisturbed and storm water would be diverted around the confluence mill site and discharged through energy-dissipating outlets or overland diffusers to the east and west fork of Rock Creek. These diverted waters do not require treatment unless the conveyance system itself contributes to water quality degradation, for example unlined or natural soil waterways. Regarding storm water detention ponds, the applicant would be required to use "best management practices" to ensure that the quality of storm water discharge would be acceptable insofar as meeting the requirements of a storm water discharge permit. The applicant would be required to demonstrate that detention time would be available in a pond designed for the 100-year, 24-hour storm. Storm water control is discussed in Chapter 2 of the EIS.

122. Subbasin B/C: Page 3 of the S.O.B. only mentions runoff from access roads. However, one of the two (it's hard to tell because every project document available seems to call it something different) contains the 178,000 tons of waste rock from construction of the evaluation adit. Discharges from this waste rock pile must be considered mine drainage.

Waste rock will be used to build the pad at the adit entrance, therefore, any water coming off that pad and out of the adits themselves must be considered mine drainage. These discharges will require treatment and coverage under a traditional MPDES permit. In addition, there will be approximately 178,000 tons of waste rock at the exploration adit portal that will be a source of nitrates, metals, and sediments to the W. Fork. Under federal law and EPA policy, discharges from this waste rock dump is mine drainage and must be covered under a traditional MPDES permit. (1223)

Response: The evaluation adit would not be located in any of the sub-basins identified in the MPDES permit application. Storm water falling on the portal of the evaluation adit would report to a pond on the portal from which water would be pumped to the temporary water treatment facility at the support facilities site prior to discharge to the Clark Fork River. Storm water falling on the waste rock dump would either infiltrate into the ground or be captured in the toe ponds at the base of the dump and infiltrate into the ground there. There would be no direct discharge to surface waters at the evaluation adit and therefore, no MPDES permit would be required.

123. The storm water discharge to Rock Creek is a misnomer. There should be a monitoring system in place and a treatment system for this run-off pollutants be allowed to be just dumped into the creek? (1925)

Response: Only two storm water discharge outfalls are proposed under the MPDES permit based on Alternative V. The MPDES permit limits and monitoring requirement for these outfalls are described in Appendix D and are based on applicable water quality standards. Additional hydrologic monitoring plans can be found in Appendix K.

Outfall 003 would consist of periodic overflow of mine drainage waste water from the storm water detention ponds below the paste facility. Discharge would be to an unnamed ephemeral tributary to Miller Gulch and would infiltrate to alluvial ground water. The discharge from Outfall 003 would be limited to storm events which exceed the 10-year, 24-hour criterion (2.8 inches of precipitation or equivalent snowmelt) as measured at the paste facility. The load discharge from Outfall 003 would be added to the load discharged and reported for Outfall 001 (the discharge from the waste water treatment plant to the Clark Fork River). The facility would be designed, constructed, and maintained to contain the maximum volume of waste water from the active surface (estimated to be 100 acres) that would result from a 100-year event during any 24-hour period, or the equivalent snowmelt, during a 24-hour period from all areas contributing runoff to the ponds.

Outfall 004 would consist of periodic overflow into Rock Creek of commingled storm water and mine drainage from the mill area collected in a lined containment pond below the mill site. Lining of the pond would minimize ground water infiltration. Discharge would be restricted to the period of April 1 to July 1, to ensure that adequate dilution would be available, or at any time when a storm event exceeded the 10-year, 24-hour event described above. Water captured in the pond during lesser events would be pumped back to the mill site for use in the mill water circuit, or sent to the waste water treatment facility prior to discharge to the Clark Fork River.

124. In light of Rock Creek's critical Bull Trout habitat and other considerations, designing storm water control systems capable of only handling up to a 25 year/24 hour storm event is inadequate. Every effort must be made to safeguard against discharge of sediment, acids, or other materials into Rock Creek. (1638)

Response: Please refer to Chapter 2 of the EIS. Under Storm Water Control it is mentioned that the diversion structures are designed to convey the calculated probable maximum flood (PMF). The impoundment under Alternatives III-IV could also contain the PMF. Under Alternative V, diversions would be signed to safely convey water from the 100-year/24-hour event.

125. At ASARCO's Ray mine in Arizona, the water treatment couldn't handle excessive storm water. How will contaminated water be contained, if a similar situation occurs at Rock Creek or if the water treatment system fails? (1248)

Response: The mine waste water treatment facilities are not designed to treat storm water runoff from the site. Storm water management was and is disclosed in the Alternatives Description section in Chapter 2. Storm water above mine facilities would be diverted around the facilities (see various alternatives and facilities maps in Chapter 2) while storm water collected from within a facility would typically be routed back to the mill for use as process water or sent to the water treatment facility prior to discharge. Under Alternative V, there are two storm water discharge outfalls included in the MPDES permit, but discharge is restricted to events greater than a 10-year, 24-hour event and the storm water outfall into the west fork of Rock Creek is also limited to April 1 to July 1. See Appendix D for more detail on these discharge points.

126. Page 2-49. Site Grading. Does this include run-off mitigation measures during scarification of the 350 plus acres of the tailings impoundment? What worst case scenarios and contingencies plans for them have been developed to deal with mass wasting/runoff from hundreds of acres of exposed clay during intense rain and storm events? It is totally unacceptable to have all that muddy water running off directly into Rock Creek. (1196)

Response: Storm water controls would be required to be in place prior to construction. Discussion of storm water controls and impacts in the EIS are based on the applicant's storm water plan and revised water management plan. Please see Chapter 2 of the EIS. The complete storm water plan and revised water management plan are on file with the Agencies and are available for public review.

The tailings impoundment under Alternatives II-IV is designed during operations as a water holding impoundment and could hold runoff from a Probable Maximum Flood (PMF). For a definition of PMF, see the glossary in the EIS. Water run-off from upstream areas would be diverted around the impoundment or the paste facility in Alternative V by diversions designed to carry the PMF. Run-off from the tailings facility area would be reduced to the amount that could report to the sediment collection facilities that collect run-off water from the embankment face and they would be sized to prevent off-site impacts to surface water. See comments in SOIL-200 for more information on diversion design and sizing. Two storm water discharge outfalls are included in the MPDES permit in Appendix D.

The Revised Water Management Plan (ASARCO 1997) is available from the Agencies and has been summarized in the EIS. See the Water Management Plan section in each alternative description in Chapter 2.

127. According to the Fact Sheet storm water from the mill site and adit areas will be discharged into the West Fork of Rock Creek. The implementation of Best Management Practices (BMPs) will not be adequate to control these discharges and the resulting pollution. BMPs are designed to prevent water quality degradation from forest practices, not mining. Furthermore, the adequacy of BMPs to prevent violations of water quality standards during forest practice activities, i.e., logging and road building, has not been established. (11)

Response: The Best Management Practices (BMP) are adequate for the Rock Creek project. Principles of erosion control can be applied to construction and premine projects as well as to logging and road building. Appendix H discusses the implementation and effectiveness of BMPs.

128. We understand that outfalls 004, 005, and 006 can operate Montana's general permit for storm water outfalls during the exploratory phase of the mine. Once that phase is completed, all storm water outfalls will follow the requirements specified in the subject permit. (2067)

Response: Please note that storm water controls would be required to be in place before construction. As stated in the proposed MPDES permit, the permittee may operate under the terms of a general permit during the exploration phase of the project. However, discharge from the mill site would not be authorized under the general permit. In other words, the permittee must have storm water controls in place but the final MPDES permit does not need to be granted before the exploration phase. No discharges other than storm water would be allowed.

129. Page 2-50: Bulleted item 9: Disturbance of hillsides above exploration adit site to install diversion for 25 year storm event: Where and how much disturbance would this require? (1288)

Response: Chapter 2 of the EIS shows the approximate location of the diversion ditch. The applicant has committed to design their diversion structures to handle a 100yr/24hr. storm event instead of the previously stated 25-year event. The actual dimension would be determined during the final design phase. The expected disturbance is shown in Table 2-2 titled "Surface Disturbance Acreage" in Chapter 2 under Exploration Adit.

130. We did not find any indicators or limits in the draft permit for storm water discharges, although the draft permit outlines a storm water compliance sampling protocol that includes grab sampling of storm water per event at outfall 003 and quarterly sampling at outfalls 004/005/006. We suggest including compliance monitoring target levels associated with the storm water sampling protocol in the permit. In addition, flow weighted composite sampling conducted per event should be considered as a permit requirement for all of the storm water discharge outfalls. This sampling protocol would probably provide adequate characterization of storm water discharges. (2067)

Response: The proposed MPDES permit incorporated the changes in the Water Management Plan for Alternative V which eliminated some of these outfalls. The MPDES permit contains numeric limits, as well as other restrictions, on two outfalls which will only discharge as a result of precipitation events. These outfalls (002 and 004) are considered mine drainage. Additional storm water outfalls would be covered under the general Storm Water Discharge Permit.

131. Where does the municipal wastewater/sewage from the 300-plus mine workers get discharged to, and how is this factored into the effluent limits in the draft permit?

(MPDES Permit) p. 5 states that "an upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance. or careless or improper operation." This could allow an upset condition if (when) the bioreactor fails.

Such a large exemption is unconscionable. A specific provision must be included to state that no exemptions or upset allowances shall be granted in the case of the failure of the bioreactor or the ion exchange system. The Department cannot base a permit on unproven treatment systems and then grant an exemption when the systems fail. (1223)

Response: The domestic wastewater from the mill would be discharged to the mill reservoir after separation of solids and ultimately to the treatment system. Outfall 005 contains internal effluent limits. Wastewater from the evaluation adit facilities would be discharged to a conventional septic tank and drainfield.

132. RWMP (ASARCO 1995), Appendix D. pg. 15 . Monitoring well MW-84-5 drilled to 33 ft. has always been dry. Nearest wells \ borings 88-8 was not measured for ground water, 88-7 has water at 15 ft. There's an incomplete picture here and bears out the contention about permitting first then doing the homework.

RWMP (ASARCO 1995), Appendix D. pg. 16. para.2 The last sentence, about the unknown water level in the basal gravel / shallow bedrock aquifer between MW-85-19 and the Clark Fork River is very indicative of the flaws in this entire document. There exist too many unknown either by design or ignorance. (1780)

Response: Please see Chapter 3 - Hydrology for a potentiometric surface map of the area.

133. RWMP (ASARCO 1995), Appendix D. pg. 16 The first sentence of the 3rd paragraph, " potentiometric map in exhibit 2 is based on limited water level information and should be viewed as a generalized interpretation of ground water flow for the basal gravel / shallow bedrock aquifer", reemphasizes the need for thorough data gathering before permitting is allowed. The possibility exists here that DEQ may be permitting a project for which it is unfeasible to protect area waters given the unknown geologic features of the area. A permit in hand after such was explored and recognized, might lead to irrevocable consequences should the project proceed with a mitigation mentality. (1780)

Response: A potentiometric surface map was constructed for the proposed tailings facility site and proposed mill site based on all available information, and is presented in Chapter 3 of the EIS. All ground water in the permit area was assumed to migrate to the Clark Fork River.

134. Due to the potential for mine discharge to impact Idaho waters, IDEQ request the right of inspection and entry, as specified in Part II.K. of the draft permit, and to be provided copies of all noncompliance notices and MDEQ inspection reports. (2067)

Response: The State of Idaho may contact the applicant directly in this regard. The MPDES discharge permit is a legal document which is based on authority granted to the agency under the Montana Water Quality Act. Authority to grant such inspections on private property is not within the agencies' jurisdiction. The department would make every effort to keep the Idaho DEQ informed of all notices of noncompliance and would provide inspection reports upon request. In addition to these requests, copies of Discharge Monitoring Reports (DMR) would be submitted to EPA and entered into the Permit Compliance System (PCS) database. Idaho DEQ and the general public may review this monitoring data.

135. We appreciate you including information concerning the Tri-State Implementation Council and its Voluntary Reduction Program (VRP). The goals of this program, however, do not supersede Idaho's Water Quality Standards which limit point source discharges of pollutants into Special Resource Waters to measurable changes. Our analysis indicates that there will be a measurable change in nitrogen at the state line from this proposed discharge. We recommend that before issuance of this permit, discussions of possible alternatives take place between MDEQ and IDEQ which address and resolve this problem. We may require some level of monitoring after discharge begins to determine if additional measures need to be taken to reduce nitrogen to acceptable levels. (2067)

Response: A meeting was held with the lead agencies and Idaho DEQ on October 7, 1996 in Missoula, Montana. As a result of this meeting and the issues raised by Idaho, the nitrogen load in the discharge was reduced from 293 to 193 pounds per day. This change was incorporated into effluent limits in the proposed permit.

136. On page 11, Statement of Basis, Section D, partially addresses the issue of Idaho's designation of Lake Pend Oreille as a Special Resource water. It appears Montana is ignoring this issue, and does not place Idaho as an equal partner in the water quality issue. Idaho receives any reduced water quality from Montana. We agree that Montana retains the authority to issue a discharge permit. However Idaho should also have input in the permit preparation. (1991)

Response: The purpose of the draft permit was to solicit input from the public, as well as affected states. The state of Idaho has provided comments on the draft and revised draft discharge permits. Montana and Idaho DEQs have met several times to discuss issues related to the project. Ultimately,

Idaho must decide if the permit violates state water quality standards and if so, then the state must notify the Environmental Protection Agency for administrative review of the permit.

137. The waste water discharge permit must adequately address how this waste water discharge would be made to comply with two major planning efforts in the basin: the bull trout recovery plans for Idaho and Montana and the plans to reduce nutrient pollution under the Total Maximum Daily Load plan currently ordered by the EPA for the Clark Fork. (2066)

Idaho's 305 (b) report lists metals as the source of water quality impairment for the Clark Fork River. We recommend this discharge be evaluated as to its contribution to impairment for metals in Idaho waters. (2067)

Response: These issues were considered and addressed during preparation of the proposed MPDES permit. Please see also the proposed MPDES permit for a description of the outfalls and the effluent limitations set forth for each outfall.

138. The Draft Permit has not shown that these discharges will comply with Idaho's stringent requirements for the lake and its tributaries such as the Clark Fork River at the state border. Idaho Administrative Code 16.01.02 et seq. (1223)

Response: The proposed MPDES permit and Statement of Basis evaluates the impacts of the discharge relative to Idaho water quality standards and would meet those standards.

WTR-307 Total Maximum Daily Loads (TMDLs)

1. Page 4-38, Water Quality Standards, paragraph 2: Water quality data for Rock Creek do not support the statement that Rock Creek is a "water quality-limited" stream. The Montana 305(b) Report June 1994 does not list Rock Creek as an impaired or water quality-limited stream (see pg. 3-21, para. 4 DEIS).

As stated "The TMDL calculation determines the allowable pollutant load, from all sources, that a waterbody can assimilate and not violate the applicable water quality standards." Although, a discharge permit may not require a TMDL, a discharge permit must achieve essentially the same goal as a TMDL. That is, any discharge permit issued by DEQ must require compliance with water quality standards including nondegradation provisions. The assertion by DEQ that Rock Creek is in need of TMDL development is not supported. A TMDL is not needed due to the stringency of Montana water quality laws and the existing high quality of Rock Creek. EPA's Guidance for Water Quality-based Decisions: The TMDL Process (EPA; April 1991) states "The TMDL establishes the allowable loadings or other quantifiable parameters for a waterbody and thereby provides the basis for states to establish water quality-based controls. These controls should provide the pollution reduction necessary for a waterbody to meet water quality standards. Section 303(d) of the Act establishes the TMDL process to provide for more stringent water quality-based controls when technology-based controls are inadequate to achieve State water quality standards."

Page 4-38: states that a TMDL calculation would be required because Rock Creek is listed as a water quality limited stream. The EIS fails to discuss how these TMDL calculations will be considered in the operation and monitoring of the Rock Creek project. (1223)

It is stated (page 4-38) that, "a TMDL calculation would be required because Rock Creek is listed as a water quality-limited stream." This is followed by the statement that "..the issuance of a discharge permit does not require that a TMDL be completed". Since is appears that the State will be granting a discharge permit in the early part of 1996, how are these two statements reconciled? It would appear that the Agencies should require a TMDL to be satisfactorily performed prior to finalization of the EIS and reaching a ROD. (1214)

Response: Total Maximum Daily Load (TMDL) calculations would be accounted for in developing effluent limitations for the MPDES permit. Reopener provisions allow for amendment of the permit.

2. Page 3-21, Hydrology, Surface Water Quality, paragraphs 3 and 4: These paragraphs are potentially misleading to those DEIS readers not familiar with the TMDL process. A TMDL for Rock Creek is not necessary to ensure compliance with water quality standards. Any discharge permit issued by DEQ must require compliance with water quality standards including nondegradation provisions, and must be protective of beneficial uses. Further, although it is implied in these paragraphs, it should be stated that Rock Creek is not a water quality-limited stream and is not impaired. (1589)

Response: DEQ has determined that the mainstem of Rock Creek only partially supports aquatic life and cold-water fisheries beneficial uses. The probable source of impairments is silviculture. Rock Creek will appear on the year 2000 Section 303(d) as partially supporting aquatic life water uses due to habitat degradation.

3. Idaho DEQ is in the process of developing a Total Maximum Daily Load (TMDL) for metals in the lower Clark Fork River. The DEIS makes no mention of this TMDL, nor does it describe how discharges from the Rock Creek project will comply with the limits developed in the TMDL. (1223)

Response: The text of the final EIS and the proposed MPDES permit have been revised.

4. We have no approach from an ecosystem water-shed point of view. We have metals. We have Super Fund sites in the upper Clark Fork. We have the lower Clark Fork River impaired on Idaho's list for metals. We have the states of Idaho, Washington and Montana working with all the discharges in the basin. ASARCO is not at the table.

We have the TMDL being developed for the lake, a TMDL being developed for the river. Where does ASARCO fit into this? (1957)

Response: The agencies have continued to work together with Sterling to improve elements of the proposed project, with an emphasis on minimizing environmental impacts. For example, aspects of the tailings deposition method, water treatment, and mill location have been revised by the applicant to respond to Agency and general public concerns and have been incorporated into the various agency alternatives. The applicant would not be part of the actual development of the TMDL for the Clark Fork River. That is the responsibility of the State and Federal agencies. However, there would be a reopener clause in the MPDES permit to allow the permit to be revisited and revised should a TMDL be developed.

5. Page 3.21. Last sentence, 3rd para., TMDL. Cumulative impacts for TMDL in the Clark Fork have not been referenced when consideration is made for another mining project the State is currently scoping in Lincoln, Mt., the McDonald Project. (1780)

Response: The project would need to comply with all TMDL requirements developed by the Agencies. State activity on this project has ceased. If activity on the project resumes, compliance with the Water Quality Act and TMDL requirements would make the probability of cumulative impacts from that project unlikely.

WTR-308 Idaho Water Quality Issues

1. Many have expressed general and specific concerns about the project's negative impacts on both ground and surface water quality from nitrates, heavy metals and process chemicals. The area of concern encompasses Rock Creek, the Clark Fork River and Lake Pend Oreille. (761)(1223)(1243)(1252)(1262)(1268)(1269)(1271)(1277)(1280)(1282)(1283)(1284)(1286)(1287)(1295)(1301)(1318)(1324-1326)(1329)(1337)(1341)(1346)(1357)(1360-1362)(1363)(1366)(1376-1378)(1382) (1384)(1385) (1393)(1405)(1409)(1410)(1417)(1419)(1423)(1425)(1427)(1445)(1449)(1456)(1458)(1463)(1464) (1469) (1475)(1480)(1482)(1486)(1489)(1513)(1915)(1520)(1527)(1529)(1544 (1545)(1551)(1598)(1613)(1616)(1639)(1641)(1649)(1650)(1681)(1700)(1734)(1739)(1750)(1757)(1760)(1764-1766)(1917)(1925)(1990)

The true possible negative environmental impacts on the future water quality of the Clark Fork River and Lake Pend Oreille have not been fully addressed within this Draft EIS. (1917)

Response: These concerns are evaluated and addressed in the EIS. Please refer to Chapter 2 of the EIS for a Description of Alternatives, Chapter 3 for a discussion of the Affected Environment, and Chapter 4 for potential Environmental Consequences. These concerns are addressed by revisions in these chapters.

2. I cannot conceive of any possible way ASARCO could discharge water into the Clark Fork and, considering their proposed treatment methods, guarantee that it will not effect the river in a detrimental way. I believe the chances of some form of pollution and subsequent damage to the river and Pend Oreille Lake are too great to risk with the proposed plan. (1417)

Response: An alternate waste water treatment system has been proposed for Alternative V, the preferred alternative. This system consisting of a semi-passive anoxic biotreatment system and reverse osmosis system are proven systems and can be easily expanded to handling increasing water volumes as the mine expands. Please see WTR304 for more comments and responses that pertain more specifically to water treatment. Please refer to Chapter 2 of the final EIS for a description of this revised water treatment system for Alternative V and Chapter 4 for discussion of potential impacts and analysis of the system.

3. The releasing into the Cabinet Gorge Noxon Dam has not been addressed in the Environmental Impact Statement. (1957)

The hydrology of Cabinet Gorge Reservoir located immediately downstream of the proposed mine wastewater discharge should also be specifically discussed, since this reservoir environment is distinct from the Clark Fork riverain environment and could be influenced by nutrient loading and accumulation of metals in the sediments. (1214)

Response: All impacts for the Clark Fork River are calculated for the reach of river below Noxon Dam, which includes the back waters of Cabinet Gorge Reservoir. The MPDES permit contains discharge limits that would result in no measurable decrease in water quality at the Montana-Idaho border (see Appendix D).

4. The tailing pond could leach harmful contaminants for generations adversely effecting the water quality of Lake Pend Oreille. (1263)(1416)(1481)(1925)

Also, we question how any responsible public agency can feel that its okay to allow huge quantities of water to seep through the impure impoundment and into the aquifer and the Clark Fork River, and eventually into Lake Pend Oreille and the Pend Oreille River. (1925)

Response: Please refer to Chapter 4 - Hydrology of the EIS. Measurable impacts to Lake Pend Oreille are not predicted. In addition, to further reduce the possibility of leaching, the agencies have

developed a tailings disposal alternative that relies on the surface deposition of a paste-like material and that would lower seepage rates.

5. The Draft Environment Impact Statement for ASARCO's Rock Creek mine does not stand up to even cursory evaluation in the interest of protecting Lake Pend Oreille and the upstream watershed of the Clark Fork River. It is also in apparent violation of Idaho water quality regulations. (1999)

Response: Issues regarding Lake Pend Oreille and Idaho water quality regulations are addressed in the final EIS and the MPDES permit. The discharge would also comply with Idaho's standards.

6. The project would "increase sediment loading to Rock Creek and the Clark Fork River" (DEIS: 4-176). The Clark Fork is already damaged by industrial pollutants. ASARCO is applying for a Section 404 permit to pollute. This project will result in polluted water for the Clark Fork River, Rock Creek, Lake Pend Oreille, and the Pend Oreille River. (1670)

Response: Please see Chapter 4, Hydrology, Wetlands and Non-wetland Waters of the U.S., and Aquatics/Fisheries for revised and updated discussion on impacts to these resources.

The agencies ran WATSED, a sediment model, for the Rock Creek drainage (see Appendix N for more detail). There would be some increases of sediment in the drainage during mine construction. However, there would be a slight decrease of sediment levels, an improvement in stream conditions, after mining ceased under Alternative V. However, the model did not take into account the reduction of sediment from a mitigation requiring the identification of existing sediment sources and reduction of 400 tons of sediment per year as the model needs location of the sites to make calculations; there is the possibility of even more reduction of sediment than WATSED predicted. This mitigation would need to be completed prior to project construction and then monitored annually. There are more comments and responses in WTR306 that discuss the sediment issue in Rock Creek.

The primary potential source of project-related sediment impacts to the Clark Fork River and possibly as far down stream as Cabinet Gorge and remotely possible as far as Lake Pend Oreille would be from the failure of the tailings storage facility. This catastrophe has a very remote chance of occurring. There is more potential for tailings to reach the river with a tailings impoundment as included in Alternatives II-IV due to the much greater amount of water retained in the tailings behind an embankment. Under Alternative V, the tailings paste would retain only sufficient water to allow placement and no free water would be stored behind an embankment on top of the tailings. This further reduces the risk of failure compared to a traditional impoundment. While the tailings storage facility under any of the action alternatives is only about one-third mile from the Clark Fork River, the tailings would need to flow over the railroad grade and the highway to reach the river. The tailings could be channeled along Miller Gulch or possibly Rock Creek depending upon the location of the failure and flow under these structures but depending upon the volume of tailings and water contained in the tailings storage facility and the amount of water flowing in these streams at the time failure, these routes could become partially blocked slowing the flow of tailings to the river. The magnitude and duration of the impact the failure would have on the river system would also depend on what caused the failure and how that cause affected other elements in the environment both up and down stream of the project. How far down river the tailings would be carried would depend upon the conditions of the river at the time. The primary impact of tailings reaching the river from the remote chance of a tailings storage facility failure would be increased sediment loads to the river and its effects on aquatic life. For more discussion on tailings facility stability see comments and responses in GEO102.

The primary impacts to wetlands and non-wetland waters of the U.S. would be beneath the tailings storage facility and at the mill sites for all action alternatives. Given the remote possibility of a tailings storage facility failure, there is no indication that wetlands adjacent to the Clark Fork River would be affected. Please see the Preliminary Section 404(b)(1) Showing in Appendix F for a discussion about compliance with Corps of Engineer regulations for the Section 404 permit. Additional comments and responses pertaining to wetlands and the 404 permit can be found in WTR309 and WTR310 respectively.

7. The waste water discharge proposed for the Rock Creek mine project will be relevant to the voluntary reduction program for the Clark Fork River in that the potential exists for impact on the effectiveness of the program for downstream Pend Oreille Lake. Clearly, the discharge will be directly relevant to the effectiveness of the nutrient reduction strategy being developed for the lake. Pertaining to such downstream issues, the final EIS should explain how the proposed project will comply with Clean Water Act requirements for potential effects to another state's downstream water quality, such as described in CWA Section 401 (a) (2.) In keeping with the maintenance and reduction goals and objectives of the management plan, perhaps there would be an opportunity to look into nutrient trading as an alternative, should the agencies approve the discharge portion of the project. Because the Council is looking to develop a plan for how to incorporate new activities into an overall long term nutrient reduction program for the watershed, we welcome the opportunity to work with the agencies and ASARCO to develop some resolution to the issue of no net increase of nutrients. (1214)(1352)(1681)(1770)(1918)

It is stated in the DEIS (page 4-62) that the IDEQ concluded that the trophic state of Lake Pend Oreille would likely be maintained since the increase in nitrogen is less than 25%. There is significant public concern regarding nutrient loading in Lake Pend Oreille. The Lake has been designated a "Special Resource Water" by the State of Idaho. We note that the Clark Fork-Lake Pend Oreille Tri-State Implementation Council is working toward implementing watershed management recommendations that preclude any increase in nutrient loading to Lake Pend Oreille. The implied 25% increase in nitrogen loading appears inconsistent with the Council's recommendations. We believe the referenced Lake Pend Oreille nutrient enrichment calculations and the fate and transport of nutrient discharges to the Clark Fork River relative to the Lake Pend Oreille nutrient concerns should be disclosed more fully in the FEIS. We note that the narrative water quality standards for the state of Montana (and similar ones for Idaho) indicate that any discharges or sources would be subject to Montana Administrative Rules. These state: State surface waters must be free from substances attributable to municipal, industrial, agricultural practices or other discharges that will: -produce odors, colors, or other conditions as to which [create a nuisance] or render undesirable tastes to fish flesh or make fish inedible; - create conditions which [produce undesirable aquatic life]. [underlining added] Increases in aquatic macrophytes in the Clark Fork River and downstream are of concern and are considered to be undesirable. The State DEQ is looking to establish levels of total phosphorus and total nitrogen concentrations in the river to protect the river from undesirable levels of vegetation. Their consultants are recommending levels of 350 ug/L total nitrogen and 30 ug/L total phosphorus. Any discharges of nutrients to Clark Fork from all mine-related sources should relate potential increases to these target levels. It should also be noted, that Montana is currently requiring upstream sewage treatment plants to substantially reduce their loadings to the river, and that the loadings are expressed in total concentrations, not just nitrate and ammonia. (1214)

I am very concerned about the proposed ASARCO project on Rock Creek and its potential impact on water quality of the lower Clark Fork River and Lake Pend Oreille. Mining is a very environmentally destructive activity. Even where the best known and proven mining waste-treatment techniques are used, there is still no guarantee that a 200-year flood event will not wash mine tailings into adjacent streams, rivers and lakes. (1350)

The draft permit states that discharges from the project will comply with the nutrient criteria developed in the Clark Fork River VNRP. The Clark Fork River VNRP only applies from the Clark Fork River's headwaters to the confluence with the Flathead River, and thus, may not be relevant to the Rock Creek Project. The department and the applicant must demonstrate the project will comply with the overall goal of the Tri-state Water Management Plan, which is to maintain and reduce nutrient loading to the Clark Fork River and Lake Pend Oreille.

In addition, the department should evaluate the nutrient load from the project and its effects on the development of the nutrient TMDL for Lake Pend Oreille. The lake TMDL is based on the assumption that nutrient loading to the lake from the Clark Fork River will remain the same or decrease over time. Permit conditions that allow an additional 193 pounds per day of nitrate to the system, over 70,000 pounds per year, directly contradict this assumption and the goals of the Tri-State plan. (1223)

In the Council's view, the proposed discharge of nitrogen-enriched waste water into the Clark Fork River from the proposed Rock Creek Mining project does not meet the goal or objectives of the watershed plan (Three-state Clark Fork Pend Oreille Basin Management Plan). The goal of the management plan is to restore and protect designated beneficial water uses basin-wide. To meet this goal, the following objectives have been established: control nuisance algae in the Clark Fork River by reducing nutrient concentrations, protect Pend Oreille Lake water quality by maintaining or reducing current rates of nutrient loading from the Clark Fork River, reduce near shore eutrophication in Pend Oreille Lake by reducing nutrient loading from local sources, and improve Pend Oreille River water quality through macrophyte management and tributary nonpoint source controls. (1352)

A tri-state commission is now in operation to study and control the pollutants discharged into the Clark Fork River - how they can allow this mine to begin operation is against what they are trying to accomplish. (1402)(1941)

I am a member of a committee of the Tri State Council to implement the water plan approved by two regions of the EPA and agencies of three states, Montana, Idaho, and Washington. The plan was conceived and prepared to improve the water flowing from the Clark Fork River. It specifically called for no more point sources of nutrients such as nitrogen. The DEIS appears to completely ignore that plan, and, if Alternative II, III, or IV is accepted, the mine will represent a new point source. I find this unacceptable, first as a flaw in the DEIS, and second, as an acceptable action. (1914)

I am concerned that the cumulative effects of the discharge water on Lake Pend Oreille have not been studied. (1681)

My concerns are that it will have an adverse impact on water quality not only for the Clark Fork River & Rock Creek, but Lake Pend Oreille which is downstream. Directly discharging waste treatment water into the Clark Fork River is against all the work & efforts being done to reduce nutrient pollution & algae growth in the Clark Fork/ Lake Pend Oreille watershed. I am also concerned about potential heavy metals contamination of the Lakes & River as well as sedimentation should the tailings impoundment fail or flood. (1776)

Montana, Idaho, Washington have legislation stating that the amount of nutrients shall be reduced going into Lake Pend Orielle & all tributaries. So all the communities have spent millions of our tax dollars installing treatment plants to abide by this legislation. How can a private company with a few private individuals monetary interests in mind come to this beautiful area from else where and disregard our legislation & basic will being by dumping into the Clark Fork River which is the main tributary to Lake Pend Oreille. (1321)

Response: Discharge from the proposed mine would be required to meet effluent limitations in accordance with an MPDES permit from DEQ. Additional water quality concerns and implementations and compliance with the Clean Water Act were used to establish MPDES requirements reflected in Appendix D. As stated in Chapter 4, Environmental Consequences of the EIS, the impact of treated discharge on the quality of water in the Clark Fork River in Montana and Idaho would not be measurable due to the low concentration of constituents in the treated effluent and the relatively higher flow available for dilution.

Results of a study by John C. Priscu, Ph.D for the Department of Environmental Quality (Priscu, 1989) state that "because the Clark Fork River appears to be phosphorus limited, additional nitrogen loading from the Rock Creek Project was predicted to not have a major influence on the magnitude of the attached algal productivity and biomass in the Clark Fork River." The report also states that because Lake Pend Oreille is phosphorus limited, and because the greatest potential nutrient impact

of the proposed project would be an increase in nitrogen, it was concluded that no significant algal blooms would be expected.

A 1993 report by the EPA notes that Lake Pend Oreille is phosphorus limited (i.e. additional phosphorus causes a greater degree of algae growth) and there exists a high correlation between total phosphorus loading nearshore and local tributaries and the degree of urban and residential development. Computer simulations indicate that the quality of deeper waters would be little changed by small to moderate alterations in how much nitrogen and phosphorus entered the lake. Idaho researchers concluded that phosphorus is the primary nutrient controlling algal growth and plant growth in Lake Pend Oreille. These reports are on file with and available from the agencies.

In addition, please refer to the tables in the hydrology portion of Chapter 4 of the EIS. These tables are conservative, as they use maximum recorded concentrations in tailing water at the Troy mine rather than average conditions, to predict impacts to the Clark Fork River. Nevertheless, changes in water quality would not be detectable.

8. What are the types and amounts of nutrient pollutants that will be discharged into the Clark Fork River? How does that compare with allowable levels of nutrient pollution that can be discharged into Lake Pend Oreille as a special resource water? (1248)

The planned discharge, as well as any unintended discharge, cannot be consistent with the Pend Oreille Lake's designation by the State of Idaho as a Special Resource Water. (2027)

Another issue which needs to be resolved in the final EIS is how the mine's discharge will comply with Pend Oreille Lake's designation by the state of Idaho as a Special Resource Water (SRW.) According to Idaho statute no new point source can discharge to any water designated as a special resource water or to a tributary of, or to the upstream segment of, a special resource water. A subcommittee of the Council is working with area sewer districts and the county on regional sewage issues and is concerned that a number of communities in the lake's watershed (including Southside, Bottle Bay, Garfield Bay, and Bayview) have had to spend many millions of dollars on special systems to land apply their waste water in order to comply with the requirements of the SRW designation. The Council requests that the SRW designation/point source discharge issue be accounted for in the final EIS. (1214) (1223)(1261)(1352)(1381)(1402)(1405)(1436)(1445)(1474)(1608)(1681)(1729)(1730)(1936)

Lake Pend Oreille has a special designation which allows no new water source point of entry. The mine water outlet is in the river but very close to the lake. I am requesting that no new water entry be allowed. Where is Idaho DEQ? Why are they not enforcing this issue. I have not seen them at the panels at the public meetings. (1261)

When you have a body of water that's designated as a special resource water, the legislation says that no new sources can occur into that body of water or into one of its tributaries. Well, the Clark Fork River -- if ever there was a tributary into a body of water, the Clark Fork River Supplies 90 percent of the lake's water -- should be considered or would be considered a tributary to Pend Oreille Lake. There are many communities around the lake. Just to mention a few: Southside, Bottle Bay, Garfield Bay, Ellisport Bay and Bayview. And the residents in those communities have had to raise millions of dollars to land apply their waste water discharge, because they couldn't discharge it into the lake. They had to land apply it. I don't think it's appropriate, and neither does the Council, that ASARCO should be allowed to discharge into the river and let it impact the lake, when the local residents around the lake have had to pay the price to keep their waste out of the lake. (1352)

There is significant concern for nutrient loading in Lake Pend Oreille, which has been designated a "Special Resource Water" by the State of Idaho. Little baseline description of Lake Pend Oreille water quality is found in Chapter 3. There may be potential for nutrients (nitrogen) from the mine discharge to the Clark Fork River to be transported to Lake Pend Oreille. Nutrient enrichment concerns of Lake Pend Oreille should be discussed in

greater detail. We note that the Clark Fork-Lake Pend Oreille Tri-State Implementation Council is recommending instream target levels for nutrients (nitrogen and phosphorus), and recommending reduction in existing nutrient levels. (1214)

Pollution of Clark Fork River and Lake Pend Oreille by nutrients from the tailings in the form of ammonium compounds and various nitrates that are all water soluble. (1730)

Response: As stated in Chapter 4, Environmental Consequences of the EIS, the impact of treated discharge on the quality of water in the Clark Fork River in Montana and Idaho would not be measurable due to the low concentration of constituents in the treated effluent and the relatively higher flow available for dilution. Discharge from the proposed project will be required to meet effluent limitations in accordance with an MPDES permit from DEQ. Montana Surface Water Standards, Montana's Nondegradation Policy, Idaho's Water Quality Standards, National Toxic Rules, EPA Quality Criteria for Water, Special Resource Waters, and the Clean Water Act provisions and requirements have all been examined and appropriately used in establishing requirements for ASARCO's MPDES permit (see Appendix D). The discharge limits in the MPDES permit are intended to protect the lake's status as a special resource water.

9. Pulp mills and waste water treatment plants currently discharge to the Clark Fork River, and mine waste has caused a myriad of water quality problems in this watershed (Idaho DEQ Water Quality Status Report No 102). Often when biological communities shift from being oligotrophic toward a more enriched system, desirable species, such as trout, are eliminated or dramatically deduced in numbers (Laws 1993). The Clark Fork and Lake Pend Oreille have high recreational values: people enjoy boating, swimming, fishing, and other activities in this watershed. Increased nitrate levels below the Rock Creek mine's discharge point could cause unacceptable changes to the Clark Fork River (Tom Reid, MDHES, pers. comm. 1994), Noxon and Cabinet Gorge Reservoirs, and possibly to Lake Pend Oreille as well. (1223)

2500 gallons per minute of contaminated water will flow somewhere, either it goes into ponds or into Lake Pend Oreille. (1385)(1475)

Lake Pend Oreille shouldn't be subjected to this drainage carried downstream by the Clark Fork River. The local economy depends on productive fisheries and scenic beauty, both would be threatened by a polluted Lake Pend Oreille. (1385)

Surface and ground water resources in Idaho and Montana will most likely be impacted with nitrates, metals, and other chemical pollution, due to the huge size of this mine and the volume of its associated wastes, the unreliable and inadequate treatment technologies proposed, and the past record of water quality violations at other ASARCO mines. In addition to the fact that many of these surface water resources support important fish populations, the Clark Fork River has already suffered serious degradation from past mining activities. We cannot afford another polluting mine impacting this river, or any of our waters. (1946)

Response: During mine development under Alternative V, the anticipated water volume would start at approximately 133 gpm. During evaluation adit construction, mine discharge would increase gradually from 550 gpm in year 2 to 1,165 gpm in year 10 and would then increase about 200 to 300 gpm every 5 years to an anticipated maximum flow of 2,043 gpm during the last year of production. During mining operations this water would be treated to remove nutrients. After mine closure nitrate concentrations would decline and the water might eventually meet standards for discharge to the Clark Fork River without treatment.

As stated in Chapter 4 of the EIS, the impact of treated discharge on the quality of water in the Clark Fork River in Montana and Idaho would not be measurable due to the low concentration of constituents in the treated effluent and the relatively higher flow available for dilution. After

mining had ceased, excess mine water would continue to be treated until it eventually met state discharge standards without additional treatment or until the mine was sealed.

Discharge from the proposed mine, both during mining operations and after mining operations have ceased, would be required to meet effluent limitations in accordance with an MPDES permit from DEQ.

10. The discharge of nitrogen in the form of ammonia, nitrite, and nitrate to the Clark Fork River and downstream areas such as Lake Pend Oreille could potentially have more of an impact than the DEIS concludes. Table 4-20 lists ASARCO's proposed effluent water quality. Ammonia, the most toxic of the three nitrogen compounds, exceeds the trigger value for maximum allowed change at the river's low flow period. The nitrate/nitrite concentration is a mere .0023 mg/L below the trigger value. The Clark Fork's low flow period is in the late summer and early fall which is also when the river would be most stressed by the effects of nutrient loading. If ASARCO's estimates are wrong or best management practices do not effectively control nitrogen release, the damage done to the river could be greater than is stated in the DEIS. In addition, the model used to predict the risk of eutrophication in Lake Pend-Oreille could also be erroneous. This could result in an increase greater than 25 percent of nitrogen in the lake and an ensuing decrease in beneficial use due to eutrophication. This would violate Idaho's narrative standard. I believe these two concerns calls for a re-evaluation in the final EIS of the threat nitrogen pose to the Clark Fork river and to Lake Pend Oreille. (1594)

Response: Please see Chapter 4 - Hydrology. Even in the unlikely situation Sterling's estimates are wrong or best management practices are not effective, Sterling may not exceed the limits set in the MPDES permit.

11. Many people get their drinking water from Lake Pend Oreille - we cannot have further degradation of water quality in our streams, river or lake. (1405)

There has not been any study how Bonner County, Idaho, will be affected by all this waste water flows into it via the Clark Fork River. (1294)

The Clark Fork - Pend Oreille water system is so significant that it may compromise as much as 15% of the total surface water of the state of Idaho. It seems inconceivable that an Environmental Impact Statement (Draft or otherwise) dealing with a massive proposed project located just off the County's boundary, can absolutely ignore any or all consequences to Bonner County and its water system. (1446)

We have a residence in Sandpoint, Idaho, and are very concerned about the poor water quality in our own area. The towns all around Lake Pend Orielle are all having problems with their water. With the population growth everywhere, the old laws are not adequate in taking care of present day water quality. (1329)

Concerned that water discharges from the proposed project may affect the treatability of Sandpoint's drinking water. (1225)

Response: Estimated effects of the proposed discharge on the Clark Fork River water quality are provided in Chapter 4 of the EIS. No significant effects to the water quality are predicted. Montana Surface Water Standards, Montana's Nondegradation Policy, Idaho's Water Quality Standards, National Toxic Rules, EPA Quality Criteria for Water, Special Resource Waters, and the Clean Water Act provisions and requirements were all used to establish requirements for Sterling's MPDES permit. Additional water quality concerns such as effects on the treatability of Sandpoint's drinking water have been considered in establishing MPDES requirements.

WTR-309 Wetlands and Non-wetland Waters of the U.S.

1. What baseline studies have been done to evaluate the water levels, plant and animal life and water quality of wetlands which may be affected by the project? (1384)

Response: Detailed vegetation baseline characterizations were completed for the riparian areas and wetland areas along Rock Creek as part of the wetlands inventory work completed by the applicant in 1993. Water level and water quality information for the wetlands was inferred from baseline ground water monitoring well data. Animal life throughout the study area, including the riparian and wetland areas, was primarily based on numerous published reports by State and Federal agencies and individuals, and are referenced throughout the aquatics/fisheries and biodiversity of wildlife habitat/vegetation and wildlife species sections of the draft EIS and supplemental draft EISs. General discussions of reptiles, small mammals, large mammals, and birds, observed while completing the wetlands inventory were included in the 1991 Wetland Inventory. DEQ staff hydrologist, Joe Gurrieri, completed field work and a report on hydrogeology and its relationship to the Montanore and Rock Creek mine and Rock, Cliff, and Copper lakes (MT DEQ 2001).

The major baseline studies, inventories, and reports that have been completed for the Rock Creek project and pertain to these resources are the following: Vegetation and soils baseline inventories initiated in 1985. Supplemental field work was conducted during 1991 and 1992 to evaluate results of previous baseline and to assess specific wetland components (hydrology, soils, and vegetation) in the context of wetland identification and delineation. The Rock Creek 404 Permit and attached Wetlands Inventory, Consideration of Alternatives and Mitigation Plan was submitted in March 1993. In September 1995, ASARCO submitted a Supplemental Information Attachment and Wetlands Inventory Considerations of Alternatives and Mitigation Plan for Alternative IV, Modified Rock Creek Project with Mitigations. In the fall of 1996, additional wetland delineation work was completed for the Cabinet Mountain Wilderness area and in January 1997 (ASARCO Incorporated 1997b) the Report of Waters of the U.S. and Wetland Delineation for Copper Lake, Cliff Lake, and Potential Subsidence Areas, Cabinet Mountain Wilderness, was submitted. DEQ staff hydrologist, Joe Gurrieri, completed field work and a report on hydrogeology and its relationship to the Montanore and Rock Creek mines and Rock, Cliff, and Copper lakes (MT DEQ 2001).

In August 1998, a 2-page letter including a figure (ASARCO Incorporated 1998) was submitted to the Corps of Engineers showing the proposed location of six optional wetland mitigation sites that could be used to achieve a suggested minimum replacement ratio of 1.5:1. The new information was used to update the draft and supplemental EIS reports.

A baseline inventory for wildlife in the project area was conducted by Farmer and Heath (1987). This baseline inventory included the wetlands of the project area, and also considered the wetlands of the larger Lower Clark Fork River valley as well.

The applicant has completed a baseline inventories of wetlands and non-wetland waters of the U.S. using the methodology recommended by the Corps of Engineers. These study results have been verified by MDEQ agency personnel, COE administrative and field personnel, and EPA personnel in the field at the proposed site. See Chapter 3, Wetlands and Non-wetland Waters of the U.S. section which was prepared based on the baseline study provided by ASARCO (1993).

2. Page 2-60 This page states that the inventory of the waters of the US, including wetlands "encompassed...most of the alternative areas included in this EIS." Is this statement in error? Which alternative areas were not fully inventoried? A complete inventory of the three structural alternatives that were carried forward for consideration in the EIS must be accomplished. (1912)

Response: Alternatives that were not completely inventoried were alternatives that were considered but dismissed. The areas of proposed disturbances for the primary alternatives carried forward in the draft EIS and supplemental draft EISs were inventoried for wetland and non-wetland waters of the U.S.

3. Page 3-45 This page states that Rock Creek wetland sites "may" provide important aquatic habitat for fisheries, habitat for four plant species of special concern, and habitat for two sensitive wildlife species. A more definitive statement must be made in the FEIS. It will be important to the public and the decision makers to know whether or not such habitat occurs or does not occur in the Rock Creek wetlands. It should be explained why ASARCO has only committed to assessing the presence of one plant species. (1912)

Response: The EIS text is changed to state that the Rock Creek wetland sites provide important habitat for fisheries, plant species of special concern, and habitat for wildlife.

Habitat for sensitive wildlife species occurs along the riparian systems of Rock Creek. Harlequin duck is known to nest along the creek, as documented in the draft biological evaluation for the draft EIS. An analysis of fisher habitat in the project area and Kootenai National Forest indicates there is available habitat for this species along the riparian systems as well. This is detailed in the final biological evaluation. Habitat for the Coeur d'Alene salamander is present in the permit area boundary, but none of the activities approaches it.

The agencies cannot conclude that the Rock Creek wetland sites are or are not important just because a species of plant or animal is or is not observed in a particular piece of habitat. The baseline studies are conducted in a finite amount of time. The statement as written is correct. The decision maker must use the professional judgment of plant and wildlife ecologists and responses like the commenter's on the EIS to make a decision on the proposed action.

The requirement for a conservation assessment for crested shield-fern has been dropped because the plant had been misidentified.

4. Page C-14. Sec. 2.2.7 Failure of engineered seepage collection system. Identify additional downgradient wetlands. (1780)

Response: The likelihood of a total failure of the seepage collection system is remote. The need for a tailings impoundment seepage collection system would be eliminated based on the proposed Paste Tailings Disposal Alternative. The tailings paste facility would be constructed with paste tailings deposited from a pipeline in series of lifts and rows. Successive layers of the paste tailings (1 to 4 feet in thickness) would be deposited in rows until the paste structure reaches a final height of 320 to 380 feet. The final upper surface would have some designed topographic relief created by preferential placement of the paste along with reshaping with a dozer. The downgradient wetlands are located along a tributary to Miller Gulch.

5. What baseline monitoring has been done of all wetlands, streams and ground water to date. Insufficient data, or no data should not be tolerated. Complete, thorough, comparable data must be used starting well before the mine is permitted. (1438)

Response: Baseline monitoring for wetlands is included in the Wetland Inventory and Mitigation Plan (ASARCO 1993). Currently, proposed monitoring includes a before-and-after photographic

record of all affected wetlands. The photographs of the impacted wetlands and wetland mitigation sites would be used as part of the overall documentation and comparison process.

6. Page 4-68 paragraph 4, sentence 1; Page 4-71 paragraph 3, sentence 1; Page C-9, paragraph 3, sentence 2 and Page C-12, paragraph 2, sentences 3 and 4: There would be more than 1 acre of wetlands affected because that 1 acre does not include that portion of south fork of Miller Gulch in Section 20 that would be dewatered. Paragraph 2&3 on page 4-71 states the situation correctly. (1455)

Response: As stated, about 1 acre of wetland would be indirectly affected by the capture of surface water by the tailings impoundment and surface and ground water capture by the seepage collection system. The wetland area of Miller Gulch in Section 20 would not be dewatered by the Alternative IV seepage collection system. In addition, the need for a tailings impoundment seepage collection system would be eliminated under the Alternative V paste tailings disposal method although it would be retained as a potential contingency measure.

7. Page C-9 The third paragraph on this page states that "some" wetlands downgradient of the tailings impoundment will be affected. Page 4-71 quantifies this impact as "about 1 acre." Page C-9 needs to quantify this impact. Also, this paragraph states that a failure of the seepage collection system may impact additional downgradient wetlands. The Waters of the US and Wetlands section of Chapter 4 did not contain this discussion. What is the likelihood of a failure? If the likelihood is remote, it should be explained and stated as such, and the reader should be referred to Appendix H, page H-5 which discusses the requirement of the preparation of a list of potential remedial action alternatives for various degradation scenarios. If the likelihood is that a failure might (around 30 percent probability) occur, then this potential effect needs to be more thoroughly discussed. How many additional downgradient wetlands would be affected? (1912)

Response: The likelihood of a total failure of the seepage collection system is remote. Please refer to Appendix K and the discussion of the Remedial Action Plan. In addition, the need for a tailings impoundment seepage collection system would be eliminated under Alternative V, the proposed paste backfill tailings disposal alternative. Appendix F has been revised to quantify the amount of wetlands affected by the project, as suggested.

8. Page C-17, Section 4.3 This section makes reference to the total available habitat in the project area, but no quantification is provided. We recommend the following information taken from Chapter 3 be added to the discussion. Within the area of the proposed project are 10 acres of wetlands, 52 acres of non-wetland water of the US, and 84 acres of riparian areas. The discussion also needs to specifically address the Harlequin duck and the Coeur d'Alene salamander. The conclusion in the main text of the EIS regarding harlequin ducks is that impacts could be major and significant. See comments for pages 3-45 and 4-71. (1912)

Response: Information quantifying the total available habitats in the project area will be added to Section 4.3 of the 404(b)(1) Showing (Appendix F). The Montana Natural Heritage Program has recently prepared a region-wide conservation assessment on the harlequin duck. This assessment analyzed the effects of the mine project on harlequin duck species viability. The Coeur d'Alene salamander, or its habitat, would not be affected by the proposed project because the one known area in Rock Creek that provides suitable habitat would not be affected by mine-related activities. The additional information on these two species has been incorporated into the 404(b)(1) Showing in the final EIS.

The quantitative figures were added to the EIS text, Appendix F, and to the main text of the final EIS, as suggested. Harlequin duck and Coeur d'Alene salamander are addressed in the wildlife section.

The agencies agree with your comment. The text has been modified in the 404(b)(1) Showing and the EIS based on results of 1996 field work conducted on harlequin ducks in the Rock Creek.

9. If problems were to be caused to the Clark Fork River by the discharge water, the wetlands at the river's mouth and Lake Pend Oreille would also be impacted. Fish, aquatic invertebrates, and migratory waterfowl would all be adversely affected. (1735)

Response: All discharges from the proposed project would need to meet the water quality limits set forth in the MPDES discharge permit and any increases in nutrients would be unmeasurable at the Idaho-Montana border, well upstream of the wetlands at the river's mouth into Lake Pend Oreille.

The extent of the effects on migratory waterfowl from discharge water depends on the amount of change to the life history requirements of each waterfowl species. For example, some waterfowl would be negatively affected by an increase in nutrient levels while some would be positively affected. The effects of the discharge water were determined to be negligible as there would be no measurable increase in nutrients or metals from the discharge into the river.

10. Page 4-84 says this project will affect no more than 1.5 acres of US waters. Obviously the Clark Fork River, the Lake Pend Oreille, the Pend Orielle River is more than 1.5 acres. We're talking about impacting a major waterway. (1926)

No identification of potential impacts to wetlands along the Clark Fork River streambed is discussed. While important to the maintenance of aquatic resources, no consideration of Noxon Rapids and Cabinet Gorge project operations and potential subsequent impacts, such as the development of thermal plumes at the point of waste water discharge, are discussed. This information should be provided for review and comment prior to finalizing the EIS. (1779)

Response: The 1.5 acres of waters of the U.S. refers to the area that would be directly impacted by placement of earthen fill materials. Potential impacts to the quality of water flowing within the stream channels has been addressed in the Hydrology and Aquatics/Fisheries sections. There are no anticipated impacts to wetlands along the Clark Fork River or Lake Pend Oreille downstream of the discharge. The Pend Oreille River enters the lake in a totally different area than the Clark Fork River and therefore would not be affected by the mine discharge.

11. Appendix C-6 states that 404(b)(1) in guidelines Section 230.10(b) require that no discharge shall be authorized if it: 1. causes or contributes to any violation of applicable water quality standards. Construction of the tailings impoundment will destroy approximately 4.5 acres of wetlands. Seepage from the tailings impoundment will cause the receiving ground water to exceed water quality standards, as evidenced by the need for the mixing zone discussed previously. Consequently, we believe the Corps is precluded from approving the loss of wetlands because of these 404(b) guidelines. The revised DEIS must address this issue. (1223)

Response: Waters within mixing zones are allowed to exceed water quality standards, but waters outside mixing zones must meet the standards or MPDES limits, whichever applies. This is not considered a violation of water quality standards. Compliance with Section 401 Certification will be required as a condition of the Section 404 Permit. The DEQ (formerly the Department of Health and Environmental Science), Water Quality Division, provides Section 401 certification and will review the project for proposed impacts associated with the discharge of tailings and will make a determination of compliance pursuant to the state rules (ARM 16.20.1701 et seq.)

12. Idaho Fish and Game is considering purchasing wetlands in the Clark Fork River delta (at the inlet to Pend Oreille Lake) to mitigate the 7,000 acres of wetlands lost due to construction and operation of the Albeni Falls Dam on the Pend Oreille River. The DEIS makes no mention of this plan, or how increased metals and nutrient loading to the delta may effect the plan. (1223)

Response: No information has been provided regarding this proposal to include as a reasonably foreseeable activity. However, potential impacts to water quality in the Clark Fork River would not

be measurable downstream at Lake Pend Oreille, primarily because of dilution, mixing, and additional point and non-point discharges to the Clark Fork River (see Chapter 4 - Hydrology). Thus, those wetlands being considered would not be affected.

13. In summary, wetlands occur where there is (1) permanent or periodic flooding, which (2) causes anaerobic soil conditions, which (3) allow only plants adapted to anaerobic conditions to grow. Where these three conditions exist, there are wetlands. Even the agencies' "preferred alternative" (Alternative IV) admits that impacts to waters of the U.S. and wetlands under would be potentially significant. This organization believes that the loss of such a significant amount of critical wetland habitat is unacceptable.

Pages 5-1 and 5-2 of the Rock Creek DEIS list the agencies which have been consulted in the DEIS process for ASARCO's Rock Creek Project. Nowhere in this text does it indicate that approval or comment was sought from the National Marine Fisheries Service as required by the Federal Clean Water Act and the Fish and Wildlife Coordination Act. The probability is very high that if there is a catastrophic accident at the project site, the consequences would be far-ranging, and would most likely affect the endangered adadromous fisheries of the Columbia River basin. Therefore, all decisions made in the DEIS which relate to the waters of the United States, including wetland and fisheries disturbances, cannot be considered complete until the National Marine Fisheries Service has been consulted. (1595)

Response: The Corp. of Engineers (COE) will review all alternatives considered in the final EIS and will determine if there is a least damaging practicable alternative that could be permitted. Public interest factors, input from other state and federal agencies, and the proposed mitigation measures will also be considered by the COE in the evaluation process prior to their making a final permitting determination.

The National Marine Fisheries Service was not consulted during the draft EIS because of the probability that impacts from a catastrophic accident would not extend downstream beyond Lake Pend Oreille. The revised wetland mitigation plan for Alternative V, the paste tailings disposal alternative, would decrease the probability of a catastrophic tailings storage facility failure and downstream impacts. The paste tailings, a dewatered material, would be deposited in successive layers until the paste structure reached its designed height for 320 to 380 feet.

14. In connection with their Application for Hard Rock Mining Operating Permit and Proposed Plan of Operation, Noranda Minerals Inc. performed a series of environmental baseline studies for their Montanore Project. These studies include in depth analyses of plant, soil and water resources. These studies furnish the data to determine that over 76 acres of wetlands occur within their tailings impoundment area. If both projects are permitted, we are looking as a net wetland loss of approximately 100 acres. This significant impact must be considered as a cumulative impact under NEPA and should be addressed with more than a cursory statement regarding its possibility. (1595)

Response: The approved Montanore Project alternative would affect about 14 acres of wetlands and 5.8 acres of waters of the U.S. The 6.2 acres of wetlands and 1.5 acres non-wetland waters of the U.S. affected by the ASARCO project would be essentially the same for Alternatives IV and V. Currently, the Corp. of Engineers has stated that a 1.5 to 1 mitigation ratio would likely be used for this project. The Cabinet Mountain Wilderness (CMW) covers approximately 94,000 acres; and although the total amount of wetlands and non-wetland waters of the U.S. within the CMW and in surrounding drainages, are unknown, the total impact to about 26 acres between the two mines would be a very small fraction of available wetlands in the area. The discussion of cumulative impacts from these two mining projects, and other activities, ~~is~~ has been expanded in the final EIS to reflect this.

15. Page 2-3: Issue 6. The wording here, earlier, and later in the DEIS is confusing. The Army COE has responsibilities for "wetlands and Waters of the U.S." Yet the DEIS seems to consider only wetlands and waters of

the U.S. within the areas of mine-related impacts in the mine-permit area and ventilation adit to be affected by the proposed project. Are not the springs, lakes, streams (including Rock Creek) in the Cabinet Mountain Wilderness, the Clark Fork River, Pend Oreille Lake, and the Pend Oreille River "Waters of the U.S.?" For example, are not the small impoundment-dams in the Bitterroot-Selway Wilderness administered as "Waters of the U.S.?" The DEIS fails to address these key issues, although it mentions that CMW lakes, streams, springs, and wetlands may be affected (some possibly drained) by mining activities. (1288)

Page 2-79: states that a plan, required by COE as part of the 404 permit, would be developed to mitigate impacts to wetlands associated with Cliff and Cooper lakes if subsidence should cause the lakes to drain. An aquatic life mitigation plan would be prepared in conjunction with the wetlands mitigation plan for the wilderness lakes. These plans must be prepared and presented in the revised DEIS so they can be evaluated by the public and decision-makers. (1223)

Page 2-76. para. 5 The mitigation plan for wetlands as a result of wilderness lakes draining should also have been a part of the DEIS document. (1780)

Response: The issues presented in this section of the EIS are defined as indicators of potentially significant issues that emerged from the scoping process to be used for defining and evaluating the alternatives. The wetlands and non-wetland waters of the U.S. included for evaluation in the EIS are only those areas considered to be destroyed, dewatered, or otherwise affected by the mine project. The applicant has submitted a wetland inventory and delineation report for areas around Cliff and Copper lakes (Hydrometrics 1997) that may be potentially impacted by subsidence. The applicant has submitted a revised wetland mitigation plan (ASARCO 1997b) which specifically addresses Alternative V which the Agencies have amended to conceptually address the potential mitigation for these wetlands, should they be impacted (see Chapter 2, Alternative V Description). A potential of 4 acres of wetlands and nonwetland waters of the U.S. could be affected by the extremely remote risk of subsidence. There is also the potential for both dewatering and creation of springs and seeps downgradient of the mine, but the location and amount of impact cannot be identified or quantified.

16. ASARCO's Rock Creek project will have an effect on wetlands. The importance of this effect lies not in the loss of wetland structure, but in the loss of function. The impaired functions causing detriment to the Rock Creek area are loss of habitat and food for wildlife and slow recharge of ground water (Hansen et Al, 1995). The problem is that in delineating wetlands ASARCO only surveyed for jurisdictional wetlands, or those meeting the Army Corps of Engineer's (COE) guidelines. They left out functional wetlands, as is the standard technique. However, page 2-63 says: The mitigation plan provides for the mitigation of and compensation for the unavoidable loss and potential diminishment of the wetland functions and values associated with the development of the proposed project.

This clearly states that wetland function will be repaired if damaged. Additional loss of wetland function would occur due to the undetermined amount of functional wetlands destroyed beyond the delineated jurisdictional wetlands. This will be very difficult to do since ASARCO only mapped out the jurisdictional wetlands. Also, an unknown amount of wetlands and their functions will be damaged by the tailings impoundment. Water containing high concentrations of metals and nitrogen would negatively impact downgradient wetlands in the event that the seepage collection system fails (C-9). When in operation system designed to collect this contaminated seepage will also harm wetlands (page C-9). It will draw down the water table and deprive these wetlands of their principal need, water. The only solution to these dilemmas is for the COE to require ASARCO find more wetland remediation sites than they currently propose, to compensate for the additional loss in function. This is suggested in the DEIS on pages 2-79 and 2-86 and should be definite part of the 404 permit. The final EIS should include wording changes on both of these pages that alters "ASARCO might be required to identify additional mitigation sited to comply with its 404 permit" to "ASARCO would be required...". Alternative four is a good beginning in reducing the amount of damage done to wetland function, but it does not go far enough.

When the new wetlands are constructed the COE must insist in the 404 permit that the mitigation wetlands be planted with native species. Exotics must not be introduced that would limit wetland function and diversity. Along the same lines, extreme care must be taken to avoid noxious weed invasion of the constructed wetlands. (1594)

Response: As stated, Sterling has committed to provide for the mitigation and compensation for the unavoidable loss and potential diminishment of wetland functions and values associated with the development of the proposed mining project. The applicant's consultants did use standard and approved methods for identifying and delineating the wetlands and non-wetland waters of the U.S. The Corps of Engineers (COE) has verified these delineations as being accurate and representative of the existing conditions.

After review of the final EIS, the COE will determine if there is a least damaging practicable alternative that could be permitted. The COE typically attaches conditions to their Section 404 permits for measuring wetland mitigation success. In the applicant's revised wetland mitigation plan (ASARCO 1997b), an additional section describing their performance criteria for successful wetland creation was included. The applicant has stated that within a five-year period, the percent vegetative cover should be equal to or better than the impacted wetlands and that species composition and diversity will closely approximate the impacted wetlands.

Wetlands provide habitat, including food, for wildlife. The objective of mitigation is to restore these losses in kind. There will likely be a lag in time before a mitigated wetland can function as the original even if all went perfectly, because of the colonization of the area by wildlife species. The wetlands mitigation plan intends to replace the damaged functions. There are no introduced species proposed for revegetating the wetlands and Sterling's noxious weed control plan would include the created wetlands.

17. Page 2-11: Impoundment Construction Methods. ----Issues addressed do not include potential effects on "Waters of the U.S. and wetlands." (1288)

Response: The issues addressed are those that are at least in part mitigated, minimized or avoided by one or more of the alternatives considered in that category. Effects on wetlands and non-wetland waters of the U.S. was not included because the three categories of staged embankment tailings impoundment construction have the same footprint and seepage and drainage collection systems and thus the same potential direct and indirect impacts to this resource. However, the tailings paste disposal alternative, Alternative V, did reduce short-term impacts on wetlands. Table 2-1 was developed to replace the issue discussions after each of the alternatives described in Chapter 2.

18. Page 3-67, Vegetative Communities, paragraph 2: The statement that "Wetlands are limited in the project area, increasing their importance." is a value statement that may very well be indefensible. This statement, in this context, requires a thorough discussion and substantiating citations, not an allusion to the Waters of the U.S. and Wetlands sections of the DEIS. In fact, the General Introduction to "Environmental Consequences to Waters of the U.S. and Wetlands" (page 4-69) apparently refutes the above statement. (1589)

Response: The applicant's consultant included a section in the Wetland Inventory and Mitigation Plan (ASARCO 1995) which discusses the relative importance of the wetlands in providing several important functions and values in their ecological role. This paragraph will be expanded to include some pertinent aspects of the overall limited regional importance of the project wetlands (since project area wetlands are not extensive and wetlands occur commonly throughout the region), while providing high site-specific importance for some of these important functions and values. The Vegetative Communities section in Chapter 3, Biodiversity, has been revised.

19. I am concerned that the full impacts to all of the wetlands potentially affected by this project have not been sufficiently address: Wetlands both inside and outside the boundary area of the project will be impacted. There are several sloughs that are outside the imprint of the tailings impoundment that are connected hydrologically to Miller Gulch. These likely will be contaminated by toxic pollutants, but are not listed in Table C-2 of the DEIS. Because water from the tailings impoundment will enter both Rock Creek and Miller Creek, all wetlands connected hydrologically to these c creeks will be impacted by seepage from the tailings impoundment. In addition, failure of the pump back wells associated with the tailings impoundment would have the potential to impact wetlands downstream. Page C-8 of the DEIS states that additional delineations of wetlands will be made in 1995 to identify wetlands associated with Cliff and Copper Lakes. Has this been done? It should be addressed in the FEIS. Dewatering of the wetlands also needs to be addressed in the FEIS. The wetland mitigation proposed in the DEIS (Preliminary 404) is clearly inadequate to cover the loss of and damage to all the functional wetlands impacted by this project. (1248)

Response: Wetland areas evaluated in the final EIS included areas considered to be either directly or indirectly impacted by the proposed project. Wetland areas outside the permit boundary (study area) were included in this EIS evaluation only if potential impacts to these areas (e.g. Montanore tailings impoundment) were considered as part of cumulative impacts to this resource. The requirement for a proposed pump back, seepage collection system has been eliminated under the proposed paste tailings disposal alternative, Alternative V, although it remains a component of Alternatives II-IV. See earlier responses to comments in this section regarding wetlands in Miller Gulch.

20. The destruction of 9.6 acres of wetlands would occur initially with a return of 13.8 acres in Year 30 (project closure). That is an estimated net gain of 4.2 acres in 30 years. How can ASARCO assume that the creation of the 4.2 acres of wetland areas would not occur naturally over that period of time? ASARCO cannot even predict any of their model designs which are to be part to the DEIS process. How can they be able to see that far into the future when they cannot see the present. Also the initial destruction of these wetlands could effectively destroy many species that the DEIS has identified but also has not identified in its process. The destruction of known and unknown to the ferocity of scale as this should not be allowed. (2026)

Response: Sterling has stated that the majority of the wetland mitigation will be conducted at the beginning of operations prior to substantial disturbance of existing wetlands. Mitigation for waters of the U.S. along the west fork of Rock Creek, associated with the proposed mill locations, would occur at the end of the mining operation when the mill facilities are dismantled and the site reclaimed. Wetland mitigation ratios (acres mitigated per acres filled and/or impacted) for the Rock Creek Mine project has been determined by the Corp. of Engineers to be 1.5 to 1 based on numerous factors including the proposed schedule for wetland destruction, the size of the wetlands impacted, and the overall functional importance of the wetlands destroyed.

21. Dealing with the wetland mitigation, will wetland mitigation benefit the species (and the actual disturbed individuals) disrupted, and will it be implemented before the areas that are being mitigated for are disturbed, so that the public can be assured that the mitigation is indeed effective? (1751)

Response: Sterling has stated that the goal of the wetland mitigation is to provide "no net loss" of wetland and compensate for the unavoidable loss and potential diminishment of wetland values associated with the Rock Creek Project. It is nearly impossible for any wetland mitigation to replace the identical habitats of the actual disturbed individuals. The "no net loss" is usually achieved by creating or restoring more area than disturbed and facilitating the natural recolonization of indigenous species.

Sterling has stated that the majority of the wetland mitigation would be conducted at the beginning of operations before substantial disturbance of existing wetlands. This would allow for some public review and evaluation of the mitigation's effectiveness. In addition, the Corps of Engineers would

require Sterling to provide an approved habitat mitigation and monitoring plan as part of their final Section 404 permit.

The wetland mitigation plan and schedule proposed by Sterling is described in detail in Chapter 2. As shown in Chapter 2, 4.8 acres of the proposed wetlands would be created in years 1 and 2 and 7.5 acres during years 4 and 5 of the operation under Alternative II; under Alternatives III and IV only 3 acres would be developed in years 1 and 2 and 7.5 acres during years 4 and 5. See the Wetland Mitigation Plans sections of Alternatives II through V in Chapter 2 to see how the mitigation plans change between alternatives. The plans may be altered further based on the outcome of the agencies decision on permitting this project and the Corps of Engineers decision on the 404 permit. Typically, all of the agencies would try to develop as many sites as possible during the early years of mine life, as the applicant did in its original proposal.

22. Page 4-71 The Wetlands Mitigation Plan section needs to specifically address mitigation for any important aquatic habitat for fisheries, habitat for plant species of special concern, and habitat for sensitive wildlife species that the Rock Creek wetland sites provide that would be impacted. If it is not certain that such habitat occurs in the affected wetlands, professional judgment must be used to make a determination, and such judgment needs to be explained. (1912)

Response: The applicant has stated that the wetland mitigation sites were selected using criteria that included the sites suitability for establishing similar functions and values as the disturbed wetlands. Two of these wetland functions are to support aquatic diversity/ abundance and to provide habitat for wildlife diversity/abundance. The wetlands in the study area do not sustain fish populations, however, the perennial and intermittent streams associated with the wetlands do support fish. In addition, bull trout do occur in Rock Creek, east fork of Rock Creek, and west fork of Rock Creek and may have spawning areas located in portions of these streams where flows are consistent. Additional information of bull trout can be found in Threatened and Endangered Species sections of Chapters 3 and 4 and the Biological Assessment in Appendix B. More general fisheries information can be found in Aquatics/Fisheries sections of Chapters 3 and 4.

Additional wetland identification and delineation efforts have been completed in the Cabinet Mountain Wilderness around Cliff and Copper Lakes. Also a revised wetland mitigation plan has been completed to address impacts associated with the paste tailings facility and changes in mill site location alternatives. The additional wetland delineation and revised mitigation plans have been further modified by the Agencies to incorporate comments from the draft supplemental EISs. The revised mitigation plans for wetlands and other resources do address specific mitigation measures for impacts to fisheries, vegetation, and wildlife and aquatic habitats.

There are no sensitive wildlife species that are specifically associated with the project's wetlands (other than the riparian system of Rock Creek itself). Harlequin ducks use stream habitat instead of ponds or other still water such as a mallard might use.

Sterling's wetlands mitigation plan process proposes creating similar wetlands types to those impacted by the proposed mining project. Prior to issuing a 404 Permit, the Corps of Engineers will have additional input on the specific location and design of the wetland mitigation sites.

23. Pages C-10 and C-18 These pages refer the reader to Figure 2-21 for wetland mitigation areas. Figure 2-22 is the correct figure to reference. (1912)

Response: The figure number has been corrected in the final EIS and references Figure 2-39 for Alternative V sites rather than Figure 2-22 for Alternative II sites.

24. C-18. Where is ASARCO's revised wetland mitigation plan? How can this public review process be legitimate with such information lacking? (1196)

Page 4-68: states that under Alternatives III and IV, 1.8 acres of the proposed mitigated wetlands would need to be relocated to more hydrologically suitable locations because the main access road would be rerouted to higher and drier terrain, Two issues must be clarified in the supplemental DEIS. First, the location of all wetland mitigations sites, particularly the 1.8 acres that are not available for the current mitigation plan, must be disclosed. Second, the mitigation plan must evaluate the impacts of destroying riparian habitat to create these new wetlands. We believe it is irresponsible to destroy, healthy, functioning riparian habitat to construct manmade wetlands that may never work. This issue is of particular concern because it may well increase adverse effects to the fisher, a riparian-dependent species. (1223)

Response: The wetland mitigation plan has been revised based on changes developed under Alternative V (Paste Tailings Disposal with Mitigation). The 1995 and revised 1997 wetland mitigation plan addressed Sterling's Proposed Project and Alternative V. A 2-page letter describing the applicant's optional mitigation areas available to achieve a 1.5 to 1 wetland mitigation ratio, has also been submitted (ASARCO Incorporated 1998).

25. To continue to sacrifice wetlands to development is foolhardy. We are dismayed by the projected loss of natural wetlands in Rock Creek, and though a mitigation plan calls for the construction of replacement wetlands, we are leery of this tactic. There is simply no way man can replicate the intricate relationships of organisms inhabiting a wetland. Perhaps in the Final EIS you will disclose more details about the wetlands to be created in the four possible wetland mitigation areas, and just how functional they will be. (1668)

Response: Natural wetlands in Rock Creek are in a dynamic state and their exact wetland boundaries, composition, and functions are constantly changing. This fact is the reason why jurisdictional wetland delineations are verified by the COE for a maximum of three to five years. Wetland mitigation does not try to replicate the intricate relationships between organisms, but basically tries to replace the three diagnostic wetland parameters: (1) wetland hydrology; (2) hydric soils; which then can support a (3) dominance of hydrophytic vegetation. Wetland mitigation locations have been revised and optional areas included based on proposed impacts associated with the Alternative V and comments on the draft EIS and supplemental EISs. The revised wetland mitigation plan is included as Appendix L in the final EIS.

26. Review of the DEIS indicates that ASARCO may be unable to meet these mitigation requirements. If this is the case, the Corps will be forced to deny the project based on inadequate wetland mitigation. There are two areas in particular that must be further clarified in the revised DEIS: 1) the amount of wetland mitigation acres and potentially adverse environmental effects of construction the new wetlands, and 2) Army Corps and EPA regulations that may in fact preclude approval of the tailings impoundment location. (1223)

Response: The amount of wetland mitigation (mitigation ratio) required for this project would be determined by the Corps of Engineers (COE) prior to their issuing a Section 404 permit. Based on recent information provided by the COE, a wetland mitigation ratio of 1.5 to 1 would be required unless Sterling can demonstrate conclusively that a lower ratio can provide adequate assurance of replacement wetland functions. Other conditions, compliance with 401 certification, substantive alterations, and/or monitoring guidelines would be attached as conditions of the Section 404 permit.

27. A few inconsistencies in wetland mitigation acreage proposed to compensate for wetland impacts were identified in the DEIS. It is stated on page 2-86 that only 10.5 acres of wetland mitigation sites will be available with the preferred alternative, whereas pages 4-86 and 4-184 indicate that 12.3 acres of wetland mitigation acres are proposed. The September 1995 revised Wetlands Inventory and Mitigation Plan prepared for ASARCO by Westech and Hydrometrics (Table 3-2, page 3-5) indicates that 11.5 acres of wetlands will be created in the

preferred alternative (i.e., 1.15 acres @ Miller Gulch sites, 2.89 acres at Rock Creek site, and 7.48 acres at Borrow Area 3 site), and Table C-5 (page C-29) in the Appendix C preliminary 404(b)(1) evaluation shows 12.3 acres of wetland mitigation (i.e., 1.2 acres at Miller Gulch sites, 1.8 acres at Rock Creek sites, 7. acres at Borrow Area 3, and 1.8 acres at Access road sites). There is even mention of a potential 13.8 acres of wetland mitigation on page 2-118. These inconsistencies in wetland mitigation acreages should be corrected in the FEIS. (1214)

Response: The inconsistencies in wetland mitigation acreage are corrected in the EIS. Acreage in the draft EIS were rounded to the nearest 10th of an acre and were based on information available at printing. The precise wetland mitigation ratio will not be finally determined until the COE issues (or denies) a Section 404 permit. However, the COE has indicated that a 1.5 to 1 mitigation ratio would be used unless Sterling can demonstrate that a lower ratio can provide adequate assurance of replacement wetland functions.

28. Also, it is stated on page 4-86 of the DEIS that the 1.8 acres of wetland mitigation proposed at access road sites will need to be relocated with the preferred alternative since the road is relocated to higher and drier terrain with the preferred alternative. Yet no details of the redesign or relocation of these 1.8 wetland acres (which is part of the overall 12.3 acre wetland mitigation package) are included? Also the discussion on page 2-137 may lead the reader to believe that the 10.5 acres of wetland mitigation is proposed for Alternatives III and IV. This is contrary to what is implied on page 4-86. (1214)

Response: The location of all proposed wetland mitigation sites have been included in Appendix L and Chapter 2, Alternative V description of the final EIS. A revised wetland mitigation plan has been completed to help address changes to the proposed wetland impacts and mitigation associated with the Paste Tailings Disposal Alternative and to meet the 1.5 to 1 mitigation ratio. The referenced discussion in Chapter 4, Biodiversity refers to the total acres of wetlands directly and indirectly impacted, not mitigation acres.

29. Also, the wetlands mitigation plan needs to be part of the EIS document. (1638)

Response: The wetland mitigation plan, along with agency modifications, has been included as Appendix L and is summarized in Chapter 2, Alternative V description. of the final EIS. Versions for Alternatives II - IV can be found in the alternatives descriptions in Chapter 2.

30. We are pleased to see a commitment to preparing a performance criteria and final success plan included on page 3-25 of the revised (September 1995) Wetland Inventory and Mitigation Plan prepared for ASARCO by Westech and Hydrometrics. We suggest that this commitment for establishment of wetland mitigation success criteria be noted in the FEIS. Establishment of criteria to measure the success of wetland mitigation efforts is essential. The goal of wetland mitigation should be to replace the functions and values of impacted wetlands. The criteria for assessing replacement of function and value of affected wetlands should be established using an acceptable method.

A simple method of replacing functions and values is to presume that if the plant communities and arrangements in the mitigation wetlands closely approximate those that were present in the lost wetlands, the functions and values of the lost wetlands will be replaced. Accordingly, minimal criteria suggested by EPA for measuring success of wetland mitigation efforts are as follows:

Percent vegetative cover within the mitigation wetlands should be equal to or greater than the percent vegetative cover of the lost wetlands within a five-year period.

Vegetative species composition and diversity should closely approximate the composition and diversity of lost wetlands within a five-year period. This close approximation shall be evaluated by comparison of plant numbers and vegetative species lists at the lost wetlands and the mitigation wetlands. We note that the above referenced Wetland Inventory and Mitigation Plan (page 3-26) indicates that ASARCO will monitor wetland mitigation sites

annually for 5 years to evaluate success of mitigation, and biennially after the first 5 years through the end of mining and production. (1214)

Response: Performance criteria and wetland mitigation success plans are now part of the revised Alternative V wetland mitigation plan which has been included as part of Appendix L of the final EIS.

31. We are pleased that monitoring will include a before-and-after photographic record of all affected wetlands. Photographs of wetlands that will be impacted, and of wetland mitigation sites should be taken, prior to impact and disturbance, for documentation and comparison purposes (page 3-26 of Wetland Inventory and Mitigation Plan). A photographic record of mitigation wetlands is necessary to chronicle and record vegetative development at the mitigation wetlands. Color photos of mitigation wetlands should be taken at least annually during the mid-to-late growing season, and should be of sufficient quality to depict vegetative development and diversity of vegetation at the wetland mitigation sites. Photographs should be taken from fixed reference points.

This photographic record should be included with the monitoring reports that evaluate and document wetland mitigation success. We suggest that a summary of the monitoring plan for measuring success of wetland mitigation be disclosed in the FEIS to improve public recognition of this aspect of proposed wetland mitigation. (1214)

Response: The photographic record would be completed to help evaluate and document wetland mitigation success. A summary of the monitoring plan, including the measuring of wetland mitigation success and information on the photographic record has now been included in the revised Alternative V wetland mitigation plan. This plan is provided as Appendix L of the final EIS and is summarized in Chapter 2, Alternative V description.

32. There should also be a clear commitment to take corrective actions if the pre-established criteria for success are not being met. These corrective actions will more than likely involve revegetation and/or additional efforts at successfully establishing wetland hydrology, and/or potentially carrying out wetland mitigation work at other sites. These corrective actions should be mandated by conditions placed in the mine operating permits and the 404 permit. We also suggest that the commitment to take corrective actions, if the pre-established criteria for success are not being met, be noted in the FEIS. (1214)

Response: As part of the Section 404 permit, the COE typically attaches conditions for monitoring and evaluating wetland mitigation success, as well as compliance with other water quality certifications. The COE may choose to attach specific corrective actions for revegetation to this Section 404 permit. However, a monitoring plan that includes reclamation success standards for these wetlands has been included in the mitigation plan in Appendix L. The applicant has also identified six additional optional sites that could be used for mitigation sites should the proposed sites fail to achieve the suggested minimum replacement ratio of 1.5:1.

33. We note that the water source for the proposed mitigation wetlands at both the Borrow Area mitigation site and the Rock Creek mitigation site appears to be primarily ground water. We are pleased to see that ground water monitoring wells and/or test pits to verify ground water levels are proposed (page 2-64). We have observed failures in wetland mitigation efforts where excavations were expected to create wetlands, but did not because ground water levels were not monitored carefully enough beforehand and predicted wetland hydrology did not develop. Monitoring of ground water levels at a mitigation site is needed to ensure that ground water levels are compatible with excavated elevations to ensure that wetlands will be created. We advise long-term ground water monitoring since ground water levels can vary significantly year to year. We suggest that wetlands created through excavations should have variable excavated elevations in order to have wetland habitat at varying ground water levels. (NOTE: These types of uncertainties are the reason why in wetland mitigation success criteria, and monitoring to determine compliance with pre-established success criteria, and reporting are needed.) (1214)

Response: The proposed wetland mitigation areas would have varying ground surface elevations to compensate for water table fluctuations.

34. We suggest that the backwater connections of the constructed wetlands at the Borrow Area mitigation site and the Rock Creek mitigation site be located at areas where erosive force of Rock Creek is reduced (i.e., inside stream meanders rather than outside meanders). This will reduce the potential for erosion of the proposed linear wetland mitigation channels. We note that sediment and erosion control measures are recommended elsewhere (Page 2-71?) to protect bull trout habitat. Precautions to minimize erosion and sediment delivery to Rock Creek should be incorporated into wetland construction. (1214)

Response: The wetland mitigation locations for Alternative V have been revised and no longer include the Borrow Area site. Under the current wetland mitigation plan for Alternative V, the linear wetlands created at the Lower Rock Creek site would not tie-into the actual Rock Creek channel to help minimize potential erosion and sediment concerns.

35. We also recommend stabilization of these wetland channel/creek connection areas with vegetative methods rather than rock riprap. If stronger bank stabilization is needed, we recommend native material revetments using intermixed root wads, boulders, and vegetative transplants over standard rock riprap (see attached diagrams). Such native material bank stabilization methods create more habitat, and have a more natural appearance than rock riprap. (1214)

Response: The revised wetland mitigation plans (ASARCO 1997b), and Agencies modification (Appendix L), do not include the use of riprap to protect the mitigation sites from Rock Creek because there would not be any direct ties to the Rock Creek channel.

36. We note that comparison of Figures 2-22 and 2-24 show the proposed mitigation wetlands at Rock Creek site will be located adjacent to the proposed ASARCO exploration support facilities site (fuel storage area, parking area, garage and warehouse, according to Figure 3-6 of the Westech Report). We recommend that the Rock Creek mitigation wetlands be moved upstream or downstream to a more isolated location. This would provide greater security and reduced disturbance possibility to wildlife using the wetlands, and would increase their functional value. For the same reason, it would be beneficial if the bioreactor water treatment site could be located further away from the Borrow Area wetland mitigation site. (1214)

Response: The revised wetland mitigation plan and Agency modifications (Appendix L) states that the exploration support facility would be relocated. The revised water treatment plan for Alternative V does not include a bioreactor site; that site is where the water treatment facility would be located but it is upslope and separated by FDR No. 150 and Rock Creek from the mitigation sites. Some readily-disturbed wildlife would be disturbed by the proximity of the mitigation locations to human activities. The location of the mitigation wetlands considers many factors of which wildlife security is one.

37. We are pleased to see that Wetland Conservation Easements will be established for wetland mitigation sites that are privately owned (page 3-29 of Wetland Inventory and Mitigation Plan). This will help assure long term maintenance and protection of mitigation wetlands. Again we suggest that this aspect of the wetland mitigation plan be disclosed in the FEIS to improve public recognition. (1214)

Response: The revised wetland mitigation plan in Appendix L does include Wetland Conservation Easements. This revised information will be included in the final EIS.

38. Also please address the hydrologic stability of wetlands in the area and wetland mitigation, and in a summary format. (1637)

Response: Detailed information on establishing wetland hydrology for the wetland mitigation areas is included in Sterling's Wetland Inventory and Mitigation Plan. The revised wetland mitigation plan, including discussions of establishing wetland hydrology had been included as Appendix L in the final EIS.

39. Page 2-63: bulleted item 1: How has ASARCO evaluated suitability of mitigation sites vis a vis "similar functions and values" if they have not done detailed, seasonal analyses of the wetlands to be destroyed; where are the detailed physical/chemical/biological characteristics of these wetlands listed in the DEIS? (1288)

Response: The applicant's consultants evaluated the locations of the proposed wetland mitigation sites based on their potential for establishing similar functions and values, as well as the other bulleted items listed. The applicant has conducted a detailed characterization of the plant communities (relative to hydric soils and wetland hydrology indicators) and presented the findings in the Wetland Inventory and Mitigation Report Plan. The plan has been included in Appendix L, and evaluated in Chapter 4 - Wetlands and Nonwetland Waters of the U.S. and in the 404(b)(1) Showing in Appendix F.

40. Page 2-65: I question whether a constructed wetland requiring a clay sealant or PVC liner constitutes an acceptable wetland mitigation. Please explain why this is acceptable? The whole idea of mitigating wetlands is biologically and geologically questionable at best. The existing wetlands have developed their characteristics slowly, mainly since the last ice age. The thought of replacing these areas with artificial mud holes lined by plastic is ludicrous. (1288)

Response: Wetlands along Rock Creek are dynamic and their boundaries and vegetative composition are constantly changing. Wetland mitigation does not try to replicate the intricate relationships between biological organisms, but basically attempts to replace the three diagnostic wetland parameters: wetland hydrology; hydric soils; and hydrophytic vegetation. Clay and/or PVC liners (and placement of salvaged hydric soils) are used as a short-term enhancement practice to restrict vertical hydraulic conductivity. After a wetland mitigation area has established and produced vegetative biomass, along with reduced microbial decomposition of the plant materials, the organic mat, or humus-layer, will naturally restrict vertical conductivities by plugging the soil pores and cracks. The revised wetland mitigation plan and agency modifications (Appendix L) state that, if necessary, compacted clay would be preferred over PVC for modifying the subsurface hydraulic conductivity.

41. Page 2-86: Wetlands Mitigation: Two uses of the word "might" render this paragraph meaningless. What if the hydrologic characteristics are not appropriate for mitigation? Why would ASARCO not be required to identify additional mitigation sites to comply with its 404 permit? Again, what about wetlands potentially affected in CMW? (1288)

Response: The text has been modified for clarity. The applicant has completed and submitted a wetland inventory report for areas around Cliff and Copper lakes that may be impacted by subsidence. The revised wetland mitigation plan (ASARCO 1997b) and Agency modifications (Appendix L) address conceptual mitigation for these wetlands, should they be impacted. Additional sites have been identified for use should the proposed mitigation sites fail to meet revegetation success standards.

42. Page 2-63, Wetland Mitigation Plan: An updated Section 404 Permit Application and Wetland Mitigation Plan was submitted to the U.S. Army Corps of Engineers (COE) and the other regulatory agencies on September 29, 1995. This updated permit application and mitigation plan was the basis for the COE's public hearing held jointly with the MDEQ's and USFS's DEIS hearings in November 1995, and should be included in the Final EIS. (1589)

Response: Information provided in the September 1995 Wetland Mitigation Plan that is still applicable to the mining alternatives has been incorporated into the final EIS. ASARCO has currently revising the Wetland Inventory and Mitigation Plan to reflect changes under Alternative V. This revised plan, along with Agency modifications have been included as Appendix L of the final EIS and is summarized in the Alternative V description in Chapter 2.

43. ASARCO plans to create mitigation wetlands along the mine access road. The primary function of these isolated wetlands is reported to be the reduction of sediment transport to Rock Creek. The true value of such wetlands as mitigation sites and their potential lifespan, given the expected steady sediment input and subsequent need for disruptive maintenance, should be explained. (1779)

Response: The revised wetland mitigation locations do not include the access road sites primarily due to the relocation of the Access Road to a higher topographic position.

44. Appendix C contains several errors that should be corrected in the final EIS. Page C-4 says that information on ASARCO's wetlands mitigation plan is on page 2-53 through 2-58 when in reality is on page 2-61 through 2-66. (1594)

Response: The revised mitigation plan is included in the final EIS as Appendix L and is referenced from Appendix F, the 404(b)(1) Showing.

45. Page 3-45, Waters of the U.S. and Wetlands, paragraph 3: The references to crested shield-fern and black snake-root should be revised based on the comments regarding page 3-63. (1589)

Response: The text has been revised for consistency to state that five plant species of special concern (Montana Natural Heritage Program database) were found during the applicant's baseline field studies.

46. Page 2-81 This page states that a monitoring plan would be implemented to monitor impacts to wetlands and to evaluate the success of wetlands mitigation. Appendix H does not provide a summary of the highlights of this plan, and should. (1912)

Response: A general description of the wetland monitoring plan has been included in the final EIS in Appendix L. Performance criteria and wetland mitigation success plans were submitted in a September 1996 Wetlands report (after the draft EIS was published). The wetland monitoring plans will include before-and-after photographic records of all affected wetlands to help document and compare the impacted and mitigation sites.

47. The statement in the Draft EIS that only 1.5 acres of U.S. waters will be affected by the project is patently false and hopefully won't be repeated in the water plan. (1926)

Response: The applicant has stated that only 1.5 acres of waters of the U.S. will be directly impacted (primarily by filling with earthen materials) by the proposed project. The inventory of waters of the U.S. within the project area has been verified as being accurate by the COE. Potential indirect impacts to surface water quality or aquatics/fisheries resources are not included in the 1.5 acres.

48. Whoever wrote this is totally wrong and these assumptions must be corrected in the 404 permit. (1196)

Response: This comment refers to potential impacts to Municipal and private water supplies and to water related recreation. An analysis of the project's potential impacts to municipal and private water supplies has determined there should be no direct effect or impacts under Alternative V. There may be indirect effects on municipal water supplies in communities that experience growth as a result of development of the mine. This is covered in the Socioeconomics section in Chapter 4. Any potential impacts to a nearby private water supply should be further decreased based on the elimination of the tailings impoundment seepage collection system under a proposed Paste Tailings Disposal Alternative. The minor impacts to water-related recreation, as described in Section 230.52, are considered correct.

49. And greater effort should be made to avoid or minimize impacts to wetlands rather than simply emphasize mitigation. (1220)

Response: The main effort made by Sterling to avoid or minimize impact to wetlands has been made during the planning process. After submitting the plans, the primarily effort by the Agencies is to develop mining alternatives that avoid or minimize wetlands. After developing the alternatives, writing the EIS may appear to discuss mitigation in greater detail. The priority has been set by the COE: first to avoid, second to minimize, and third to mitigate.

50. We note that mitigation for the loss of stream channels or waters of the United States (WUS) is deferred until after reclamation at the completion of mining (Table 2-5), leaving a temporal WUS loss for 30 years. While we recognize that the preferred alternative includes impacts to only 0.4 acres of WUS we believe opportunities for mitigation for the affected waters of the U.S. channels should be considered that would avoid or reduce temporal (30 year) loss of the channels. (1214)

Response: The 0.4 acres of waters of the U.S. to be directly impacted by Alternative IV are associated with stream crossings for the tailings pipelines and bridge abutments for an upgraded road. The 0.4 acres was considered to be unavoidable and the minimum area impacted based on the proposed alternatives. The recently proposed Paste Tailings Disposal Alternative (Alternative V) may modify the acreage for waters the U.S. impacts by modifying the method and quantity of tailings transported to the tailings disposal facility site.

51. Where are water treatment issues pertinent to potential effects on "Waters of the U.S. and wetlands" discussed in the DEIS? (1288)

Response: The applicant's original proposed water treatment system (passive biotreatment system) was described in Chapter 2 under Alternative II. The revised system is described under Alternative V. The potential effects on waters of the U.S. and wetlands is discussed in Chapter 4 under Wetlands and Nonwetland Waters of the U.S.

52. The US Army Corps of Engineers (ACE) was the chief reviewer and perimeter at Omaha Office in Lincoln, Nebraska. The primary overview of this project was conducted at the Helena Office. The Seattle District Office not brought into this permitting process at all. This was confirmed by the District Commander for the Seattle District in March of 1996/ The Kootenai Tribe of Idaho does not understand why this process is occurring? The downstream users of the discharge will be significantly impacted by any discharge to the water. The Tribe would also like to know what involvement the Walla Walla Dist. of the ACE had in this process. The Tribes' conversations with the Walla Walla Dist. has led us to believe that very little consultation has occurred. How can this be? We are extremely affected by this if any discharge occurs to the system. (2026)

Response: The U.S Army Corps of Engineers Omaha District Regulatory Office is and has been the chief reviewer for the Corps of Engineers (COE) on the proposed Rock Creek silver and copper mine. The primary review has been conducted out of the Omaha District Office and not the Helena Office. The Helena Office requested that the Omaha District Regulatory Office be the primary reviewer and main point of contact for this project. The Omaha District Regulatory Office is listed as a cooperating agency and not the lead Federal agency on the project; the lead Federal agency is the Kootenai National Forest (KNF) of the U.S. Forest Service. The KNF shares a dual lead role, with the State of Montana, in preparing the EIS. The COE is involved because of its role in permitting and reviewing any adverse impacts to either wetlands or waters of the U.S. The COE will use the information in the EIS because the applicant needs a 404 permit to deposit the tailings (dredge and fill material) from the proposed silver and copper mine into wetlands or waters of the U.S. In compliance with the National Environmental Policy Act and the Clean Water Act, public disclosure and review of those impacts is required.

Other than an increased nutrient and metals load that complies with nondegradation requirements, there are no anticipated impacts to the Clark Fork River downstream from the point of discharge from implementation of this project. However, there could be significant water quality impacts should the tailings storage facility fail or collapse, although the risk of failure would be minimal under the preferred alternative. Increased sediment in downstream wetlands and waters of the U.S. would be the greatest potential impact from the remote chance of a facility failure.

The location of the proposed project falls within the boundaries of the Omaha District Regulatory Office and is outside either the Seattle, or Walla Wall Corps District boundaries. If possible impacts warranted, that would not preclude the Forest Service from requesting that those Corps Districts also consider being cooperating agencies and providing their comments on the EIS. The Omaha District is not aware of any involvement in this project by either of these Corps Districts, and neither office is currently on the EIS mailing list. The Omaha District, after contacting the Kootenai Tribal Office and the Seattle District Office was unable to obtain, or locate a copy of the letter from the Seattle District Commander, mentioned in the referenced comments from the Kootenai Tribe of Idaho. The Kootenai Tribal Office informed the Omaha District that Mr. Hopkins was no longer employed there and they had no record of the letter mentioned in his referenced comments on the EIS.

WTR-310 404(b)(1) Permit

1. In the event the applicants obtain authorization for the dredge and fill activities associated with this project, DOI recommends that all mitigation be in-kind and be completed prior to or concurrent with the construction period for the mine. (1933)

Response: The Corps of Engineers will consider all input from public, state, and federal agencies in the evaluation process prior to their making a final permitting determination. Sterling criteria for selecting wetland mitigation sites includes sites where wetland can be created with similar function and values as those directly and indirectly impacted (in-kind mitigation). Sterling's proposed wetland mitigation schedule would create most of the wetland during Preproduction years 1 through 5 (during evaluation adit construction and mine development) for Alternative V or operation years 1 to 5 under Alternatives II - IV.

2. The backfill of tailings associated reduced impoundment size need to be carefully evaluated relative to the 404 B1 guidelines analysis for the tailings impoundment. This should be done as a practical alternative relative to the 404 B1 guidelines 40 CFR 23010A, and also to ensure all appropriate and practicable steps have been taken to minimize potential adverse impact of the discharge on the aquatic ecosystem 40 CFR 23010D. (1961)

Response: The backfilling of tailings was evaluated in Part II of Chapter 2 of the draft EIS as an alternative considered but dismissed from further study (page 2-96 in the draft EIS). The backfilling of tailings was dismissed in the draft and final EISs for three main reasons including: (1) a surface impoundment would not be eliminated; (2) additional land disturbances may be required; and (3) costs to mine could be uneconomical if backfilling were part of the project design. The COE does consider the alternatives dismissed in their evaluation of the projects avoidance and minimization of wetlands.

3. Finally, page 2-79 says the COE will require a mitigation plan if Copper and Cliff Lakes drain. However, this vitally important measure is not contained within appendix C and must be included in the final EIS. (1594)

Response: The revised wetland mitigation plan includes agency modifications that address the conceptual mitigation for the wetland areas around Copper and Cliff Lakes, should they be impacted. This revised and modified mitigation plan is included as Appendix L in the final EIS.

4. Permits offered under Section 404 of the Clean Water Act directly defeat the purpose of the Act, which is to keep the nation's water clean not polluted. ASARCO proposes to locate this mine in an area where it will cause, not might cause, or probably won't cause substantial environmental degradation. In Montana, no mines have ever been free of significant amounts of pollution. Never in the state's history of mining has one single mine managed to avoid polluting. (1670)

Response: The Code of Federal Regulations (CFR) Part 230 describes the Section 404(b)(1) Guidelines for specification of disposal sites for dredge or fill material. The stated purpose of these Guidelines is to restore and maintain the chemical, physical, and biological integrity of waters of the United States through the control of discharges of dredged or fill material. Under Subpart B, the compliance evaluation procedures and requirements and restrictions on discharges are described. If pollution problems occur, the agencies would take appropriate action and require abatement of the problem.

5. Appendix C The entire appendix needs to make much more use of the determinations listed in Table 2-13. Page C-19, Section 6.0 - The section especially needs to make much more use of the effects listed in Table 2-13. (1912)

Response: Appendix F is an analysis of how well one alternative (typically the Agency-preferred alternative) meets the 404(b)(1) guidelines. There is no intent to analyze how the other alternatives

discussed in the draft final EIS meet the guidelines. There are specific requirements laid out by the Corps of Engineers. Appendix F is intended to fulfill these requirements.

6. Page C-3 The Marble 1992 reference cited on this page is not listed in Chapter 9. (1912)

Response: The reference list has been revised.

7. Page C-14, Section 2.2.8 Secondary effects are synonymous with indirect effects. This section needs to specifically discuss the indirect effects of the fill activities are quantified in Table C-2. (1912)

Response: Section 2.2.8 will be edited and expanded to more explicitly discuss indirect effects caused by the proposed fill activities listed in Table F-2.

DRAFT EIS
RESPONSES TO COMMENTS

BIODIVERSITY

Wildlife Habitat BIO-400
General Wildlife Species BIO-401
Sensitive Wildlife Species BIO-402
Management Indicator Species BIO-403
Vegetation BIO-404
Plant Species of Special Concern BIO-405
Old Growth BIO-406
Noxious Weeds BIO-407

BIO-400 Wildlife Habitat

1. The project will degrade wildlife habitat, including that of sensitive and endangered species. (1327)(1540)(1915)(1739)

Response: The analysis of impacts to wildlife habitat is discussed in Chapter 4, Biodiversity

2. We are also most concerned about damage to the area's ecosystem as well as the injurious affect on wildlife. (1393)

Response: There would be impacts to the ecosystem from this project, but the Agencies have tried through the development of Alternative V and its mitigation measures to minimize impacts. Even with agency efforts, there would be changes to the ecosystem. Some animal species would see a reduction in habitat they use while others would see an increase in the type of habitat they use.

3. Declining redhead duck populations have been a major waterfowl concern for several decades. Currently, concern for the species remains high and harvest levels continue to be very limited. During the 1982-1991 period, average midwinter redhead populations for the Pacific Flyway was 23,063. In 1987, over 18,000 redheads wintered on Lake Pend Oreille, Idaho (mostly near the mouth of the Clark Fork River). Thus, this wintering habitat is exceedingly important to the Pacific Flyway wintering population, and any negative impacts to that environment (especially water quality could have serious impacts on the ducks. To date, no rigorous analysis of wintering ecology and habitat use has been completed for redhead ducks in Idaho, or in the Pacific Flyway. Recent research has noted the importance of winter habitat quality and resulting body condition on subsequent reproduction for many water fowl species. (1989)

Response: Water quality in Lake Pend Oreille is not expected to be measurably reduced by the project. Thus, the mine's effect on ducks, including the important redhead population, would not be an issue.

4. If such great care is put into protecting our wildlife then why is it that once a mine pulls out things are not in as good of shape as they were found in? (1291)

Response: The Agencies have attempted to design an alternative including the addition of mitigation measures which minimizes project impacts to wildlife. Even with design and mitigation measures, there would be changes to habitat types over time as the project is developed and operated. Once the project was completed and reclamation was done, the changes brought about to the land may reduce a specific site utility for a particular species while improving the utility for other species.

5. Mining activity would divide the wilderness corridor disconnecting habitat for wildlife. Mountain goats are often seen near Cliff Lake; however, they would not stay in the area with the constant noise pollution and mining activity. Other sensitive animals in the Chicago Peak/Rock Creek area in which habitat would be lost, reduced degraded or fragmented are the harlequin duck, lynx, fisher, and wolverine. Loss of old growth habitat would impact neotropical birds and the pileated woodpecker. (1371)

Response: The effect of the project on mountain goats is detailed in the effects analysis (Chapter 4) portion of the final EIS. Harlequin ducks, fisher, and wolverine are analyzed in the sensitive species portion of the effects analysis and biological evaluation. Lynx is analyzed in the Threatened and Endangered portion of the effects analysis. Old growth habitat including the effects on species such as, but not limited to pileated woodpeckers, is analyzed in the effects analysis.

6. Planned losses of old growth, wetlands, and creek habitat with significant impacts to the myriad of species these habitats support (including driving several species closer to extinction) should not be allowed on public land. (1447)

Response: Impacts to and losses of old growth, wetlands, and creek (riparian) habitat are disclosed in Chapter 4.

7. Because the mine is so near the Cabinet Mountain Wilderness, you should look for more ways to prevent or minimize destruction of habitat for native bull trout, removal of close to 3,000 acres of effective grizzly bear habitat, total loss of mountain goats and pileated woodpeckers - both "indicator" species and disrupting wildlife travel corridors. (1770)

Page B-21. Reduction in corridor effectiveness. Please show the transportation plan and demonstrate its mitigative effect. (1780)

Response: The plan is summarized in Chapter 2, under Transportation for each alternative. The effects on pileated woodpeckers and mountain goats are outlined in the Chapter 4, Biodiversity. Pileated woodpeckers are strong-flying, mobile birds that tolerate human activity provided they have appropriate habitat. This is evident by their presence in the intermountain west with its naturally fragmented habitat and their presence in the eastern U.S. with its human-induced fragmented habitat. Mountain goats are prone to disturbance which would affect their ability to use any active area for travel corridors. These effects are outlined in Chapter 4. Effects on bull trout and grizzly bear are disclosed in the Threatened or Endangered section of Chapter 4.

8. Will the underground blasting and above ground activity (for possibly 30 years) have an effect on the wildlife that has made this area their homes, including the mountain goats, grizzly bear, lynx, wolverines, and fishers. (1529)

Response: Activities underground are much less likely to affect wildlife than those on the surface, mostly because of the insulating effect of the overburden, but also because wildlife species lack the instinct to sense danger from beneath the surface. Activity above ground will have varying effects depending on the species and area; these effects are explored in Chapter 4, Biodiversity.

9. The project would create adverse impacts on habitat for fish, wildlife, and plant species. Therefore, the analysis must show that the viability of all Threatened, Endangered, Proposed, Sensitive and Management Indicator species will be maintained in order to comply with NFMA and ESA. The EIS should fully analyze population growth rate, population size, linkages to other populations, and the dynamics of other nearby populations in examining populations dynamics. (1670)

Response: A viability analysis was conducted for the Kootenai National Forest on those species for which the Rock Creek Mine project was considered to cause a potential viability issue, that is, fisher, lynx, and wolverine. Some parameters of viability analysis are unknown for those species, such as rate of population growth or decline, population size, and to some extent, the dynamics of nearby populations. Linkages to adjacent forests were considered and how those populations may affect the Kootenai National Forest were considered. This analysis is included in Chapter 4, Biodiversity (for fisher and wolverine) and Threatened and Endangered Species (for lynx).

10. Figure out how to prevent or at least minimize--not mitigate--disruption of wildlife travel corridors and feeding ranges. (1730)(1732)(1737)(1738)(1741-1744)(1746)(1747)(1913)

Response: The disruption of wildlife travel corridors and feeding ranges is inevitable with some forms of human activity, including the Rock Creek Mine project. Mitigation seeks to minimize or counteract some of the effects. Alternatives III through V minimize the activity in the wilderness area relative to Alternative II. Some other design features of Alternatives III through V are attempts

to minimize the effects of activities near the wilderness area that have an effect on the wilderness area itself. An example of a design feature is sound dampening vegetation screening at the mill site. The effects on wilderness wildlife are outlined in Chapter 4, Biodiversity.

11. In the final DEIS ecosystem effects must be more thoroughly examined, explored. (1982)

Response: The supplemental EIS and final EIS have both explored additional information (see Chapter 3) and analysis (see Chapter 4) to examine ecosystem effects.

12. It seems there would be adequate room in the surrounding forest areas to handle the temporary displacement of the big game habitat and other wildlife without requiring special habitat mitigation. (1612)

Response: It is not generally possible for wildlife species to "share" their living space or territory. This would be analogous to your neighbor showing up unannounced and uninvited and sharing your refrigerator and your bedroom. Territoriality would quickly move you to show your neighbor the door. With most wildlife species the process is the same. If there is unoccupied but suitable habitat, then it is possible for wildlife to move into an area. However, when there is a choice, wildlife normally chooses the best available habitat to occupy first, and there may be a reduction in vigor if forced to use less than optimal habitat. The concern with many rare species is that there are too few individuals to ensure the continuance of the species, although all suitable habitat may not be currently occupied. One management objective for rare species recovery is to manage suitable habitat so that as recovery occurs, the expanding population may expand into that suitable habitat. The mitigation plan is designed to meet this habitat need.

13. There is too much discussion and listing of mitigation in the alternatives section to understand what the alternatives are. The mitigation discussion would be more useful if it were tied to the analysis of impacts. (4502)

Response: The final EIS clarifies the connection between the mitigation and the effects it attempts to correct.

14. Page 4-83 - There is no effort to put populations into the context of regional ecosystems, no discussion of the natural ranges of potentially affected species or any overview of wildlife or sensitive species. This section is a disservice to the public and does not do an adequate job of disclosing expected or predicted (versus speculative) impacts. Was there any analysis of the extensive wildlife and vegetation baseline data collected over the years by the project proponent? (4502)

Response: The final EIS glossary includes a definition of biodiversity, which is a standard term used in biology. Analysis of the baseline data was used in the preparation of the draft EIS. Chapter 3 of the final EIS summarizes the baseline data submitted by the proponent. The agencies reviewed the baseline wildlife and vegetation data to produce the biodiversity section. These data were used to project impacts. Additional analysis of the planning unit (the Kootenai National Forest) provided large-scale overviews where needed.

15. Page 4-86 paragraph 44 - The statement "Habitat loss due to mine-related home building and recreational demands would also occur.", is unsuitable and not compared with projected changes in land use over the next 30 years without a mine. Where would these supposed impacts occur? What impacts would occur without the mine? (4502)

Response: Habitat loss due to building would likely occur at the perimeters of existing communities. Dispersed impacts could occur in any private lands in the area sold for homesite construction. Impacts from recreational demand would occur in public lands used for recreation, basically, throughout the forest on trails and campsites and other facilities. As use increases, more animals

would avoid the areas in use. Also, see response to comment below. The effects to wildlife without the mine are in the "no action" alternative.

16. Project impacts on wildlife, including both resident animals and those which use the project area as a travel corridor, will be unacceptable. ASARCO must minimize these potential impacts before the final EIS. (1389)(1740)

Response: The irretrievability of any habitat need for wildlife, including corridors, is dependent on the temporal duration of the loss. Some corridor loss will be encountered, as noted in the effects analysis (Chapter 4, Biodiversity). The duration of the loss depends on how long the activity will occur or how drastically the site has been altered relative to its value for wildlife. For example, housing developments in the Bull River valley as an indirect result of increased human employment in the mine is likely to cause an irretrievable loss of the value of parts of the valley for some species, such as grizzly bear. The mine tailings, once revegetated, are not likely to cause an irretrievable loss as a corridor for grizzly bear.

BIO-401 General Wildlife Species

1. There would be a certainty of disruption of wildlife. (1419)

Response: The project would disrupt some species of wildlife, in particular those that are most sensitive to noise or human presence. These effects are outlined in the effects analysis in Chapter 4, Biodiversity.

2. The ventilation of mining fumes and noise, and noise from blasting will destroy wilderness values in the area and probably drive all the more sensitive animals away. (1246)

Response: The effects of noise on wildlife at the ventilation adit has been explored in the effects analysis. Fumes are not known to affect wildlife as a source of disturbance. Bats may be affected by fumes but the ventilation adit may not be used by bats until project completion.

3. Would the habitat of grizzly bears and other wildlife species be compromised,... (1255)

Response: Habitat of some species will be affected as outlined in the effects analysis in Chapter 4, Biodiversity; grizzly bears and their habitat are addressed in the Threatened and Endangered Species section and in the Biological Assessment in Appendix B.

4. Protecting wildlife from the impact of the mine and expanded human population,... (1295)

Response: Some of the adverse effects of the project on wildlife are proposed to be mitigated as outlined in the mitigation plans. Mitigation deals with not only direct effects to wildlife such as effects from the mine itself but also indirect effects such as the expanding human population resulting from the mine.

5. Even if the mining is done under the wilderness area, I fear for the wildlife and vegetation there. (1366)

Response: Monitoring is proposed in the agency modified Alternatives III through V in Chapter 4 to monitor for water level changes in the wilderness waters. The agencies assume if the water table is not affected, then the vegetation would not be affected. Wildlife impacts from the ventilation adit in the wilderness are discussed under the wildlife sections of Alternatives III through V in Chapter 4.

6. The wildlife and... uses and concerns alone are enough or should be a good starting point to acknowledge that there are some strong concerns with this project. Wildlife and... provides economical reasons to be concerned besides just "being humane." The economics of wildlife and ... have just as much place and right to reside in this area without risking detriments to this industry (including fish...). (1373)

Response: Wildlife do contribute to the area's economy as well as to its standard of living. This is recognized in the affected environment section of this EIS. Analyzing the relative value of wildlife to mine products is a very difficult process, but most economists would agree that under any standard procedure high economic value products such as minerals would be worth more to a local economy in pure *dollars* than any combination of wildlife economic values.

7. Baseline data on animal and plant populations should be done for the impacted areas, by a neutral party - not by Asarco - before ANY work proceeds. (1384)

Response: Baseline studies on the area's wildlife were conducted several years prior to the draft EIS (Farmer and Heath 1987). Those studies were completed by an independent contractor for the applicant. Other sources for baseline wildlife information are the wildlife atlas, information from the Kootenai National Forest, and the Montana Natural Heritage Database.

Baseline studies are reviewed by agency personnel and if any apparent data has been misreported, the agencies would require additional baseline work if necessary to check the data.

8. How does the possibility of two mines in close proximity increase the wildlife impacts? How would those changes affect mitigation plans? (1384)

Response: The proximity of two mines is considered a cumulative effect, and was considered in the analysis of wildlife species. These effects are outlined under cumulative effects in the effects analysis (Chapter 4, Biodiversity as well as Threatened and Endangered Species) and the biological assessment. Mitigation plans are designed to consider the cumulative effects as well as the direct and indirect effects.

9. Was any wildlife study conducted at the Troy Unit to document any effects? The Troy Unit enhanced the existing wildlife condition, it was and still is like a small wildlife refuge. The tailings area especially is teaming with moose, deer, bear, elk, coyote, and all types of water fowl. (1358)(1367)(1478)(1647)

Response: The species you mention are generalists, and particularly those that thrive on lower seral stages. Not all species would be benefitted by the situation at Troy. No wildlife study at the Troy unit is available.

10. The plan does not take into account…wildlife concerns. (1286)(1310)(1330)(1390)(1423)(1486)(1539)(1549)(1551)(1918)

Response: The supplemental and final EISs further consider the effects to wildlife. Alternative V was the result of many of the concerns presented by the public as well as the analysis of effects in the draft EIS.

11. Detrimental effects of the mine & its discharges will seriously and adversely impact wildlife; these harmful effects have not been adequately addressed in the draft EIS. (1345)(1436)

Response: The effects of the mine and its discharges have been discussed in the effects analysis (Chapter 4, Biodiversity) section of the final EIS. These sections have been expanded and more recent data included since the draft EIS was published.

12. The blasting would scare away what little wildlife there is left after the initial development. (1532)

Response: The effects of noise, such as that occurring during blasting, are identified in the effects analysis (Chapter 4, Biodiversity). Noise measurements were taken at certain parts of Rock Creek to determine the degree of the effects of noise from the road at the creek (Chapter 3, Sound). This analysis was conducted in response to concerns about the effects of noise from the project.

13. Common sense dictates that if owls, bats, etc. were thriving there, they would be plentiful. Wildlife will adjust to any noise or disturbance, either moving to another nearby area or being curious and staying. (1596)

Response: Some species of wildlife do adjust to noise and human activity, while others are displaced from the area. If the displacement occurs to habitat already occupied, or to unsuitable habitat, those individuals are at a greater risk of mortality. Wildlife do not normally respond to immigrating individuals without territories by sharing habitat, but rather by repositioning dominance in which either the resident or the newcomer is subsequently forced from the area.

14. ASARCO's impact on wildlife in the C.M.W. needs to be addressed further. (1721)

Although the DEIS mentions that there are ecosystem implications for all mine alternatives, it appears that because information on this subject is scarce at this time the subject will not be explored deeply enough for my satisfaction. A CMW ecosystem study specifically outlying total potential impacts on biodiversity and all species of special

interest (especially wide-ranging mammals) needs to be completed before a final EIS is undertaken. I am extremely concerned that any of the mine alternatives will have significant and long-term impacts on the CMW ecosystem's biodiversity. (1223)

Response: Additional analysis of the effects to wildlife in the Cabinet Mountain Wilderness include an analysis of lynx, fisher and wolverine, and further analysis of grizzly bears and can be found in Chapter 4, Biodiversity and Threatened and Endangered Species of the final EIS.

15. Page 2-59. Fish and Wildlife. Require Asarco to hire at least one extra full time game warden, for western Sanders County, and a project wildlife biologist to track impacts, and devise wildlife mitigation plans, as effects of the mine are manifested. (1196)

Response: A Department of Fish, Wildlife and Parks law enforcement position would be partially funded by Sterling for the purpose of additional law enforcement, as proposed by the Agencies in the wildlife mitigation plan for Alternatives III through IV. While this position is primarily targeted toward reducing the threat of grizzly bear mortality, conservation officers will enforce all wildlife laws. U.S. Forest Service biologists would assist with implementation of the mitigation plans.

16. Page 3-73. Fishers. No discussion is made of species listed as SPSC (state species of special concern), what responsibilities do state agencies have towards these animals. Ditto for wolverines, mountain goats, Northern bog lemmings, and all the other species listed on pg. 3-73. (1780)

Response: State agencies have primarily been charged with managing the populations of wildlife, such as setting big game hunting seasons and bag limits, while federal agencies have been charged with managing the habitat. Species of special concern (SPSC) is a state-authorized category of wildlife. Most of the species of concern within the project area are already in other categories such as threatened, endangered, or sensitive, so are dealt with in the final EIS in their appropriate categories. Northern goshawk is now considered a Forest Service sensitive species and is discussed in that section of chapter 3 and 4, Biodiversity. Tailed frog and great gray owl are the only species not already categorized elsewhere in the document, and they are covered in the writeup at some point. Some of the SPSC listed in the draft EIS were there because of inadequate information on their status, and are no longer on the current SPSC list. Some have concerns in other parts of their ranges but not in the project area. A recent bird species list of the Kootenai National Forest updates the baseline study for distribution and abundance of birds. A similar list has not been compiled for mammals or reptiles and amphibians. The final EIS has updated information on these species.

17. I want the plan to be modified to tell us how they intend to mitigate loss…and wildlife currently on tenterhooks in the Cabinet and Rock Creek. (1527)

Response: Mitigation plans have been drafted to address the losses identified in the final EIS and can be found in Chapter 2.

18. Other raptor species, such as the northern goshawk, great grey owl, sharp-shinned hawk, long-eared, barred owl, and osprey, are mentioned, but again, the potential impacts to these species are not explored. (1223)

Response: There are far more wildlife and plant species than could be individually analyzed, so two approaches are normally taken in project analysis. The first is to analyze species that have some special status such as threatened or endangered species. The second is to analyze the changes in the major habitat type groups that each species occurs in. For example, an analysis of the effects on old growth treats the effects on the majority of species dependent on old growth. None of the species present in the project area are expected to have any unique habitat requirements outside of their habitat needs in other portions of their ranges, so the analysis of habitat is a reasonable method of analyzing effects on the species mentioned.

19. On page 3-80, black bear populations are mentioned as a species of interest. However, the writers discuss hunting of the bears, but completely avoid the issue of impacts to this species. Mule deer are also mentioned, but again the writers ignore the issue of impacts even though the proposed mine area has possible winter habitat. Is this habitat critical for local populations? The writers do not explore this, they simply state the "population estimates or trends are not available", as if this closes the subject! (1223)

Response: There is no evidence to suggest that the habitat associated with the project area is critical for either black bears or mule deer, either for local populations or for either species as a whole.

20. The DEIS writers discuss general impacts to wildlife on page 4-88. The four primary ways in which wildlife individuals or populations would be impacted are listed here. Unfortunately, these potential ways for wildlife to be impacted are not then explored through the cautious process of scientific method. The critically important question of how these impacts will cumulatively effect the CMW ecosystem arises again, and remains unanswered. It appears the writers have paid the necessary lip service to "ecosystem management", but have made no real commitment so far to realistically, systematically, and thoroughly evaluate ecosystem-wide wildlife impacts. (1223)

Response: The science of ecosystem management with regard to cumulative effects on wildlife is still in its infancy, and some questions simply cannot be answered with certainty. The draft EIS did state on page 4-88 that cumulative effects likely would have greater impacts than direct effects. For some species, such as grizzly bears, a standardized method of addressing cumulative effects is used, but standardized scientific methods for most species do not exist. An EIS is not a scientific discourse but rather a summation of information and results from previous studies and applicable research.

21. The draft EIS, as amended by the errata sheet, adequately discloses the significant effects of this proposal on many forms of wildlife including many threatened, endangered, sensitive, management indicator and game species, such as harlequin duck, mountain goat, fisher, lynx, wolverine, pileated woodpecker and many others. Although the draft disclosed significant effects, there was little mention of efforts to mitigate those effects except to threatened or endangered species. Because petitions to list lynx and wolverine as either threatened or endangered have been submitted to the U.S. Fish and Wildlife Service in the recent past, and since petitions could conceivably be submitted for other species, particularly fisher, the selected alternative should include substantial mitigation to address the projected effects. (1947)

Response: A wildlife mitigation plan for other than threatened or endangered species is part of the project plan. However, not all of the effects to species are possible to mitigate. These are disclosed in the final EIS.

22. Page 4-83, paragraph 2 (paragraph 1 of "Summary"): The term "local" is ambiguous and potentially misleading. It should be defined in a context of scale (areal and temporal) that is clear to the majority of readers. The statement "The proposed project could result in a decline of local plant and animal species diversity and numbers" could be subjectively (and perhaps correctly) construed to imply that declines would be relatively minor and primarily limited to the immediate vicinity of mine operations. (1589)

Response: "Local" is revised to read "project area."

The final EIS has been revised to read "These are potentially long-term effects." More data has been collected on certain plant and animal species of concern in the study area, and included in the final EIS.

23. Based on the information provided in the DEIS, it is impossible for an educated biologist to ascertain to any comfortable degree of certainly just how severely biodiversity in the CMW ecosystem will be affected by any of the mine alternatives. All the DEIS states is that almost all of the species of special interest that are discussed will be impacted in a way that is "potentially adverse and significant." This is completely insufficient. Alternative IV is touted in the DEIS as having fewer wildlife impacts than the other alternatives, but the only real difference in it's impacts from the others are plans to monitor selected wildlife populations over time. The writers claim that adverse

affects to these populations will therefore be discovered and "mitigated." This is patently ridiculous, since only a handful of the species mentioned have been studied sufficiently enough to even monitor the populations, and be able to detect a change. Furthermore, monitoring only discovers problems after they've happened or as they are occurring. This is a far cry from preventing the problems from occurring in the first place. It won't do an endangered or threatened species much good for us to find out after the mine is approved and in operation that the species is disappearing from the region. We must demand more intensive studies on the terrestrial wildlife species potentially impacted by the proposed project. Without these studies the DEIS team cannot tell us that the mine alternatives proposed will not unacceptably impact wildlife in the CMW ecosystem. (1223)

Response: The final EIS explores the effects of the project alternatives to a reasonable extent. Prevention of problems is the intent of the project design and the mitigation plan, but it is recognized this would not prevent all the adverse effects. Some future effects are likely which are unforseeable at this time, so monitoring and mitigation of those effects at that time would be the only method of trying to prevent future problems from escalating. Effects on species are frequently apparent even without detailed population trend information; although if available, those data are extremely valuable.

24. Figure out how to prevent or at least minimize--not mitigate--increased poaching and hunting pressure along with increased highway slaughter of black bear, elk, mule deer, moose and smaller animals (1732)(1737)(1738)(1741 - 1744)(1746)(1747)(1913)

Response: The agencies are not aware of any mechanism that will totally prevent poaching of big game. Hunting pressure on big game can be regulated by the state if conditions warrant. Regulations could include shortening of seasons, limiting numbers of animals that could be harvested, or restricting certain areas. The Montana Department of Fish, Wildlife, and Parks rarely manages small drainages such as Rock Creek by themselves, but rather manages by larger hunting districts.

The effects analysis (Chapter 4, Biodiversity) discloses that an increased likelihood of greater poaching and hunting pressure would occur. The mitigation plan provides for several methods to reduce the effect where it can not be prevented through project design features.

Within the project boundary, efforts have been taken to minimize mortality to wildlife by consolidating the utility corridor and utilizing seed mixtures along roads which are not an attractant to wildlife. In addition, Sterling would be required to remove road kill along Forest Development Road 150 and part of Highway 200, thus minimizing this attractant to other wildlife.

25. We are deeply concerned about the impact this mine would have on several wildlife species. Moreover, we are concerned that the DEIS does not detail a plan for avoiding or mitigation some of these serious problems. (1603)

Response: Some of the effects to wildlife disclosed in the draft EIS were the basis for developing a new alternative in the supplemental EIS, Alternative V. Alternative V was designed to reduce or eliminate as many residual impacts, including those to wildlife, as possible.

26. Impacts to fish, wildlife and birds from the Rock Creek proposal, in this critical biologically diverse habitat area, must be better addressed. (1638)

Response: The analysis for wildlife was substantially rewritten between the draft EIS and supplemental EIS. More information is presented on the impact to the species to be found in and around the project area. The final EIS has additional discussion in the Biodiversity section about the impacts to the expected and the mitigation/modifications proposed. Other related sections include Threatened and Endangered Species, Wetlands and Waters of the U.S., and Aquatics/Fisheries.

BIO-402 Sensitive Wildlife Species

1. The Project area is located on harlequin duck breeding grounds. Rock Creek supports 3 breeding pairs that are part of the metapopulation inhabiting other nearby drainages. Harlequin ducks fill a very specific niche and show a strong fidelity to both their wintering and breeding habitat. The inter-relationship between the metapopulation of Rock Creek and other harlequin tributaries in the Clark Fork drainage is significant. The effects of this project should not ignore these populations. These birds show interchange between tributaries and therefore need to be considered in this way when planning to destroy their habitat.

Harlequin ducks are sensitive to increased human disturbance (Clarkson, 1994) and this project would tremendously increase the amount of human activity. The many ways the mine project alter Rock Creek making it uninhabitable to this species, would extirpate more than just the Rock Creek population. We are concerned about water levels and quality of Rock Creek during and after the project. Any increased sediment to Rock Creek, however temporary, will destroy the volume of aquatic macroinvertebrates. This will have direct effects on habitat for harlequin ducks who depend on them as food source. "Use of clear, clean, swiftly flowing streams is universal to all five breeding areas where harlequins have been studied, probably partly due to the abundance of benthic macroinvertebrates in these stream reaches." (Cassirer and Groves, 1991)

Harlequin ducks are a Category 2 species and a regional sensitive species. The three action alternatives would destroy the breeding habitat of this sensitive species. We find the DEIS in violation of NEPA by creating an inadequate range of alternatives to provide protection of this unique and declining species. (1355)(1405)(1700)

Response: The draft Harlequin Duck Habitat Assessment and Conservation Strategy (Cassirer et al 1996) recognizes the importance of metapopulations, human disturbance and water quality to duck population maintenance. The new information available in this report is utilized in the final biological evaluation for harlequin ducks in Chapter 4. Alternative V was developed to address the concerns of the public and agency specialists, specifically the concerns about harlequin ducks.

2. Ecosystem effects such as this are not explored sufficiently in the DEIS. The three breeding pairs of harlequins in the Rock Creek drainage represent 20 percent of the lower Clark Fork subpopulation's birds. The proposed project could significantly depress the available genetic pool of harlequins in the lower Clark Fork subpopulation. If this depression is great enough, it could significantly impact the subpopulation's breeding success, and we may see harlequins completely disappear from the lower Clark Fork region. (1223)

Page 4-90 - This entire section on Harlequin ducks appears to be based on speculation and provides little in terms of facts. There is no discussion of the possibility of continued use of East Fork Rock Creek or of use of other streams in the area. The level of speculation in this section (. .or remained and bred unsuccessfully … could be significant... should loss occur) is incredible and should be removed or backed up with facts. (4502)

Response: A forest wide assessment of sensitive species has been included in the final EIS to better display viability and biological diversity impacts. The analysis on harlequin duck has been updated to better display impacts to that species and its habitat.

3. Will the harlequin duck nesting habitat be protected and ASARCO be required to provide a mitigation plan for this species? (1359)(1401)(1481)(1484)(1624)

Response: The effects of the project on harlequin duck nesting habitat are described in the final EIS. A mitigation plan for this species has been developed and is part of the whole wildlife mitigation plan described in Appendix K

4. I am most concerned about the effect on waterfowl either near the mine or down river from it. (1470)

Response: The effects to waterfowl within the project area are primarily in the loss of habitat quality of the riparian systems, and wetlands. Harlequin ducks are the primary species affected by the riparian system changes and are discussed in the biological evaluation. Other species of waterfowl

using the wetlands will have their habitat mitigated over time through the wetlands mitigation plan. The effects of the project on down-river waterfowl is expected to be unmeasurable, based on the amount of discharge materials into the Clark Fork River. Metal loading from the project is described in the hydrology and aquatic/fisheries sections. These levels are expected to remain below Montana cold-water aquatic life standards. This implies that the effects to waterfowl would be negligible.

5. It is absolutely absurd to consider shutting down the project over six harlequin ducks. This is especially magnified when the fact that these same six ducks are game birds in Washington state where they migrate. What guarantee is there that they will return? The chances of them being shot is much greater than the mine disturbing their nesting habitat! If this project follows suit like the Troy unit they too will adapt. (1358)

Response: Harlequins are considered game birds in Washington state. Although the harvest is very low at this time, most harlequin duck experts consider it an unacceptable risk to the population. The risk of reducing the range of the population due to disturbance from the mine for Alternatives II, III, and IV is considered greater at this time than the risk to species viability from legal harvest (F. Cassirer, pers. comm. with Sandy Jacobson, USFS, December 7, 1996). Alternative V was developed in part to minimize adverse impacts on harlequin ducks through the use of various mitigations/modifications (see Chapter 4 - Biodiversity).

6. Page 3-72 - Table 3-24: The Western Toad should be added to the list of sensitive wildlife (pers. comm. w/Kirwin Werner) Also, names of amphibians and reptiles should agree with the recent publication by MFWP: (Reichel and Flath, 1995). (1504)

Response: Common names of reptiles and amphibians conform to Reichel and Flath (1995) in the analogous table in the EIS. Boreal toad was added to the Forest Service Sensitive Species list in March 1999; it is considered western toad in Reichel and Flath (1995).

7. The draft EIS lists many other sensitive species which also occur in the project vicinity. Impacts to these species vary from displacement or loss of a few individuals to loss of an entire population (for some of the aquatic species) yet the draft EIS includes no discussion of alternatives or ways to eliminate or mitigate these impacts. (1624-1626)

Response: A mitigation plan was developed for the final EIS and summarized in Chapter 2. However, some effects are not possible to mitigate, and these are disclosed in the effects analysis in Chapter 4.

8. First, in identifying concerns over potential impacts to wildlife in the Clark Fork delta area of Idaho, we neglected to inform you that the Department, along with area Indian tribes, is pursuing acquisition of and conservation easements on wildlife habitat in the lower Clark Fork as mitigation for the Albeni Falls project. BPA funding would be used to accomplish the mitigation. The Rock Creek mine not only poses a threat to downstream wildlife, but may limit mitigation options in the future. (1445)

Response: It is likely that as human activities and developments become more numerous over time, the options to mitigate those activities will be reduced. Mitigation strategies that restore rather than preserve are likely to be available for future options, albeit perhaps at greater expense in the future. Project and alternative design and permit standards are intended to protect water quality and thus habitat dependent on that quality.

9. The ASARCO mine project could result in the loss of the Rock Creek Harlequin duck subpopulation due to a number of factors: 1) disturbance; 2) loss of riparian habitat; 3) fragmentation of current available stream reaches; 4) loss of water quality; and 5) changes in runoff patterns. Human disturbance on Rock Creek is currently low, with little fishing pressure, no boating, and no trails (even fishing trails) following the creek in the areas of highest harlequin duck use. Traffic is not heavy and the road is currently screened from the stream by thick vegetation and/or topography in most of the reaches extensively used by harlequin ducks. Increased human disturbance levels will result from building of roads, bridges, tailing impoundments, a mill site, and other mine

facilities; increased traffic on the new roads; increased human use of the stream as familiarity with the area increases; and operation of the mill site, tailing impoundments, borrow areas and other mine facilities. This disturbance would likely displace harlequin ducks from the affected areas. (1937)

Response: The effects you outlined were considered in the design of alternatives and in the analysis of effects on harlequin ducks in Chapter 4 of the final EIS.

10. If mine construction occurs, we would propose the following actions (in order of importance) to improve or secure habitat on these streams in order to offset the potential loss of Rock Creek. 1) Marten Creek. Harlequin duck numbers on Marten Creek are probably currently at maximum levels. Most land is in Federal (USFS) ownership and management is currently consistent with harlequin duck protection. The private property holders currently have not removed riparian vegetation, however, if they did it would substantially reduce the effectiveness of the stream. This is due to the fact that the most heavily-used area for brood raising is on the lower portion of the main stem where the private inholding is located. The stream reach above, and much of the South Fork, is often dry in the mid-late summer so no alternate site is available on Marten Creek. The integrity of the Marten Creek breeding habitat could be ensured by purchase of the property or a conservation easement. Additionally, moving the roads out of the valley bottom could reduce disturbance and ensure a reduced disturbance level in the future. 2) Swamp Creek may be able to support more harlequin ducks than are there now. Harlequin ducks currently use only the upper reaches managed by the U.S. Forest Service during brood rearing. There is a water withdrawal structure immediately below public land and most of the lower sections of stream are dewatered or at very low water levels by mid-summer. Riparian vegetation has been removed on private lands and disturbance has been increased by the use of structures on the stream banks. The number of harlequin ducks supported by Swamp Creek could perhaps be increased by: (a) ensuring adequate summer flows; and (b) purchase of property or conservation easements on the lower stream reaches. 3) The Vermilion River population is relatively small in comparison to the stream length and amount of habitat occupied by both broods and pairs. However, it is not clear whether this is due to intrinsic or human-caused factors. For 25% of its length it is isolated and the road is well up from the valley floor. There is little private inholding, however, some mining claims exist which may be patented and which have cabins on them. Fishing pressure is low due to low fish populations, and boating use is very rare. There is considerable undeveloped camping use on the river and in some cases camps are used for several weeks to months at a time. Water levels appear adequate throughout the summer. The viability of the Vermilion River subpopulation could be enhanced by purchase of the mining claims, property, or conservation easements. Additionally, moving roads out of the valley bottom could reduce current disturbance and assure a reduced disturbance level in the future. Whether this would increase the number of harlequin ducks using the stream is unclear at this time. (1937)

Response: Thank you for options to consider for mitigation plan items for harlequin ducks. Please refer to the mitigation plan included in this final EIS.

11. The DEIS also shows that Alternatives II, III, and IV may result in significant impacts to harlequin ducks, lynx, fisher, and the wolverine. We are especially concerned about the possible permanent loss of harlequin ducks from Rock Creek and the associated impacts to the harlequin duck population in Montana. A mitigation plan for the harlequin duck should be a part of each Alternative in the FEIS. (1933)(1779)(1207)

Response: Following release of the draft EIS, additional information was developed for these species and is presented in the final EIS. A mitigation plan was developed to address adverse effects from the project on harlequin ducks and a summary is found in Chapter 2, under Alternative V. Although this plan was only included in Alternative V, it could be applied to any of the action alternatives should the decision makers decide to permit a different alternative.

12. It's essential for the Forest Service to devise a plan to prevent elimination of this important population of harlequin ducks. The harlequin is currently considered a "sensitive" species--one that could become endangered without careful management. Development of a mine of this size--without any proposal for mitigation of impacts--is unacceptable and is precisely the process which is driving so many species toward extinction. (1603)(1351)

Response: While a mitigation plan for Alternative V has been developed, it is not a guarantee that the harlequin duck will not be adversely affected by the project. The analysis has shown that harlequin ducks would likely be adversely affected by Alternatives II, II and IV. Alternative V was

developed in part to include mitigations/modifications which would minimize the project's impacts on harlequin ducks.

13. Page 3-73, Sensitive Wildlife species, Fisher, paragraph 6: The last sentence states that a female fisher uses the Rock Creek drainage as her home range. The polygon delineating the home range of this fisher should be shown in the BE or DEIS to allow interested readers to assess habitat components within the home range and proximity to proposed disturbance. (1589)

Response: A habitat analysis for fishers across the Kootenai National Forest was accomplished, which is a general analysis of habitat as opposed to a specific home range area for a single individual. General habitat analyses provide more long-term information because they are independent of the preferences of an individual animal.

14. Page 3-71, Sensitive Wildlife Species, Harlequin Duck, paragraph 5: The statement is made that, "Groups of breeding streams could be considered to sustain a harlequin subpopulation." This ambiguous statement is important because the following analysis in the DEIS assumes that the lower Clark Fork drainage is a distinct subpopulation. The concept of a subpopulation has not been discussed in the DEIS. Evidence of restricted gene exchange in a subpopulation should be discussed. This discussion should address pair bonding of young harlequin ducks on communal wintering areas. There should be reference to the fact that harlequin ducks can be legally hunted in Montana, Idaho, Washington, Oregon, and Canada. (1589)

Response: The Harlequin Duck Conservation Assessment and Strategy discusses the subjects you mention. Subpopulations, or metapopulations, are discussed in Chapter 4 of the final EIS.

15. Page 3-73, Sensitive Wildlife Species, Lynx, paragraph 7: The last sentence refers to "unsuccessional plant communities". If this term is to be used in the DEIS and understood by readers, a definition of "unsuccessional" is needed in the Glossary. (1589)

Response: The correct word should have been "successional." Successional as used in this context refers to the process of plant community development that occurs after a major disturbance such as fire, logging, or mining. Early successional plant communities used by lynx for foraging would be dominated by a mixture of forbs, shrubs and small trees. Due to the revision of this section to incorporate viability analysis, this particular description has been modified and the phrase "successional plant communities" dropped.

16. Effects on species such as bull trout and west slope cutthroat, grizzly bear, harlequin duck, wolf, wolverine, mountain goats, and pileated woodpeckers require special attention. Is adequate baseline data available? What surveys have been conducted? The nature and extent of flora inventories are not adequately described. (1638)

Response: A baseline study was conducted to determine the wildlife resources in the project areas and vicinity. It is Farmer and Heath's 1987 Wildlife Baseline Inventory, Rock Creek Study Area, Sanders County, Montana contained in the Rock Creek Mine permit application. Other surveys have been done since. Presence has been confirmed for grizzly bear, mountain goats, harlequin ducks and pileated woodpeckers, among other wildlife species.

17. There is also a proliferation of poorly chosen words in the DEIS. For example, on page 4-92, it is stated that wolverines "could" return to Rock Creek after mine closure, although the habitat left would be poor quality. We know that wolverines are capable of returning to the area, but the salient question is will they return to Rock Creek after mine closure? It seems that it would be an extremely long time after mine closure, several wolverine generations at least, before any of the animals would return, if at all. It is stated in several places in the DEIS that higher mammals, such as bears, who teach their young many behavior patterns prior to weaning, are less likely to return to an area where they have been displaced because the young must be taught to use these areas. This is applicable to many of the far-ranging mammals who currently use the proposed project area. (1223)

Response: Potential wolverine habitat is outlined in the final EIS in Chapter 3, Biodiversity. Very little habitat for wolverines occurs within the project area, although wolverines have been observed in the project area. While it is true that wolverines are likely to follow established patterns based on their parent's travels, the great distances traveled by this species makes it one of the most likely to reestablish use in an area. However, if there is little suitable habitat in an area, the use will be much lower.

18. On page 3-73, it is stated that the small, isolated populations of fishers in the Rocky Mountains are highly susceptible to extinction. We know from radiotelemetry studies that fishers use the proposed project area, and one female's home range is entirely within Rock Creek. What is the local and ecosystem level importance of this group of fishers? The DEIS again is sadly lacking in needed wildlife information. When so little is really known about many of the species of concern in the proposed project area, it seems to me that approving any of the mine alternatives would be akin to writing off the mine area as wildlife habitat, and being willing to lose all the species of interest from the area. The long-term effects to overall ecosystem biodiversity will be adverse, so approving the project would imply a willingness to accept this decrease in diversity and ecosystem health. (1223)

Response: The female fisher known to use Rock Creek was a transplanted animal. While this implies Rock Creek is suitable habitat, transplanted animals are generally not the best indicator of quality habitat because of their tendency to be searching for a suitable home range. Transplanted animals must be considered in a different light than native animals in terms of their importance to the local and ecosystem's populations. Because of their experimental nature, it is expected that the population of the transplants will be tentative for a period of time. In order to provide an analysis of the importance of this portion of the ecosystem's contribution to fisher habitat, a forest-wide assessment of available fisher habitat was completed for the final EIS. This analysis is explained more fully in the effects analysis section of the final EIS. Briefly, suitable habitat for fishers is widespread at mid to lower elevations throughout the forest, with the project area representing a portion.

19. The DEIS skips over potential impacts to boreal and flammulated owls, because of the lack of information on these species in the proposed project area. Where are, at the very least, the evidence of extensive literature searches on the species, cross-referenced to any industrial activity, including mine operations? The DEIS writers seem content to ignore the potentially significant impacts to many of the wildlife species in Rock Creek, simply because little is currently known about them. It seems that the less is known about a species, the more conservative actions should be, since we cannot accurately predict the seriousness of adverse impacts to the species. (1223)

Response: Boreal owls occur at higher elevations in spruce and fir habitat. As noted in the draft EIS biological evaluation, which has a literature review of pertinent work, the project affects very little habitat that is preferred by this species. Boreal owls will use lower elevations for nesting habitat, and could use some stands now present that would be altered by the project. However, it was determined that the project might impact individual owls (i.e., cause some disturbance or displacement) but not impact the population. Flammulated owls occupy the lower elevation end of the habitat spectrum in dry, relatively open canopy forests. As noted in the biological evaluation, this habitat is naturally rare in the project area. The effects of activities on these species was not elaborate in the biological evaluation, although it was mentioned, because the habitat is either limited or unaffected by the project. This information has been incorporated into the final EIS.

20. The Forest Service is required by NFMA (1976) 16 U.S.C.1604 to protect the viability of all existing native and desired non-native vertebrate species within the planning area (36CFR219.19) and (FSM 2706). I'm not certain my citations are correct, but I am certain of this requirement. As proposed, your own draft analysis lists several species for which viability may not be maintained. Therefore, I see this as a proposal which violates federal law & should not be permitted. (1637)

Response: Kootenai National Forest assessed the forest-wide suitable habitat for those species whose viability was in question at the time of the draft EIS. For fisher, lynx, wolverine, the determination of viability effects was unknown. See responses to previous comments on wolverines, and fishers, and several comments in TE-500 for more information on lynx as well as Chapter 4 of the final EIS. The analysis is included in the final EIS as well as the biological evaluation. For harlequin duck, the effects of Alternative II, III and IV were determined to possibly result in a trend towards federal listing (i.e., threatened or endangered status under the Endangered Species Act). In Chapter 1, page 1-14 of the draft EIS , it is stated that "all practicable measures must be taken to harmonize operations...and maintain and protect fish and wildlife habitat that may be affected by the operation." None of these species were protected under the Endangered Species Act (ESA) at the time the draft EIS was released, but was managed under Forest Service policy in Forest Service Manual (FSM) 2670; Forest Service policy does not allow for approval of projects that would result in significant trends towards federal listing. However, lynx is now listed as a threatened species and is discussed under the Threatened and Endangered Species sections of the final EIS and the Biological Assessment in Appendix B. The Harlequin Duck Conservation Assessment and Strategy for the U.S. Rocky Mountains provides a strategy for managing harlequins over much of their western breeding range. One of its functions is to provide an overall strategy for management and viability maintenance in actions where impacts are unavoidable. As noted in the analysis of effects for harlequin duck, even with all mitigation measures in place, Alternatives II, III and IV would still be likely to result in a declining trend for the species, towards federal listing under the Endangered Species Act. This would be a violation of Forest Service policy in FSM 2670.2. Alternative V was developed in part to address these concerns, and was determined to mitigate this potential trend of the species towards extinction.

21. Page 2-132, Sensitive Animal Species, paragraph 3: The probability that the proposed project would have any measurable impact on fisher, lynx, and wolverine is very low. These species are not habitat-limited in the Cabinet-Yaak Ecosystem and naturally occur at very low population densities. Habitat alteration associated with the proposed project would have insignificant impacts on these species. Increased mortality risk to these species from project implementation would be negligible. (1589)

Response: An assessment completed for the final EIS addressed the probable effect from the project on lynx, fisher and wolverine, taking into account their naturally low population numbers.

22. Page 2-132, Sensitive Animal Species, paragraph 4: The concept of a harlequin duck "subpopulation" in the lower Clark Fork and the relationship between this "subpopulation," the Montana population, and the population in Northwestern North America needs to be addressed in more detail. The last line in the paragraph states that, ".. stability of the Montana harlequin duck population could decline." The ecological attributes of a "decline in stability" need to be presented. Is stability synonymous with viability? If so, probability of extinction within a given time period needs to be discussed. (1589)

Response: The recent Harlequin Duck Conservation Assessment and Strategy for the U.S. Rocky Mountains discussed the relationship between "subpopulations," and this assessment was considered in the final EIS. Stability in this context is used to denote the ability of the state's population to withstand impacts that could potentially cause declines. The concept of viability assumes the process occurs over time, however, random events influence how rapidly a trend towards loss of viability occurs. Thus, a time period is an estimate based on normally very limited information at best, and the trajectory is the more important issue. The time period does give an estimate of how urgent the viability loss is in terms of the amount of time available to arrest the trend.

23. Page 2-132, Sensitive Animal Species, last paragraph: Does "threatening security and recovery" mean that viability of the local fisher population, or Montana fisher population would be jeopardized? Substantiation of this conclusion is important because of its relevance to [the] National Forest Management Act. Also the geographic

extent of a "local fisher population" needs definition. The interpretation that the project would threaten the security and recovery (viability?) of the local fisher population appears to over state the potential impact risk to fisher and fisher habitat in the Cabinet Mountains' area. (1589)

Response: Wording has been changed in the final EIS to clarify the status of the importance of local, i.e., project area fishers, to the viability of the Kootenai National Forest population.

24. Page 2-133, Sensitive Animal Species, paragraph 1: This paragraph overstates the potential impact risk to lynx and wolverine posed by the proposed project. (1589)

Response: A forest-wide analysis of wolverine and lynx habitat was conducted after the publication of the draft EIS. This analysis was incorporated into the final EIS effects analysis for these two species.

25. Page 4-83, Biodiversity, Summary, paragraph 4: It is stated that potentially significant impacts could occur to fisher, lynx, and wolverine and/or their habitat. Given the low population density of these species, marginal habitat, and large amounts of habitat accessible to the species in western Montana, the interpretation in the DEIS seems overstated. (1589)

Response: Large amounts of habitat may not be as accessible to fisher, lynx and wolverine as in historical times, due to the increasing human population. This issue is further explored in the effects analysis of the final EIS for these species.

26. Page 4-85, Biodiversity, Alternative I, paragraph 1" Reference is made to the "Clark Fork subpopulation." On page 3-71 it states that groups of streams could be considered to sustain a subpopulation. Apparently, the DEIS writers did assume that the lower Clark Fork breeding harlequins constitute a "subpopulation." Given this assumption, the rationale for assuming limited genetic exchange within the Clark Fork subpopulation needs additional discussion. It is not clear why harlequins on individual streams should not be considered isolated subpopulations.

It is possible that gene exchange occurs between groups of breeding streams over a much broader area than the lower Clark Fork drainage, primarily as a result of pair bonding of young ducks on wintering areas. The impact assessment should address how the proposed project would affect the species over its range in Montana/Idaho and the Northwest. (1589)

Response: The definition of the lower Clark Fork subpopulation is primarily based on the geographic isolation from other Montana and Idaho breeding groups. Individually-marked harlequins have been observed on more than one stream in the lower Clark Fork group (Hendricks and Reichel 1998), thus it would be unjustified to consider each stream an independent population. It is possible that genetic exchange occurs as a result of pair bonding in winter. However, the mechanism of genetic exchange is poorly understood and harlequin duck experts agree that it is an important area of research needed in order to manage the species properly. The effects analysis in Chapter 4, Biodiversity of the final EIS answers the question of how the proposed project would affect the species over its entire range. Since Alternative V is not expected to result in a trend toward federal listing, it would also not cumulatively result in a trend towards listing.

27. Page 4-89 and 90, Alternative II, Forest Service Sensitive Wildlife Species: The assessment that harlequin ducks breeding on Rock Creek would be affected should address the types of human disturbance that likely would have the greatest impact on the duck (e.g., rafting floating, swimming, wading and fishing). The assumption that traffic on roads would have a major impact on harlequins on Rock Creek needs to be supported by studies done on harlequin ducks or other species that could be expected to react to traffic similarly to harlequin ducks. Are there data concerning how traffic and human activity have affected harlequins on this breeding stream? With the proposed project, Rock Creek would remain shielded from most traffic and other mining activities by a dense buffer of vegetation along Rock Creek. The potential for harlequins to habituate to increased traffic volumes should be

addressed. Other sensitive breeding birds such as ospreys and ferruginous hawks often habituate to traffic and other human activities.

The DEIS and BE discuss no mitigation measures that could reduce potential impacts to harlequin ducks. Measures such as restricting direct human access to the stream and riparian zone would reduce the "invariable increase of human use on Rock Creek" described on page 4-90, paragraph 1. Other measures such as improving habitat and long-term security on other breeding streams in the area would reduce impact risk to the groups of harlequins (subpopulations?) in the Rock Creek area. Measures such as eliminating sport hunting in the Northwest and sponsoring research to develop measures to recover populations on streams with suitable habitat should be addressed. (1589)

Response: The disturbances you listed are recognized as impacts to some breeding harlequin ducks, however, rafting, floating and swimming are not uses known to occur on Rock Creek now and probably will not become uses because of its small size. Some children probably occasionally wade at huckleberry camps, and huckleberry camping is one of the activities that has been noted as being a potential disturbance to harlequin ducks. Fishing occurs rarely because of the inherently poor fishing in the stream; the effects of fishing are described in the effects analysis section of the final EIS. According to monitoring studies on harlequin ducks in Glacier National Park, harlequins appear to be affected by both human foot and vehicle traffic (Reichel 1996). Habituation may occur over time, but habituation normally requires a large enough population to allow for individual variability. Glacier NP has a relatively large harlequin duck population, and there is some speculation that some females may be more habituated to human activity than their mates which may have hatched elsewhere (Ashley 1994). Rock Creek would have a small fraction of the human foot traffic that the Glacier birds experience, and it may be possible for them to habituate. However, if they do not habituate, the consequences are greater because the smaller population of Lower Clark Fork has fewer birds to replace the displaced, non-breeding birds.

The final EIS incorporates mitigation measures for harlequin ducks, including some of the suggestions in your comment. The elimination of sport hunting for harlequin ducks is outside the scope of this project.

28. Page 4-90, Alternative II, Forest Service Sensitive Wildlife Species, last paragraph: The statement that "Critical habitat reduction would occur for both the short and long term." (emphasis added), appears to conflict with the characterization of fisher habitat on page 3-73, paragraph 4 (i.e., "Some suitable habitat for fishers is found within the Rock Creek drainage and in the project area." and "The quality of fisher habitat in the Rock Creek drainage has been compromised due to forest fragmentation, loss of old growth habitat, and the occurrence of roads adjacent to or in the riparian zones."). Based on the discussion in Chapter 3 - Affected Environment, it would appear that "critical habitat" currently is lacking in the Rock Creek drainage. Therefore, the reduction predicted to occur appears to be overstated. (1589)

Response: The analysis of fisher habitat presented in the draft EIS did not consider the relationship of suitable fisher habitat in the project area and suitable habitat on the Kootenai National Forest as a whole. This relationship is better understood at this time, and is reported in the final EIS affected environment for fisher.

29. What will the FS do to prevent significant declines in...fisher, lynx, wolverines, Townsend's big-eared bat, black-backed woodpeckers, boreal owls, flammulated owls, crested shield fern, all of which are present in the Rock Creek drainage? (1207)

Response: The effects of the project on the species you have listed varies, and are described in the effects analysis in Chapter 4. For those species for which effects have been noted, a mitigation plan has been developed to remove, avoid, minimize or compensate for adverse effects.

30. On page 4-101, it is stated that for far-ranging sensitive mammals such as lynx, wolverine, and fisher "The cumulative effects could be significant. Determination of the effects on species viability cannot be determined at this time with information currently available"..."Cumulative impacts under all action alternatives would be similar. Cumulative impacts to biodiversity under all action alternatives would be potentially significant." Basically, all the DEIS writers can say with confidence is that mine impacts are adverse, short and long-term in effect, and potentially very significant. No educated estimates from wildlife impact models regarding exactly how some of these species will be affected on local and ecosystem scales can be found in the entire DEIS. This is an obvious, and truly glaring omission. One major concern is that data on population numbers of many of the species discussed in the DEIS are not available. Many of the species mentioned in the DEIS are simply recorded as having been sighted, heard, or that not sighting or hearing them in the proposed project area is not conclusive of their absence. No in depth studies of any of these species have been conducted, to establish the local, specific importance of the Rock Creek drainage, and it's overall importance as part of a larger, cohesive ecosystem. (1223)

Response: While it is not possible to determine "exactly" how some species would be affected by the project, an attempt was made to determine the cumulative effects on those species whose viability was in question (i.e. fisher, lynx and wolverine). This process was completed after the draft EIS and the findings are incorporated into the final EIS. Population numbers are rarely used in land management planning because of the great difficulty in obtaining accurate information, particularly for rarer species. That is why the known presence of a species is used to imply suitable habitat, which is much easier to identify and quantify, and is less prone to the occasional vagaries of an individual of a species. Even so, some population data for some species in the project area are available, notably for harlequin duck and mountain goats. In other situations, such as for most species whose few observations imply the population size is below carrying capacity, knowing the number of individuals present would not change the basic premise that recovery needs to occur. The process of cumulative effects analysis is the method used to determine Rock Creek's local importance to the ecosystem.

31. On page 4-92 it is stated under the section on the black-backed woodpecker that "the proposed project would result in some habitat loss, but would not adversely affect the woodpecker." Exactly how can habitat loss not adversely affect an animal or bird species? After all, it is well known that habitat loss today is the number one leading cause of extinctions in the United States, as well as globally.

Page 4-92, it is stated that the Townsend's big-eared bat would lose 538 acres of summer roosting and foraging habitat, and that it is unknown how mine lights, noise, and disturbances would impact bat use of the surrounding areas. Yet the conclusion of this segment is the statement that the loss of summer habitat is minimal, land that the proposed project would not be expected to cause declines in local bat populations. These statements appear contradictory, and I would be surprised if bat populations in the Rock Creek drainage remained stable if the mine were constructed. At the very least, the DEIS team should find literature on bat studies that might support their claim that the proposed mine operations's effects on the Townsend's big-eared bat would be negligible. (1223)

Response: For some species, habitat loss either directly or cumulatively up to a certain amount may not affect the viability of the species as a whole but may affect a few individuals. In the case of black-backed woodpecker, preferred habitat (generally burned forest) is not affected by the project, but this species will also use the other cover types within the project area as secondary habitat.

Townsend's big-eared bats forage over a wide range of habitats, but roost in very specific types of caves, adits or trees. Foraging habitat is normally not limiting to the species' abundance. Abandoned mine adits form one type of roost habitat that this species is known to use (Reel, S., L. Schassberger, and W. Ruediger 1989). So the conclusion that the proposed project is not expected to cause declines in bat populations is based on the assumption that bats are not using a mine adit that is not yet there, and that abundant foraging habitat is present already. Disturbance is known to adversely affect bats in roosting and nursery caves (Reel et al. 1989), but if foraging habitat is available in

much larger supply than roosting habitat there is room for bats to find adequate forage outside of the mine's area of disturbance.

32. Viability requirements for sensitive species are to be managed for under direction of NFMA. The negative short- and long-term effects to threatened, endangered and sensitive wildlife who depend on this area are unacceptable and need to be addressed further in the EIS. The ASARCO preferred alternative II and the FS preferred alternative IV (while slightly mitigated) both destroy habitat through direct mining processes and increased human access to this area. (1355)

Response: The effects to each sensitive species' viability is summarized in each account in the determination of effect. As noted in the effects analysis, habitat for some species would be destroyed by the project.

33. The DEIS indicates that the viability of the bull trout and harlequin duck populations would be jeopardized with all action alternatives, as would several old-growth-associated species. Although the language in the National Forest Management Act is unambiguous when specifying that the viability of populations cannot be jeopardized, considerable scientific debate has taken place concerning the definition of "viability" and "populations." Many of ASARCO's comments concern the DEIS's consideration and treatment of these and other important terms in the discussions and conclusions regarding potential impacts. These terms and others used in the DEIS's impact discussions are subject to various interpretations, and the DEIS's Glossary needs to be expanded to clarify the author's interpretation of these terms. The interpretation in the DEIS that many impacts to biological resources would be significant does not appear to be adequately documented for many species. In addition, ASARCO is also concerned that the DEIS's discussion of the grizzly bear and the EA insufficiently addressed required habitat mitigation and compensation (i.e. acquisition of habitat to be managed specifically for the grizzly bear) as a portion of the impact evaluation process. (1589)

Response: The terms "viability" and "population" have been added to the glossary in the final EIS. For those species whose viability as a result of the project was determined to be questionable in the draft EIS, greater documentation and analysis has been completed. This can be found in the effects analysis in Chapter 4 of the final EIS.

34. This plan must also more thoroughly address the relationship between all threatened and endangered species in the Cabinet Ecosystem. The Forest Service must maintain habitat capable of supporting viable populations of all "sensitive" species. To accomplish this objective, the Forest Service has responsibility for developing and implementing conservation strategies (habitat Conservation Assessments and Management Plans) for all sensitive species. To date, the Kootenai National Forest has not completed inventories for all sensitive species on the Forest to determine their extent, location, and condition. Nor has it developed proactive conservation management plans for these sensitive species.

This organization believes it would be prudent for the Forest Service to cancel or delay the ASARCO Rock Creek Project pending determination and implementation of the management prescriptions, standards, and guidelines needed in order to fulfill its legal obligation of providing habitat for viable populations of all sensitive species. (1595)

The loss of habitat for lynx, fishers, wolverines would continue to occur according to the DEIS. It also states that this operation could ``...displace animals and/or increase the stress and mortality risk'' to these animals. This would effectively be achieve by two ways: habitat degradation of wetlands and riparian zones and the displacement of habitat corridors from hunting, trapping, poaching, and traffic mortality to these animals. Many of these animals are currently stressed as is, and further destruction of their native land is not needed. (2026)

Response: As a result of the determinations of effect for the draft EIS, the Kootenai National Forest recognized the need for further large scale assessment for fisher, lynx, wolverine, and harlequin duck. A forest-wide analysis has been completed for the first three species, and a Conservation Assessment and Strategy has been developed for the harlequin duck. The greatest utility of conservation assessments and management plans lies in management direction for avoiding adverse

impacts. If a project is determined to have no impacts, or impacts to individuals but would not result in a trend towards federal listing under the Endangered Species Act, conservation strategies are not necessarily needed to implement the project although they would assist in managing the species as a whole.

35. Figure out how to prevent or at least minimize--not mitigate--negative impacts to the harlequin duck, fisher, lynx, wolverine and others.

The DEIS directly states that ASARCO's Proposal would directly affect the sensitive harlequin ducks and habitat degraded due to mining activities. This would be achieved from riparian and wetland zones being destroyed. The loss of the needed habitat would reduce the harlequin duck population significantly in the Clark Fork Drainage. (1732)(1737)(1738)(1741 - 1744)(1746)(1747)(1779)(1913)(2026)

Response: The mitigation plan and Alternative V address methods to prevent or minimize as many adverse impacts to these species as possible. Mitigation is a form of minimizing impacts, although it may not be on site. Where it is not possible to minimize or prevent adverse impacts, the effects analysis discloses the situation.

36. Little if no mention is made of the effects of the proposed discharge permit on loons, harlequin ducks, and other sensitive species within the permit area. (1196)

Response: Common loons do not occur within the project area because of lack of habitat. The effects of the project on water quality within the area that loons may occupy, particularly Lake Pend Oreille, were determined by the hydrology effects analysis to be unmeasurable for Alternative V. This implies that effects to loons would also be unmeasurable. Harlequin ducks and other sensitive species are analyzed in Chapter 4, effects analysis.

37. Well, I'd like to know how exactly we're actually going to monitor the impact on wildlife. How do you plan to do that when you don't even have the information right now? I know you don't know what's going on in this area in that ecosystem as far as sensitive species are concerned. And furthermore, monitoring only discovers problems after they occur, and that just isn't good enough for me. In the final DEIS we want these issues addressed thoroughly, completely and with citations of current biological literature which is sorely lacking in the entire document. (1982)

Response: The analysis on sensitive species has been updated in Chapter 4 of the final EIS. It includes a forest-wide habitat analysis and viability determinations. Monitoring plans have been more fully developed and are described Appendix K of the final EIS.

BIO-403 Management Indicator Species

1. Insufficient attention to mountain goat impacts - not addressed. (1308)(1309)(1314)(1545)(1639)(1737)

Response: The project's effects on mountain goats are outlined in the Chapter 4, Biodiversity. The purpose of the analysis of effects is to enable the decision-maker to make a reasoned decision based on pertinent information.

2. ASARCO has not included a mitigation plan to reduce impact on the resident mountain goat herd in their mining proposal for the Cabinet Mountains?! (1304)(1359)(1360)(1401)(1420))(1443)(1484)(1517)

Response: A mitigation plan that includes mitigation items for mountain goats is now included in the document and summarized in Chapter 2.

3. Page 3-78. Elk and open road densities. Cumulative impacts to the Rock Creek elk population are not adequately addressed. Particularly as both the tailings pond and the alt. mill site are located smack dab in their wintering areas. There has been way too much reduction in quality elk habitat (especially security) the past 15 years. (1213)(1633)(1780)

Response: Elk habitat has declined as human population has increased in previously occupied winter range and as more activities of all types have increased in summer ranges. Chapter 4 notes the effect on elk winter range from the tailings impoundment. The cumulative effects of these actions along with the project's effects are considered in the effects analysis section in greater detail in the final EIS.

4. Indicator ("barometers" of forest health) Species impacted: elk, mountain goats (loss could be complete in project area), and pileated woodpeckers (loss could be complete in project area). (1351)

Response: The effects analysis for elk, mountain goats and pileated woodpeckers does not indicate that the effects of the project for any alternative would be a "complete loss." It is noted that some alternatives would likely result in a decline in elk for the life of the project, a decline of mountain goat herd abundance, and potentially significant impacts to pileated woodpeckers.

5. Page 3-80, Other Species of Interest, paragraph 1: The statement, that nesting habitat for pileated woodpeckers in Compartment 711 is limited, needs a citation of explanation of how this conclusion was reached. It appears that it is assumed that pileated woodpeckers only nest in old growth stands larger than a certain minimum size. Data for the Rock Creek drainage does not support this conclusion. (1589)

Response: Pileated woodpeckers are dependent on large trees associated with old growth simply because of their physical body size; however, they are known to nest in stands with some older, larger trees present to supply nest trees. As the amount of old growth increases, opportunities for pileated woodpeckers to find suitable nest trees increases. Pileated woodpeckers' foraging opportunities for preferred species of ants (*Camponotus* spp.) also increase in old growth.

6. How will you eliminate displacement of some mountain goats from their 8,492 acres of habitat and concentration on St. Paul Peak where 450 acres will be disturbed by the ventilation adit. (1207)

Response: Chapter 4 notes that the ventilation adit would be expected to elevate noise levels within 400 feet of the adit or on about 12 acres for Alternatives III through V; this level is not expected to displace goats. Alternatives III, IV, and V would still be expected to cause disturbance to goats from other mine activities. The indirect effects of increased human access into the area is likely to be a greater effect on mountain goats than is the effects of sound. Mountain goats, like many other animals, can habituate to human noises and have done so. An example is a herd along Highway 2 in Montana which frequents a salt lick visible to both humans on a trail and a major railway, and within noise influence of the highway and of course the railroad. The indirect and direct effects of the

project are not expected to be eliminated, but the mitigation plan attempts to minimize these effects to within acceptable limits for the mountain goat herd.

7. What specific measures are the agencies proposing to prevent or minimize impacts to the indicator species of mountain goats and pileated woodpeckers and to the many other sensitive species of flora and fauna found in the overall area? What have the agencies done to analyze the cumulative impacts on these species? Where is the complete, comparable data on which to base a monitoring program for these species? What is the monitoring program the agencies propose? What consequences are the agencies proposing if (when?) impacts occurs? (1438)

Response: Specific measures taken to minimize or prevent effects are outlined by alternative in response to specific concerns. The wildlife mitigation plan outlines measures to offset the effects that can not be prevented. An example of a change in the alternatives to prevent adverse effects is the relocation of the ventilation adit so that noise effects to mountain goats (as well as to people using wilderness) are minimized.

Cumulative effects analyses for wildlife are recorded in the Chapter 4 at the end of the Biodiversity section.

Comparing monitoring results with complete baseline data is much better than using incomplete data. Unfortunately, it is very rare that any monitoring effort has complete baseline data. Techniques are available to use incomplete data because that is the rule rather than the exception. Several mitigation items depend on monitoring to establish need. Some mitigation items for wildlife species are based on triggers that turn on if monitoring indicates a need. Please see the wildlife mitigation plan in the descriptions of the alternatives in Chapter 2 for further information. Depending on the mitigation item, it is usually the applicant who has the responsibility to implement the needed item but the agencies would inspect reports and field work for compliance.

8. The movement of the mill site to the confluence of the east and west Forks of Rock Creek could have potentially significant effects on mountain goats wintering on nearby cliffs. Effects would result from increased disturbance due to mining activity and increased winter recreation made possible by upgrading and maintaining the Rock Creek Road. These effects should be addressed in the final mining plan and permit. (1947)

Response: The effects of Alternative IV on mountain goats are noted to include greater disturbance from this alternative's mill location. The wildlife mitigation plan attempts to address these effects but the effects analysis recognizes mitigation does not eliminate them.

9. p. 2-123: Mountain goats: Alternatives III, IV: How much human use would road closures reduce? What associated disturbances? Alternative IV: Noise-related impacts: Would not the cumulative affects of Montanore and the increased proximity to Rock Creek Meadows make Alternative IV the most detrimental to the goat population? Where is this analyzed? (1288)

Response: Mountain goats would likely not be displaced over the long term by the amount of traffic allowed on a closed (or more accurately, "restricted") road. The EIS recognizes that the effect on mountain goats from Alternative IV (and V) would be different than the other alternatives in the Rock Creek Meadows area, however the combination of road closures and other design features was considered the best of the alternatives at that point with regards to effects on mountain goats. The cumulative effects of both mines in the Cabinet Mountain Wilderness are discussed in the cumulative effects section at the end of the Biodiversity section in Chapter 4.

10. Page 2-134, Pileated Woodpecker, paragraph 6: "Sustainability" of the pileated woodpecker populations needs to be addressed in terms of viability. (1589)(1732)(1737)(1738)(1741 - 1744)(1746)(1747)(1913)

Response: This paragraph has been rewritten to clarify the effects of the alternatives on pileated woodpecker local populations.

11. Page 4-95, Alternative II, Forest Service Sensitive Wildlife Species, Pileated Woodpecker, last paragraph: The statement, "The percentage of old growth in the compartment would decline to 5.5 percent", appears to conflict with data presented in Table 4-2. Also, if replacement old growth is considered to provide the same functions and values as old growth (this is implied by classifying both old growth and replacement old growth into MA 13), the compartment would remain above the recommended 10 percent. (1589)

Response: Table 4-1 in the final EIS compares the changes in Forest Plan Management Area 13 (Old Growth) by alternative; Table 4-36 in the final EIS compares the changes in effective old growth habitat by alternative. Old growth habitat is not exactly synonymous with the old growth management area delineation or allocation, although they are close. Table captions have been modified to clarify the difference in purpose between the two tables. The statement of old growth habitat loss referred to on page 4-95 in the draft EIS is consistent with values in tables of the draft EIS.

Replacement old growth contains some but not all old growth characteristics. It is managed as old growth in situations such as Compartment 711 where old growth is not available. It represents the next best thing to meet the needs of some old growth dependent species, such as the pileated woodpecker. Depending on the stand selected, some stands may be more or less complete in meeting those needs. Compartment 711 has a relatively high proportion of replacement old growth to old growth (3.9 and 7.4 percent respectively of the compartment's acreage below 5,500 ft). While replacement old growth provides some functions, it does not have all the attributes of old growth, and is thus distinguished from old growth by the name replacement. The compartment remains below minimum Forest Plan standards for effective old growth.

12. The cumulative effects of the Rock Creek and Montanore project could sever wildlife movement corridor for goats. (1624)

Response: Mountain goats travel over very rugged, high elevation country by their nature. While the Rock Creek Mine project has a ventilation intake adit located within the wilderness area, all other project facilities including those of Noranda's Montanore project are outside the wilderness. Most of the project areas are outside of the majority of the mountain goat habitat. Figure 3-20 of the final EIS illustrates that the majority of goat habitat in the permit area is Situation 3, which is habitat that is not considered key habitat, but may allow travel corridors because of proximity to better quality habitat. A portion of Situation 1 habitat is near Chicago Peak; this habitat is key summer habitat with documented goat use. This portion of the summer habitat was expected to be adversely affected by Alternatives II and III, which in part prompted road restrictions as mitigation in that area for Alternative IV. Road use restrictions are expected to retain the value of the area for travel corridors better than roads without restrictions. The ventilation adit, while in the wilderness area Situation 1 habitat, does not measurably affect mountain goat use in Alternative IV and V and so would not affect the ventilation adit site's effectiveness as a travel corridor. As noted in the cumulative effects section, mountain goats may be affected by the two mines operating simultaneously because the goats use areas affected by both mines. However, the primary adverse effects to mountain goats are not because of the effects of the two projects on travel corridors because the majority of the best mountain goat habitat is not in areas *directly* affected by mine activities (see Chapter 4, Biodiversity for details). Travel would be less affected in the wilderness area for goats than in the lower elevation areas denoted as Situation 3 lands, where both mines' facilities and roads occur.

BIO-404 Vegetation

1. Page 3-65, Vegetative Communities, paragraphs 3 and 4: Of six taxa listed as tall shrubs, only Rocky Mountain maple is actually a tall shrub - all others should be listed with the low shrubs at the end of the sentence in question. Concerning the species listed as typical grasses and grass-like plants, rough leaf ricegrass (Oryzopis asperifolia) is more "typical" (more commonly encountered) in the general permit area than is elk sedge. Similarly, queen's cup (Clintonia uniflora) and beargrass (Xerophyllum tenax) could be added to the list of typical forbs (paragraph 3). Spotted knapweed (Centaurea maculosa) is conspicuously missing from the list of typical species that occur in openings, and should be added (paragraph 4). (1589)

Response: The Vegetative Communities section in Chapter 4, Biodiversity in the final EIS has been summarized and reduced somewhat from the draft EIS. Representative species are listed in Table 3-28.

2. Page 3-66, Vegetative Communities, Table 3-22: There was apparently an inadvertent shift in Table 3-22; under "Artificial Openings". Wild carrot should be moved from shrubs to forbs, and Canada bluegrass from forbs to graminoids. (1589)

Response: Table 3-28 titled "Representative Plant Species by Dominant Vegetation Type and Lifeform class" in Chapter 3 is correct in the final EIS.

3. Regarding the affect the waters from the tailing pond will have upon the plant life, the small life in the ponds from natural algae to aquatic insects, fish, etc., will the larger plant life such as cottonwoods and cedars still flourish along the banks of the creek? Will the ferns and serviceberry bushes still hang along the banks? (1390)

Response: The agencies have evaluated impacts to aquatics and fish in Chapter IV, Aquatics/Fisheries. Plant life would be directly destroyed in all areas proposed for disturbance. Streambanks, except at road crossings, would not be directly disturbed. The tailings water would be isolated from direct contact with plant life outside of the disturbed areas. See the disturbance acres listed in Chapter 2, Table 2-2 for the tailings storage facility area. The only other plant affects from the impoundment are indirect effects to downstream wetlands discussed in Chapter 2 and 4 in the wetlands sections. The only large plants that would be disturbed along the creek banks would be in the proposed disturbance areas associated with road crossings. See the maps for each alternative in Chapter 2. No impacts are predicted to the cottonwoods, cedars, ferns and serviceberries along the banks from the tailings water.

BIO-405 Plant Species of Special Concern

1. It will eliminate viable populations of Botrychium sp; found in the drainage. NFMA and NEPA are supposed to prohibit this. (1700)

Response: Additional surveys for *Botrychium* spp. were conducted in 1996. The additional data are reported in the final EIS and impacts disclosed, so the decision makers can decide if the impacts are permitable.

2. The DEIS lists five plant species of special concern found in the project area during baseline surveys. You may have missed some others. The MNPS is aware that several species of Botrychium were found in Rock Creek during the summer of 1995. A number of those are sensitive plants on the Kootenai National Forest. In addition, another sensitive plant was found on the slopes between Miller Gulch and Rock Creek during timber stand examinations, and it's possible that at least one population may be effected by the tailings impoundment. This plant is Clarkia rhomboidea. Prior to this summer, it was known from only one location in the state. (1668)

Response: The agencies gathered and reviewed the additional data you mentioned and rewrote the plant species of special concern section in the final EIS. Impacts to these populations of special plants are disclosed in the final EIS. If the populations can't be avoided other mitigations will be recommended to the decision maker for inclusion in agency modified alternatives to reduce impacts to acceptable levels.

3. At the very least, we expect to see conservation assessments prepared for the sensitive species that may or likely will be effected by the mine, including Dryopteris cristata, Botrychium spp. and Clarkia rhomboidea. The other species mentioned are also important, and we suggest you also prepare conservation assessments for them. (1668)

Response: The agencies rewrote the Plant Species of Special Concern section in Chapter 3 and 4 of the final EIS. Conservation assessments may be one of several possible mitigation strategies if Kootenai National Forest sensitive species are found.

4. The agencies should also consult with Washington Water Power which has conducted extensive surveys in the Noxon Rapids and Cabinet Gorge Dams Hydroelectric Project areas over the past three years, and also found sensitive plant species. (1668)

Response: The agencies reviewed the Washington Water Power (now Avista) studies and no other sensitive plant species were found.

5. Page 3-63, Plant Species of Special Concern, paragraph 3 and subtending bullets: Of the five sensitive plant species addressed, two are in question. Crested shield-fern (Dryopteris cristata) was reported during the wetland inventory conducted in 1991-1992, but was not collected. Subsequent searches were conducted for this species during 1995 at the reputed locations and other potential sites by Western Technology and Engineering, Inc., but failed to document its occurrence in the project area. However, these searches identified a plant thought to be Dryopteris arguta, which was collected and sent to a pteridophyte specialist in Oregon; verification of the identification is pending. Dryopteris arguta is not listed by Montana Natural Heritage Program (MTNHP) (1995), likely because it has not been previously documented for Montana, and its range (in our region) reported by Hitchcock et al. (1969) is "chiefly west of the Cascade summits, but known also from the mountains of eastern Oregon and reported from Stevens County, Washington." MTNHP personnel are aware of this 1995 collection.

Black snake-root (Sanicula marilandica) is not listed by MTNHP (1995) nor by the KNF due to its relatively common distribution in western Montana. The significance of its inclusion in the DEIS is very questionable. It may also be germane to indicate that the "population" of point broom sedge (Carex scopulorum) was located in a highly disturbed, clear-cut site. The discussion of yerba buena (Satureja douglasii) indicates that this taxon is "imperiled in the state due to rarity," and should elaborate that its distribution in northwestern Montana is at the periphery of its primary range; this species is more common to the west of the project area. The Yerba buena citation "Montana

Natural Heritage Program (1993)" can be updated to read MTNHP(1995). The legal status of MTNHP species of special concerns needs explanation in the DEIS.

Page 4-85, last paragraph: All comments below relate to the comments regarding page 3-63. The reference to black snake-root is considered invalid. The reference to slender wintergreen (Gaultheria ovatifolia) is considered invalid since it is not listed as a plant species of concern by MTNHP (1995). Furthermore, it is not clear why this species is mentioned at all, as it is not discussed in Chapter 3 (Affected Environment) of the DEIS. The statement "much of the relatively extensive Yerba buena population" is ambiguous. References to crested shield-fern should be modified as per page 3-63.

Page 4-97, last paragraph: The reference to black snake-root is considered invalid. Reference to crested shield-fern should be modified as per page 3-63, and the statement "12 of 18 plant populations" accordingly modified.

Page 4-100, paragraph 1: The reference to crested shield-fern should be modified as per page 3-63, as also "11 of 18 plant populations." The reference to slender wintergreen is considered invalid (see comment regarding page 4-85). (1589)

Response: The misidentification of crested shield-fern was removed from the discussion in the final EIS. Agency personnel discussed the 1995 collection of *Dryopteris arguta* with MTNHP personnel and the specimen collected was not a sensitive plant (pers. comm. Beth Heidel, Montana Natural Heritage Program [MTNHP], with P.L. Plantenberg, July 10, 1998). The comment about black snake-root was deleted from the final EIS discussions. The text of the discussion about pointed broom sedge will indicate that it was found in a highly, disturbed clear-cut site. The comment about yerba buena will be included in the final EIS text. The yerba buena citation will be updated to MTNHP 1997. The legal status of MTNHP species of special concern is explained in the final EIS.

The agencies will be rewrote the entire section on plant species of special concern because of the new data collected in 1995 and 1996 and review of additional studies. Black snake-root, slender wintergreen and crested shield-fern are removed from the final EIS. The statement about yerba buena is modified in the final EIS to state that "The local population of yerba buena in the area is rather extensive. Much of this large local population will be destroyed by construction of the tailings impoundment." The statement "12 of 18 of plant populations" was modified accordingly.

6. There must have been some sensitive plant and animal species in the impact areas. Are they described anywhere? (1914)

Response: See the Chapter 3, Biodiversity of Wildlife Habitat/Vegetation and Wildlife Species (Biodiversity), Wildlife Habitat/Vegetation section in each alternative, as well as the Threatened and Endangered Species section in each alternative for details.

7. p. 2-122: How could the elimination of 60% of these plant species be acceptable? What attempts will be made to avoid them during construction? Who will monitor ASARCO's attempts to do so? (1288)

Twelve populations of five species of plants would be eliminated, including three populations of crested - shield ferns. How can ASARCO be allowed to destroy species for the sole purpose of their economic venture without a pennies worth of compensation? The Tribe will not allow this type of activity to occur. (2026)

Response: Sixty per cent of the plant species would not be eliminated as suggested by the reader. Some populations of the plants would be eliminated. The entire section on plant species of special concern was rewritten in the final EIS because of new information gathered in 1995 and 1996. The agency-modified alternatives includes mitigations to reduce impacts to sensitive species as much as

possible. The decision makers will decide if the impacts are acceptable. Avoidance of a sensitive plant community by Sterling would be monitored by the Kootenai National Forest on National Forest Service lands, by the Montana DEQ on private lands and by the Corp of Engineers (if sensitive plants are in the wetlands).

8. Page 4-100, Cumulative Impacts: Since plant taxa are not specifically addressed in this section, it is assumed they are not considered important to the assessment of cumulative impacts for the Rock Creek project. (1589)

The impacts to these few matters we have raised contribute to the overall loss of biodiversity in Rock Creek. The acknowledgment on page 4-83, "The project could have a significant effect on components of biodiversity under all action alternatives. The project could result in a decline of local plant and animal species diversity and numbers. These are potentially long term effects," is alarming. (1668)

Response: Plant taxa are covered primarily in terms of habitat under Biodiversity, Aquatics/Fisheries, Threatened and Endangered Species, and Wetlands and Waters of the U.S. sections in Chapters 3 and 4. Specific taxa that are listed by the U.S. Forest Service as sensitive species and by the Montana Natural Heritage Program as plant species of special concern are discussed in the Plant Species of Special Concern subsections of Biodiversity in Chapters 3 and 4. One plant species, water howelia, considered threatened and is discussed in the Threatened and Endangered Species section in Chapter 3. Water howelia is not discussed in Chapter 4 as there were no plants or suitable habitat found in the Rock Creek drainage. The cumulative effects on specific plant taxa, biodiversity and noxious weeds are included at the end of the Biodiversity section in Chapter 4 in the final EIS.

9. The impacts to plant life alone is distressing. The "reduction of plant community diversity" and "an increased rate of noxious weed spread" (page 4-84) are blatant violations of Forest Service stewardship of public lands. (1668)

Response: The effects of any action on public lands must address impacts to plant community diversity and noxious weed populations. The agencies updated the information in the final EIS. The decision maker will have to decide if the reduction in plant community diversity and increase in noxious weed invasion are acceptable. See BIO-407 for additional comments and responses relating to noxious weeds.

BIO-406 Old Growth

1. On page 2-136, it states:"Old Growth Habitat. All action alternatives would physically destroy and/or disturb old growth, rendering it biologically less effective or ineffective." By reading this, it makes it sound that this project is going to have a very drastic and significant adverse affect on old-growth-dependent species. Yet the discussions of old growth ecosystems on pages 3-67 through 3-70 completely contradict this. This discussion states that pileated woodpeckers require a minimum of 100 contiguous acres for nesting habitat and that the marten require a minimum of 250 to 500 contiguous acres. Other species require the same large amounts of contiguous old growth acres. 97% of the old growth stands in the project area are currently below the 100 acre minimums required to sustain these species. 62% are less that 50 acres.

The information states, when discussing the existing conditions: "The ability of the Rock Creek drainage to sustain, overtime, viable local populations of diverse old-growth-associated species is unlikely." Contradictions such as these tend to make these type of projects more controversial than they actually are. Which is actually the correct information to use when formulating comments?

Page 3-67, Old Growth Ecosystems, paragraph 5: Statements that pileated woodpecker "require a minimum of 100 contiguous acres of old growth for nesting habitat" is not correct. Two pileated woodpeckers were documented to nest in the project area and neither nest was in a stand of old growth. Although population densities are usually higher in old growth than in earlier successional stages, it is not accurate to characterize the species as requiring old growth. (1239)(1589)

Response: The referenced text at the end of Chapter 2 is a summation of the impacts discussed in Chapter 4. It has been modified to state the "Alternatives II through IV would destroy old growth and reduce its effectiveness. Because of closure of some open roads, Alternative V would result in a slight increase in habitat effectiveness by 1 acre. The Chapter 3 text refers to the existing environment. There is no contradiction here. The existing old growth is already fragmented and does not meet the minimum standard of biologically effective old growth even though sufficient acres are managed as old growth to meet Forest Plan standards.

Research has indicated that for those areas studied, larger blocks of contiguous acres of effective old growth are needed for viable populations than are currently present in the Rock Creek Compartment 711. Research must always strike a balance between using available information in areas that are not exactly the same and the cost of gaining site-specific information. The presence of some old growth dependent species implies several things: the habitat is likely to be good, although not abundant, and that random factors that affect viability adversely (such as annual weather) were not overwhelming during the time period those individuals were present. The presence or absence of individuals, even if they are breeding, does not demonstrate whether the habitat is able to sustain the population over time without additional research into productivity. For example, even if pileated woodpeckers successfully breed, their offspring may be unable to survive to adulthood because young inexperienced birds require more habitat to find adequate food or roost sites than older experienced birds. It is unknown whether the old growth dependent species in the Rock Creek project area are self-sustaining or if they are require timely infusions of transient individuals from other populations (this is known as a population sink). The best available research leads most experts on old growth dependent species to believe there is a minimum size and distribution of old growth necessary to sustain viable populations, and the available size and distribution of effective old growth in Compartment 711 is below this level. Some old growth dependent species will use other habitats when old growth is limited but they generally prefer and need sufficient old growth to maintain available populations.

2. It will destroy from 90 to 201 acres of old growth forest in an area that has precious little old growth forest left. (1255) (1363)

Response: The effects analysis, Chapter 4, Biodiversity, recognizes the loss of effective old growth for Alternatives II, III, and IV, and that this loss will further degrade a situation below minimum standards.

3. Effects on old growth ecosystems from the proposed alternatives are very minor compared to the extensive cutting, mostly clearcuts of old growth stands, in the Rock Creek watershed by the USFS. (1502)

Response: Rock Creek has had extensive timber harvesting, frequently of old growth stands, over the decades of management of the area. Harvesting of old growth was done prior to the establishment of current management direction on maintenance of at least a minimum proportion of old growth in each compartment. Other factors such as wildfire were also responsible for reducing the amount of old growth in this century. The cumulative effects of past actions and environmental conditions have led to the existing condition of the compartment being under the minimum Forest Plan standards. Additional acres of replacement old growth stands (stands that do not currently meet all old growth criteria but would eventually mature into old growth stands) are being managed as old growth, such that 11.6 percent of Compartment 711 is being managed as old growth (Forest Plan stand is 10 percent).

4. The project is also flawed due to its location in old-growth forest, and the resulting effects on old-growth dependent species, too numerous to mention here. As an ecotype, late-successional forest is exceptionally diverse, supporting a wide range of diversity at different scales. It is also the most endangered ecotype in the region, due to the management preferences of the Forest Service. Even under the preferred alternative hundreds of acres of old-growth would be lost outright through conversion, and thousands more would see their functional integrity decreased. (1728)

Response: While there are not thousands of acres of old growth in the compartment to destroy, it is recognized in the Environmental Consequences section on old growth, Chapter 4, Biodiversity, Wildlife Habitat/Vegetation, and in individual accounts of old growth dependent species, that functional integrity such as contiguity will be degraded more or less proportionately to the amount of direct habitat loss: Alternatives II, III, and IV would affect 122, 47, and 30 acres respectively, while road closures under Alternative V would actually increase habitat effectiveness by 1 acre.

5. Impact to old growth ecosystems is unacceptable to me. They are precious and rare and required for the survival of some endangered species like the pileated woodpecker. How long does it take to reestablish a forest of this kind and will it ever happen once removed? (1735)

Response: Old growth forests are indeed a habitat component needed by several species. Pileated woodpeckers are dependent on large trees but they will also make use of other habitats. They are not an endangered species. The time it takes to reestablish an old growth forest depends on several variables, including the type of forest habitat. Lodgepole pine becomes decadent and at risk for stand-replacing agents almost a century before several other forest cover types such as cedar or high altitude spruce/fir mixes. Forests are not static and they do grow into old growth eventually. For this project, the stands that are removed to construct developed facilities are not going to be replaced by younger stands growing into old growth. Other existing stands in the compartment will grow into old growth within 50 to 100 years whether or not the project is approved.

6. Page 3-67. Old growth. The DEIS while addressing old growth as a subject fails to determine or identify areas where the old growth will be impacted by the proposed project. If you compare figure 2-24 on pg. 2-80 with figure 3-16 on pg. 3-68 you can about surmise that old growth stand #1 will be impacted by a borrow area, #4 by an

exploration support facilities site, #5a by the alternative mill site and # 12b R.O.G. by the exploration adit. As the compartment is already below the acceptable minimum further erosion of old growth in Rock Creek is unacceptable. Please elaborate how much the proposed project will further impact this resource? (1780)

Response: The compartment is below the minimum amount of old growth required by the KNF Forest Plan, as noted in several locations in the draft, supplemental, and final EISs. As you noted, the comparison of the two maps indicates the locations of the specific stands affected. The borrow area, would impact old growth stand #1 in some alternatives. The exploration support facilities for Alternatives II to IV would not affect old growth stands as they would be located in Section 22 (area #4 is in Section 15), and area #12b is below the evaluation adit and FDR No. 2741. Old growth stand #5b is dissected by FDR No. 150 and would be affected by increased traffic but would not be directly affected by use of the mill site confluence.

7. The Montana Native Plant Society finds the expected loss of old growth to this project objectionable. What steps, if any, will be taken, should the mine be implemented, to mitigate for the loss of old growth in Rock Creek. (1668)

Response: The effects of the loss of old growth are disclosed in the effects analysis. There is no reasonable way to mitigate for old growth in the sense that to truly offset the effects of the loss, replacement of similar kind and function would be necessary. The major problem since there are many "replacement" stands is the time required before they function the same as existing old growth. If some timber within the lands acquired for grizzly bear mitigation were old growth then this would be a means to reduce the cumulative effects of loss of private old growth stands.

8. Page 3-70, Old Growth Ecosystems, paragraph 3: The statement that, "The ability of the Rock Creek drainage to sustain, over time, viable local populations of diverse old-growth-associated species is unlikely." raises questions about whether the National Forest Management Act is being violated under existing conditions in the Rock Creek drainage. The conclusion that could be reached from this statement is that the old-growth-associated species listed in paragraphs 4 and 5 are currently not viable. The concept of local populations needs to be addressed in terms of viability (probability of extinction over a given time interval) and needs to be considered relative to the directive in National Forest Management Act to ensure that viable populations are maintained. (1589)

Response: There is no way to "fix" the existing condition of too little old growth in the project area other than allowing time to grow replacement stands into suitable old growth. The impacts of further reductions of old growth are disclosed in the effects analysis. A loss of individuals in a local population does not necessarily imply a viability issue. However, a loss of individuals in local population triggers a careful consideration of cumulative effects in case several similar situations in concert may give rise to a viability concern. Viability analyses were done for fisher, wolverine, and lynx and are summarized in the Biodiversity and Threatened and Endangered Species sections of Chapter 4 of the final EIS.

9. Page 3-69, Table 3-23, Summary of Existing Old Growth OG) and Replacement Old Growth (ROG) Acreage Designated as MA 13 in Timber Compartment 711: This table lists "existing old growth" and "replacement old growth;" however, "replacement old growth" is not defined or discussed in the text. There is no indication of the relationships among "existing old growth," replacement old growth," "functioning old growth" and "effective old growth" from either an ecological or administrative perspective. Does replacement old growth have ecological functions and values similar or the same as old growth? How are replacement old growth and old growth addressed in the Kootenai Forest Plan? It appears that for the Forest Plan (MA 13), replacement old growth and old growth are the same. (1589)

Response: These terms have been added to the glossary for clarification. Effective and functional old growth are synonymous. Replacement old growth is not considered to be equivalent to existing

old growth, but it is in a condition such that over time it would mature into old growth. Both types are managed as old growth, MA 13, under the Forest Plan.

10. Page 3-70, Old Growth Ecosystems, paragraph 1: The last sentence states that, "Seven percent of the drainage is old growth habitat, below the biological minimum." What is the biological minimum? Does this minimum consider replacement old growth? Does the biological minimum consider effective old growth? (1589)

Response: The "biological" minimum is referring to the 10 percent minimum required by the Forest Plan, which assumes a certain minimum level of old growth is required in order to meet the biological needs of old growth dependent species. This concept uses replacement old growth as providing some but probably not all the necessary components of older stands. Replacement old growth is set aside and managed as old growth in lieu of the availability of old growth meeting Forest Plan definitions. Effective old growth is old growth that meets the needs of old growth dependent species and is included in the old growth figure.

11. Page 3-69, Old Growth Ecosystems, paragraph 1: The statement, "It is estimated that, at a minimum, 8 to 10 percent of a drainage needs to be functioning old growth to meet biological needs." requires a source citation. The Kootenai Forest Plan specifies a required percentage of old growth but no reference is made to "functioning old growth." (1589)

Response: The source citation for "functioning old growth" is in the KNF's Forest Plan. The KNF Forest Plan, Appendix 17, Old Growth Habitat Characteristics and Management Guidelines (USFS KNF 1987) provides the foundation of old growth management for the forest. The Appendix states "a minimum of 8-10% of available wildlife habitat should provide old growth conditions." It goes on to identify the characteristics needed to maintain viable species.

12. Page 3-68, Figure 3-16: This figure would be more informative if it showed the permit boundary for the project in relation to old growth stands. The figure should also show old growth stands in the adjacent wilderness area since these are directly relevant to wildlife habitat issues. (1589)

Response: The context of other old growth stands outside the project area are important to understand the status of those within the project area. The larger area was analyzed on the basis of old growth management unit, and from that scope the units portrayed adequately indicate the project effects. As part of the new information between the draft and final EISs, mapping of several old growth dependent species habitat was accomplished (such as fisher) which will show the project area's old growth in context. These maps are included in the project files at the Agency offices.

13. The citation of marten requiring 250-500 acres old growth i.e. Burke in Warren 1990) does not appear to be correct. Burke, as cited in Warren suggested that at least one-half of the area of a female marten home range be maintained in mature or old-growth conditions. The other author cited (Soutiere 1979), recommended that at least 25 percent on an area be maintained as pole-size or larger forest cover. Reference is made to "interior forest birds." A definition of an interior forest bird should [be] added to the Glossary of the DEIS. (1589)

Response: Your interpretation of the marten Habitat Suitability Model is correct, although Burke's (in Warren 1990) recommendation of maintaining at least half of a marten's home range, in this case implied to be 1920 acres, mature to old growth would put the minimum near the level of 250 to 500 acres of old growth. A clarifying statement was added.

A definition of "interior forest bird" was added to the glossary.

14. How can the FS accept the loss of acres under the ASARCO project when increases in old growth are clearly mandated. How do you plan to provide adequate habitat for pileated woodpeckers and goshawks? (1207)

Response: An EIS discloses what impacts are anticipated should an alternative be implemented. The disclosure of a reduction in old growth habitat does not imply acceptance of the impact. In fact as the Agencies continued to develop alternatives, the amount of old growth diminishes from 122 acres under Alternative II to an increase of 1 acre under Alternative V. These effects are described in Chapter 4 of the final EIS.

The loss of pileated woodpecker and northern goshawk habitat associated with the project does not necessarily equate to a loss of viability, although at some point cumulative effects may warrant such a conclusion. The effects analysis did not reach a conclusion that either of these two species, or any other, would be affected in terms of their viability because of the loss of old growth. The competing effects of multiple-use management may result in the loss of some habitat for several species without directly affecting viability.

15. Page 2-123, Table 2-13, Summary Comparison of Project Alternatives, Column 3, (concerning pileated woodpecker): It is not clear what "sustainability," and "local populations" mean. Is sustainability synonymous with viability? The probability of extinction within a defined time period should be addressed. These terms should be specifically defined in the DEIS's Glossary. (1589)

Response: Sustainable is distinguished from viable because it refers to a local population rather than a species. Local population is added to the glossary.

16. Page 2-125, Table 2-13, Summary Comparison of Project Alternatives, (concerning old growth): "Old-growth-associated" and "old-growth-dependent" species are referred to in the table. These terms appear to be used interchangeably but, have distinctly different meanings and biological implications. These terms should be specifically defined in DEIS's Glossary. (1589)

Response: These two terms have been added to the glossary.

17. Page 2-136, Old Growth Habitat, paragraph 5: This section reflects a later discussion of old-growth which needs additional analysis. The concept of "effective old growth" (note: "effective old growth" needs to be defined in the glossary) is alluded to but the analysis of existing old growth stands influences effectiveness of old growth. Effectiveness only is discussed in terms of the overall area of a stand of old growth and does not consider edge effects for linear parcels that exceed certain minimum size standards. Reference is made to "old-growth-dependent" species. This should be changed to old-growth-associated species. (1589)

Response: The species referred to as old-growth dependent, pileated woodpeckers, goshawks, and fisher, are generally considered dependent by most researchers. It is recognized that the habitat components of old growth that make these species dependent on old growth forests are also what allows them to occur in stands that have only some of the components (i.e., old growth associated). The effect of edge on a stand is mentioned several times as a factor in reduction of effectiveness.

18. Page 4-83, last paragraph: The statement "Old growth ecosystems would be significantly reduced" is in general overstated given the data in Table 4-25 and elsewhere in the DEIS documents, particularly the term "significant," would be more meaningful from the standpoint of wildlife habitat considerations if at least the adjoining compartments were placed in context, and the analysis were not limited to Compartment 711 alone. (1589)

Response: Generally 10 percent change is considered at least potentially significant. Alternatives II and III would affect over 15 percent of the compartment's old growth while Alternative IV would affect slightly less than 9 percent. There would be no net change in old growth under Alternative V (see Table 4-36 for more detail). The additional analysis conducted for the final EIS places the habitat in larger context for several old growth dependent species.

19. Page 4-84, Biodiversity, Alternative I, paragraph 5: The statement that existing levels of "effective old growth" (MA-13) are currently below biologically sound amounts (7 percent) appears to conflict with data on Table 4-2 on page 4-4. Although this table is difficult to interpret, it appears that MA 13 would comprise over 10 percent of the acreage with the implementation of all alternatives. Therefore, it is not clear why the DEIS takes the position that the amount of old growth is below biologically sound levels and that, "Under current conditions, the long-term maintenance of old-growth-associated species would be difficult." Apparently, the DEIS assumes that replacement old growth does not provide adequate habitat for old-growth-associated species. Is this interpretation shared by the Forest Service? If so why is replacement old growth included in MA 13? The biological and administrative relationships between old growth and replacement old growth need elaboration. (1589)

20. Page 4-85, Table 4-15, Comparison of Alternative Effects on Old Growth Habitat in Compartment 711: The rows showing "ineffective" need explanation. What is "ineffective" and how were the values calculated? The source for the information in the table is OEA Research and Kootenai National Forest, however, this source is not listed in Chapter 9 - References Cited. Why is there a "0" behind various headings in column one (i.e., destroyed 0 and ineffective 0)? (1589)

Response: There is a difference between effective, existing old growth habitat, and what is managed as MA-13 under the Kootenai National Forest's Forest Plan. The management area does include the existing old growth, but is a less finely detailed administrative line than the stands of existing old growth, although they overlap for the most part. Because there is less than minimum existing old growth in the compartment, the need for an administratively-designated old growth replacement was clear. The function of this designation is to define and protect stands to be managed for old growth until they mature into old growth. The difference between effective old growth and Forest Plan old growth has been more fully described in the final EIS. Please refer to the Biodiversity sections in Chapter 4.

21. The agencies should figure out how to prevent or at least minimize--not mitigate--direct and indirect loss of old growth, riparian and wetland habitats which potentiate loss of nontropical migrant song birds, migratory waterfowl and sensitive species such as Peregrine falcons. (1732)(1737)(1738)(1741-1744)(1746)(1747)(1913)

Response: Alternatives have been developed by the Agencies to prevent, minimize, or mitigate effects, but some effects are not preventable. These are disclosed in Chapter 4 of the final EIS. New mitigations developed since the draft EIS are described in Chapter 2, Alternatives Descriptions for Alternative V.

22. Page 4-99, Alternative III, Effective Old Growth Habitat, paragraph 2: The heading "Effective Old Growth Habitat" needs clarification. The differences among the various types of old growth are not clear. Also, the values shown in paragraph 2 do not agree with values displayed in Table 4-2. (1589)

Response: Old growth terms have been added to the glossary. Table 4-1 of the final EIS shows the changes in the Forest Plan management area allocation for old growth, which is not the same as effective old growth. The changes in effective old growth are shown in Table 4-36 of the final EIS.

BIO-407 Noxious Weeds

1. Page 4-86 Noxious Weeds: Any disturbance of the upper several inches of soil in the privately owned part of Section 20 has produced an immediate heavy growth of Mullen weed, Canadian thistle, and Musk thistle. The seed apparently lies inert in the soil until brought up to the surface where it promptly sprouts and grows in the spring. (1455)

Response: Thank you for your comment. The mining company would be required to have a weed control plan which meets county standards to minimize noxious weed invasion.

2. pg. 3-64. In what capacity (spraying bio-controls etc.), communication (letter of intent) or time frame has the county taken over noxious weed control in the Rock Creek drainage? (1780)

Response: Private land owners are responsible for the noxious weeds on their property. If the noxious weeds are not controlled, a complaint can be filed with the county and the county will send their spray crews in to control the problem and then the landowner will be billed. The Kootenai National Forest has approved a Forestwide Herbicide Weed Control Plan where by herbicide control noxious weeds could take place on up to 2,500 acres per year, some of which could be on the Cabinet Ranger District.

3. Development of the sort proposed up Rock Creek invariably spread noxious weeds. You cite Montana's County Noxious Weed Control Act in the DEIS, but go on to explain that noxious weeds will spread further in Rock Creek because of this project. Does this mean you are prepared to break this law in order to accommodate the mine? There are far-reaching and long-term negative effects to pushing weeds further into these mountains, both to native plant communities and to critical wildlife winter range. We would like to see an aggressive program to control the spread of weeds in Rock Creek which should include the use of native seed and plants. Please address this matter fully in the Final EIS. (1668)

Response: The Montana County Noxious Weed Management Act defines weed control as "the planning and implementation of a coordinated program for the containment, suppression, and where possible, eradication of noxious weeds [MCA 7-22-2101(8)]." Also, it states in MCA 7-22-2116 that "It is unlawful for any person to permit any noxious weed to propagate or go to seed on his land, except that any person who adheres to the noxious weed management program of his district or who has entered into and is in compliance with a noxious weed management agreement is considered to be in compliance with this section." If Sterling implements their weed control program and does the required weed management activities they would be in compliance with their weed control management program and will not be breaking the law, even if weeds spread even further into the Rock Creek drainage during mine life. This is the same for any landowner. The potential for the increased spread of noxious weeds would primarily be due to increased traffic in the drainage from mine-related traffic but also due in part to a potential increase by recreationists making use of the improved roads to reach private lands, the Cabinet Mountain Wilderness, and other National Forest Service lands.

4. p 2-74: par 7: Provide clear description of how mulching materials will be "weed-seed free." Just saying they will be "certified" means nothing. Is it really possible to have weed-seed free mulch? If this is not true, it should be stated as such in the EIS. Also, if not true, then potential for spreading weeds by mulching must be addressed. The EIS must be an honest statement. (1288)

Response: Mulching materials are certified noxious-weed-seed-free. Typical mulches used on reclaimed areas include hydromulches and straw. Hydromulchers use two products, namely silvawool fiber and recycled ground-up newspapers and magazines. These are essentially 100% weed free. Straw if used must be certified as noxious weed free. This is typically done by an

approved inspector who surveys the field from which the straw is harvested. Seeding mixes must also be weed-seed-free as another means to reduce the spread of weeds under the agency alternatives.

5. The statement at the bottom of 4-76 that implies noxious weeds will lead to erosion is totally spurious. Elsewhere there is much discussion of required weed control measures (page 4-86) and it is clear that widespread knapweed dominance of reclamation areas would not be allowed and would not occur. Why is this even mentioned? (4502)

Response: Research conducted by the Montana University system has shown that stands of spotted knapweed produce more sediment. The reader was referenced to Chapter 3, Biodiversity section for a discussion of sediment where the reference was cited. This was the reason for the statement in Chapter 4.

The other comment about required weed control is mentioned because even with aggressive weed control there will always be a population on noxious weeds in the area. Noxious weeds are spreading in all areas of Montana even with weed control efforts. Noxious weeds are spreading even without disturbance.

DRAFT EIS
RESPONSES TO COMMENTS

THREATENED AND ENDANGERED SPECIES

Terrestrial T&E Species TE-500
Aquatic T&E Species TE-501

TE-500 Terrestrial T&E Species

1. Having served on the local advisory committee for grizzly bear management since the onset, and again trying to apply a practical and reasonable approach to common sense measures, it does not appear to us that the wildlife biologists have scientifically and categorically proven that there is a real problem here with temporary displacement of grizzly bears and an increased mortality risk.

Again we must say that the bear is provided with more than adequate habitat in surrounding areas. We are not forcing bears that may be displaced to compete with other bears elsewhere in adjoining drainages. According to the findings of the local study efforts available to us, it appears that the adjoining drainages hold, if any, a minimal population of grizzly bear.

We have a real problem with the idea of habitat loss. At worst, this is a temporary displacement. There is no need for mitigation in the form of replacement habitat when the direct surface disturbed acres are only 543 to 609 acres. There are over 3.5 million acres of adequate available habitat for grizzly bear on the Kootenai and Kaniksu National Forests. The grizzly bear is certainly not crowded for space. The agencies have estimated only 20 live in the total Cabinet mountains area. There surely is ample room for them to utilize other existing habitat without setting aside more. It is unreasonable to impose unwarranted mitigation measures for these threatened and endangered situations. There just is not a sufficient population of grizzlies to warrant these excessive measures. When are we going to start to incorporate a little common sense in dealing with these controversial issues? Permanent acquired replacement habitat also has a dramatic long-term affect on local governments. As more and more lands are acquired by the federal and state governments for wildlife mitigation, local taxpayers are forced to pick up this extra burden for the tax-exempt property. Remember, this is only a temporary situation, not permanent.

Consider the improved vegetation planted on the disturbed areas of ASARCO's Troy Unit. These areas have proven to be frequented by black bear. It developed into a game refuge for them, being posted "No Hunting." We are not aware of an increase of enforcement problems here. Have these factors been considered as they also may relate to grizzly bear? (1239)

Response: The analysis of grizzly bear displacement and mortality risk has been updated (see final EIS, Threatened and Endangered Species section on grizzly bears in Chapter 4). Habitat loss does occur at the mill site and tailings disposal facility, and may occur within their influence zones. These two sites would not provide habitat for grizzly bears for over 35 years. Bear learn to avoid areas and in turn may teach their offspring to do the same. In this way, learned avoidance behavior can persist for several generations of bears before they again utilize habitat associated with a disturbance, even though the disturbance may have ended. This, in effect, is habitat loss.

The experiences from the Troy mine were considered in the evaluation of effects to grizzly.

The mitigation plan provided in the Biological Assessment (Appendix B) has been updated to show acceptable methods of mitigation in addition to land acquisition. Effects to the county tax base have been disclosed in Chapter 4 - Socioeconomic section.

2. Although there is a slight chance of increased risk of bald eagle mortality due to increased vehicular traffic traveling to the project area, we feel it is insignificant when considering the small area affected. The bald eagle population continues to grow and recover at a significant rate and has been considered for delisting. Also, since no suitable nesting or winter roosting habitat has been identified in the project area, there would be no habitat loss. Therefore we concur with your closing statement on the consequences Alternative II that "the resultant indirect effect to bald eagles would be minor" at most. There are no known resident gray wolf populations in the area. The project area is also outside of designated gray wolf recovery habitat. The project would have no effect on efforts to recover this species and any mitigation efforts should not even e considered. The potential impacts on wolves would be from none to insignificant or minor. Again it seems reasonable that there is adequate room in surrounding forest

areas that would more than sufficiently handle the temporary displacement of big game and other wildlife species without requiring potentially excessive special mitigation measures. (1239)(1612)

Response: The analysis of effects on the Bald Eagle have been updated to more clearly show project risks to this species (see Chapter 4 - Threatened and Endangered Species section and Appendix B, Biological Assessment).

There were no mitigation measures required for the protection of the wolf (see Appendix B).

3. Imagine impacts to habitat which is not even inhabited by grizzly bears. (1266)

Response: Environmental impacts are required to be disclosed on the species, as well as occupied, and unoccupied habitat. Those effects are disclosed in the Biological Assessment (Appendix B) and in Chapter 4 (Threatened and Endangered Species section). It was assumed that the habitat in and around the project area is occupied, but not at carrying capacity.

4. Despite extensive habitat loss, in the Cabinet-Yaak Recovery Zone, the population is small and, by criteria of viability analysis, unlikely to survive in the long-term, even if every possible accommodation is made to protect both the bears and their habitat. The Cabinet Mountains Wilderness comprises the core of the recovery zone. It is relatively small and, in itself, certainly will not support a viable population of bears. The habitat provided by the nonwilderness areas that constitute the remainder of the zone, then must be considered critical to the populations's survival. It is plain from the descriptions provided for each of the alternatives in the draft EIS that critical habitat will be diminished both by direct elimination and by usurpation (roading and increased human activity) if any of Alternatives II-IV are selected. (1255)

Response: The Biological Assessment (Appendix B) and Chapter 4, Threatened and Endangered Species section, disclose the potential adverse effects to the grizzly bear and its habitat.

5. Protection of the habitat necessary to recovery of threatened or endangered species is a fundamental provision of the Endangered Species Act of 1973, and the Forest Service is obligated to take this into account in all land-use decisions. (1255)

Response: Compliance with the Endangered Species Act and Forest Service policy concerning Threatened and Endangered Species is achieved by: disclosing all effects, providing mitigations, and completing consultation with the U. S. Fish and Wildlife Service. All of these steps have been completed and the results will be used by the decision makers to make the final decision.

6. Please note that mitigation for the grizzly bear may not be possible as Noranda has already agreed to mitigate for grizzlies and their mine site is only five miles from the proposed ASARCO mine. (1401)

Response: The mitigation plan (Appendix B) and the disclosure of effects in Chapter 4, Threatened and Endangered Species section, have taken into consideration the Noranda Mine project.

7. If developed, the mine would impact thousands of acres of important grizzly bear habitat which must be addressed including detailed and workable mitigation plans for grizzly bears must be developed. (1245)(1314)(1359)(1376)(1489)(1517)(1697)(1923)

Response: Impacts to grizzly bear habitat by each alternative are disclosed in Chapter 4, Threatened and Endangered Species section. Mitigations for these impacts are required and shown in Chapter 2 (Alternatives Description - Monitoring and Mitigation Plans), and the Biological Assessment (Appendix B).

8. The rationale behind the Fish, Wildlife and Parks' mitigation proposal seems senseless to me. Where is the justification of allowing a mine to operate and attempting to solve the problem of loss of grizzly habitat by making road closures in nearby areas? (1371)

Response: Road closures are only one of the many mitigation measures required for the proposed project. Other measures attempt to protect other habitat lands that may also be in danger of

disturbance. See the mitigation plan in the Biological Assessment (Appendix B), Chapter 2 (Alternatives Description - Monitoring and Mitigation Plans), and Chapter 4 (Threatened and Endangered Species section).

9. Page 2-131 last paragraph, add: (there had been sightings of grey wolves in Miller Gulch area). Page 4-104 last paragraph on page. I disagree with (2). Three wolves have been seen on private land in Section 20. Three wolves were seen together near the state road department site west of Noxon this last spring. The wolf recovery team has never made an effort to obtain public input about wolf sightings. The same is true of the parties to this DEIS. The agencies do not have enough information to make the statement in (2). (1455)

Response: The scoping process conducted for the Rock Creek Mine project proposals did provide opportunity for the public to provide any and all information they may have on the project area. The comment period on the draft EIS provided additional opportunity for information to be provided by the public. The new information on wolves was incorporated into the analysis (Chapters 3 and 4 - Threatened and Endangered Species section: Gray Wolf, and the Biological Assessment).

10. The Forest Service is closing down a whole area west of here just for the grizzly bears. If they are protected so much there, why not here? (1639)

Response: The comment says "the whole area west of here." It is assumed that the respondent is referring to the extension of the Selkirk Ecosystem recovery area in Idaho. The Selkirk ecosystem is a separate recovery area for the grizzly. The habitat needed for recovery in the Cabinet/Yaak Ecosystem has already been identified and established by the U.S. Fish and Wildlife Service.

11. The grizzlies will be impacted mightily. Cannot this development be halted under the provisions of the Endangered Species Act? (1515)

Response: The Endangered Species Act provides the U.S. Fish and Wildlife Service the legal authority to issue a Biological Opinion that may include a "jeopardy" determination. Should a jeopardy opinion occur, the U.S. Fish and Wildlife Service must provide "reasonable and prudent" alternatives for the project proposed. If none are available or the proponent decides not to implement them, the project might not happen. A more likely course would be a legal action in which the court would be asked to determine which law (1872 Mining Act or the 1973 Endangered Species Act) has priority.

12. The project's impacts on the grizzly population, both locally in the Cabinet mountains and across the northern Rockies, are equally dire. Already listed under the ESA, the biological needs of the species are well known. Foremost among them is the need for roadless habitat, free from human intrusion. Again, the project moves us in the wrong direction by converting key habitat to a non-compatible use, fragmenting the watershed with more roads and assuring greater levels of human presence in a vital travel corridor for grizzlies. Less habitat, more bear/human encounters, more poaching and, at the landscape scale, less habitat security for the species certainly doesn't bode well for the grizzly. (1728)

Response: The environmental analyses (Chapter 4 - Threatened and Endangered Species section) and the Biological Assessment (Appendix B) disclose the adverse impacts to the grizzly bear. The determination of the BA is that the proposed project would adversely affect the grizzly. This determination required formal consultation with the U.S. Fish and Wildlife Service (USFWS), the agency responsible for the recovery of the bear. The consultation was initiated and the USFWS Biological Opinion (Appendix E) has been incorporated into the final EIS and will be considered in the KNF decision.

13. In view of the fact that the mine and mill are located in and near an important wildlife area we believe it is incumbent upon the agencies you represent to eliminate, prevent or minimize, and not merely mitigate, the following environmental impacts that are reasonably associated with the ASARCO project. Removal of up to 3500 acres of grizzly bear habitat thus violating the Endangered species Act. (1730)

Response: The project does not "remove" 3500 acres of grizzly habitat. It does reduce the effectiveness of the habitat, due to increased human disturbances. Long-term "removal" of habitat does occur but at a much smaller scale (0 to 609 acres - Chapter 2, Summary Comparison of Project Alternatives Impacts; Chapter 4 - Threatened and Endangered Species section on grizzly bear, and the Biological Assessment - Appendix B). Removal of acres, by itself, is not a violation of the Endangered Species Act.

14. Researchers have identified bear-human interaction as the main cause of grizzly bear mortality (Mattson). In addition, those bears that survive are conditioned to avoid roads. Thus, increased mortality and reduced habitat area must be adequately addressed in the environmental analysis. The Cabinet-Yaak population of grizzly bears has recently increased to about 18, however, this number of bears remains very vulnerable to extinction from demographic and environmental stochasticity (Gilpin & Soule 1986, Goodman 1987) as well as low effective population size and concomitant genetic effects (Lande & Barrowclough 1987, Lande 1995). The number of breeding age females is also extremely low and, as a result, additional female mortality must be avoided. Additional stresses on the population do not bode well for its persistence in the short or long term. The analysis done so far fails to adequately address the increased risk of mortality and the stress on bears due to habitat reduction. (1695)

Response: The Biological Assessment has been updated to reflect the change in mortality risk (Appendix B). These effects are also shown in Chapter 4 - Threatened and Endangered Species section).

15. The cumulative impact of this project and the proposed Montanore mine project located opposite the Rock Creek proposal on grizzly bear mortality and migration also have not been adequately addressed. These two projects will effectively squeeze bears into a narrow migration corridor and hinder north-south movement of individuals. The effect of blasting on bears in the wilderness may also act to block movement between the two "halves" of the wilderness, if bears are not behaviorally adapted to ignore subsurface concussion shock waves. In a population already perilously low in number, the effective isolation of parts of the population will only decrease the probability of their survival. Moreover, human-bear encounters may be increased through the narrowing of the corridor for movement. This again increases the potential for bear mortality. (1360)(1695)

It is obvious that the cumulative effects of this project and the Montanore project would be significantly deleterious to the Cabinet Yaak grizzly bear population. (p. 4-102). Mitigation of this must be required and added to the preferred alternative. (1632)

Response: The Biological Assessment has been updated to better reflect the cumulative impacts with the Montanore project. These effects are shown in Chapter 4 - Threatened and Endangered species section) and in the Biological Assessment (Appendix B). Mitigation for these effects are described in Chapter 2, Alternatives Description - Monitoring and Mitigation plans, as well as Appendix 5 of the Biological Assessment.

16. The existing habitat for grizzly bears is not adequate for long-term survival of the species. The East Cabinet Wilderness must be expanded, especially in width, and joined as completely as possible to a west Cabinet Wilderness down Pollick Ridge. (1662)

Response: The decision to expand the East Cabinet roadless area is outside the scope of this project. The area is already part of the Cabinet/Yaak ecosystem recovery area for grizzly bears.

17. The Biological Assessment for Threatened, Endangered and Proposed Wildlife Species ("BA") (DEIS Appendix B) finds that the proposed project, in its current form "may adversely affect" the threatened grizzly bear. (DEIS at B-1) This indicates that many changes will have to be made in project design in order for the mine activities to be in compliance with the Endangered Species Act ("ESA"). Whether the mining project can be designed to avoid a jeopardy situation is questionable. In fact the U.S. Fish and Wildlife Services's (FWS's) July 27, 1995 Incidental Take Statement ("ITS") which amends the 1985 Biological Opinion for the Kootenai Forest Plan indicates that there is currently a "taking" of the grizzly bear on the Kootenai National Forest due to habitat degradation and

high road densities. It seems clear that further degradation or loss of grizzly habitat such as that resulting from the proposed action will increase the taking and lead to a jeopardy situation. We wish to reiterate that the alternative chosen in your decision to implement this project should be in compliance with the U.S. Fish and Wildlife Service's Incidental Take Statement which requires that the Kootenai NF adopt the new access standards being developed for the Cabinet-Yaak Recovery area that will implement the access management strategy issued by the Interagency Grizzly Bear Committee in July of 1994. (11)

Response: The U.S. Fish and Wildlife Service Incidental Take Statement was received after the draft EIS and Biological Assessment (BA) were completed. This new information has been included in the final EIS and BA in the form of an analysis of compliance or non-compliance with the Statement.

18. The mining project as proposed will physically change 542 acres of grizzly habitat and influence grizzly use of an additional 2390 acres during construction and 2150 acres during operation, reducing habitat effectiveness for the life of the mine (35 years). DEIS at B-14.

The major issues that must be dealt with are the impacts on the grizzly bear due to the loss of over 2000 acres of habitat for the life of the mine and the reduction of habitat effectiveness below acceptable levels, essentially the displacement of bears from the area affected by the mine.

The Mitigation Plan calls for ASARCO to "secure or protect…replacement habitat to compensate for acres lost by physical alteration or acres with reduced habitat effectiveness due to disturbance." DEIS at B-40. There is no indication in the BA whether or where replacement habitat exists or of the feasibility of such an acquisition and/or trade.

In summary, the DEIS indicates that the project has the potential to move populations of these and other threatened, endangered and sensitive species, including old growth dependent species toward listing and/or extinction. Alternatives that minimize or eliminate impacts on wildlife in these categories, such as the grey wolf, fisher, lynx, wolverine, harlequin duck, must be the basis for the decision if it is to comply with the National Forest Management Act ("NFMA"). (11)

Response: The mitigation plan (Appendix 5 of the Biological Assessment) has been updated and expanded to provide descriptions of replacement habitat location, reasons for selecting, and habitat values provided.

19. The greater human use of the area concerns me greatly, especially for the grizzly bear. It is known that greater human/grizzly contact results in "bad bears." As the bear encounters man more frequently, he loses his fear for him and sooner or later the man/food connection is made and a bad bear results. We surely don't want bad grizzlies here. The danger to wilderness users and mine workers concerns me greatly as does the future of the grizzly in our area which is tenuous at present. (1735)(1736)

Response: Mitigation measures are included to reduce bear/human encounters and to reduce the chance of a problem bear situation. They can be found in the Mitigation Plan of the Biological Assessment (Appendix B).

20. As a taxpayer who is tired of seeing money wasted, could you please explain just how you can justify the removal of thousands of acres of effective grizzly habitat in this ecosystem? Why have we spent money, time and resources for the bear in this system, only to have one company come in and virtually eradicate all this work? You cannot possibly mitigate this devastation with road closures and potentially "buying" other habitat, if that is even available or feasible. You cannot tell the bear where its new habitat lies--its habitat is where it is--it cannot just go walking off to a new promised land! The grizzly is extremely disrupted by noise and vehicles, of which there will be a tenfold increase in this ecosystem, and not just within the neat boundaries of the "project area." Given recent US Congressional action, logging will continue to eat away at the bear's habitat in this system. Now if you add the Noranda Montanore mine, and then grant ASARCO a permit, the Rock Creek mine will definitely do the bear in. You and ASARCO will be in violation of the Grizzly Recovery Plan and the ESA, and you certainly aren't practicing

ecosystem management with this project. How could you justify giving ASARCO an operating permit when they (and you) will be clearly breaking the law? (1916)

Response: Thousands of acres would not be "removed" as grizzly habitat. However, habitat effectiveness would be reduced due to increased levels of human activity. The replacement habitat was selected due to 1) other threats to its security, and 2) value as suitable habitat. The U.S. Fish and Wildlife Service, the agency responsible for administrating the Endangered Species Act (ESA), was formally consulted with on the project and the terms and conditions of their Biological Opinion (see Appendix E) have been incorporated into the preferred alternative. Meeting their conditions means the project would be in compliance with the ESA if it is approved and permitted.

21. The EIS does not properly address...loss or negative impacts to any animals such as the bald eagle, gray wolf, or pileated woodpeckers. (1923)

Response: An analysis of impacts to wildlife species, such as the bald eagle, gray wolf, and pileated woodpecker was completed using the most recent information (local data, research papers, and professional opinion). All impacts are disclosed in Chapter 4 of the EIS and in the Biological Assessment (Appendix B).

22. The U.S. Fish and Wildlife Service (FWS) concurs that the proposed project will have direct, indirect, and cumulative effects from Alternatives II-IV, resulting in significant impacts to the grizzly bear. Thus, pursuant to Section 7 of the Endangered Species Act as amended, the Forest Service must prepare a biological assessment and initiate formal consultation with the FWS. The Final EIS (FEIS) should contain the results of the Section 7 consultation. (1933)

The project impact may not just delay, but may preclude grizzly bear recovery in the Cabinet Mountains/Yaak ecosystem. It is likely that the displacement habitat mitigation measures proposed in Appendix B(10-22) will be required for grizzly bear recovery even if the Rock Creek project does not proceed. (1608)

Endangered and threatened species is the quintessential time for a risk averse position. Respect for hard-won information which specifies distinct risks is the way to express it. It is not a time to mitigate with all good faith but to draw the line with all good faith. If there be a time and reason to restrict development activities, surely the failing Cabinet population of grizzly bears, a threatened species under active recovery effort, presents it. (1629)

Page 2-131. The Grizzly Bear. The 2nd, 3rd and 4th paragraphs speak everything about the values that are in conflict here. There is no mitigation, other than Alternative 1 (no action), that can be made that will preclude extirpation of this animal. For the agencies, DSL, KNF, USFWS to pretend that additional road closures, educational and land arrangements can be made to suffice would be to lie unto themselves and the public. The issue is clear and beholden to us: we either allow ASARCO to profit in the development of copper and silver and eliminate the bear, or we say whoa, and we keep our silver in the bear. Does the sentence, "The project may adversely affect the grizzly bear.", on pg. B-1 constitute a jeopardy opinion? The law does not allow for ambiguities and it would be nice if we did not have to tolerate them. USFWS speak with a clear voice. (1780)

Before this project proceeds it is essential that the Forest Service ensures existence of secure habitat for grizzly bears in the Rock Creek area. This could be accomplished through additional road closures, road obliterations, or through constraining the areas near the project where activities are permitted. (1603)

The DEIS admits that the proposed project will have significant, negative effects on Forest Service sensitive species and federally listed endangered species, including the Cabinet-Yaak grizzly bear population. Yet the DEIS offers no discussion to demonstrate that the project will comply with the National Forest Management Act (NFMA) or the Endangered Species Act (ESA), both of which require maintaining habitat for viable populations of sensitive and endangered species. (1223)

Given the precarious survival situation of these species, elimination of this habitat would seem to violate the Endangered Species Act. The impacts on the population and travel patterns of these species should be thoroughly studied and disclosed. (1633)

The grizzly bear analysis tiers to a recovery plan that was recently found to be illegal and inadequate as far as providing real recovery of the great bear. Therefore, this analysis must deal with viability of the grizzly, dealing with cumulative effects of habitat losses due to other human development in the Cabinet-Yaak Ecosystem as well as this proposal to create a major disturbance in occupied grizzly bear habitat. The proposal is thus an example of continued piecemeal condemnation of habitat and constitutes a "taking" of grizzly bears. The DEIS fails to utilize the core analysis procedures required by the Interagency Grizzly Bear Committee (IGBC). The analysis also assumes a valid recovery plan, which is not the case since a federal judge has determined that the plan contains several inadequacies. This analysis therefore needs to ascertain the viability of the grizzly bear population in the value of the habitat in the affected area for contributing toward a viable population before any habitat can be irretrievably committed to a mine.

The project will violate the Endangered Species Act and the National Forest Management Act with respect to grizzly bears. The ESA demands that habitat and individuals be protected. This project will irretrievably displace grizzly bears from the area (DEIS: 4-178,182). This project will also cumulatively impact grizzly bears to the extent that they will not survive in this area; "The loss of additional habitat could further reduce the carrying capacity to the point that a viable level of grizzly bear could not be supported" (DEIS 4-185). Grizzly bears were listed under the ESA because Americans want them protected. (1670)

Response: A Biological Assessment has been prepared (Appendix B). The U.S. Fish and Wildlife Service (USFWS), the agency responsible for administrating the Endangered Species Act (ESA) was formally consulted with on the project and the terms and conditions of their Biological Opinion (Appendix E) have been incorporated into the preferred alternative. Meeting their conditions means the project would be in compliance with the ESA. A draft Biological Evaluation of effects on sensitive species was prepared and documents the compliance with the National Forest Management Act; the Biological Assessment has been incorporated into the final EIS in Chapter 4, Biodiversity.

The statement "may adversely affect" does not constitute a "jeopardy" opinion. The "jeopardy" determination can only be made by the USFWS. The recovery of the grizzly is the direct responsibility of the USFWS as defined in the ESA. They were consulted formally under Section 7 rules and have provided a Biological Opinion, the contents of which will be incorporated into the final decision, including reasonable and prudent measures to reduce or eliminate impacts should a decision to permit the project be made.

To ensure secure habitat for the grizzly bear the Kootenai National Forest, in conjunction with the USFWS, has established standards and guides that must be met. In addition, consultation with the USFWS is conducted to determine any additional measures which may be required to protect the grizzly. The proposed project, as described in the final EIS and the associated mitigation measures meets the requirements for providing secure grizzly habitat.

23. Long term effects would include reduction in habitat effectiveness for threatened or endangered species, e.g.,grizzly bears and harlequin ducks, loss of old growth forest and reduction of habitat for old growth dependent species, loss of some sensitive an/or endangered plants. Given the present excessive rate of species extinction and the consequent loss of biodiversity, these effects are serious, and should be minimized to the greatest extent possible.

Because of the critical importance of the Cabinet/Yaak grizzly bear ecosystem to the possible recovery of the grizzly bear, we are especially concerned with the irretrievable loss of grizzly bear habitat that would result from the Rock Creek project. The promise of mitigation of grizzly bear habitat loss through so called "habitat replacement" is a snare and a delusion. The fact is that thousands of acres of badly needed grizzly bear habitat would be permanently

lost. That loss would almost certainly make it impossible for the grizzly bear to be recovered in the Cabinet/Yaak ecosystem. (1696)

Response: The project proposal has been modified, as shown in the different alternatives, and mitigations have been applied to each alternative that minimize the impacts to the greatest extent possible as required under NEPA and MEPA. See the Comparison of Alternatives section in Chapter 2 and compare the impacts in terms of disturbed acres to old growth and sensitive plant species.

There are short and long-term effects from the project for some species, as noted in the effects analysis. The long-term effects of the loss of old growth habitat decline as time goes on and old growth habitat is replaced by currently younger stands (assuming the rate of harvest of old growth continues to decline, and stand-replacing wildfires do not disproportionately remove old growth). This assumes that the loss of old growth is not so large that old growth dependent species suffer extinction during the lowest ebb of habitat availability.

No endangered plants occur in the proposed disturbance areas. The loss of some sensitive plants is inevitable if an action alternative is selected and will be a long-term effect of the disturbance. The effects have been minimized in the agency alternatives. Final design reviews by the agencies will try to avoid all or part of some populations if possible.

"Thousands of acres of grizzly habitat" would not be lost. A maximum of 609 acres would be irretrievably lost due to the mill and tailings disposal facility site. The other acres impacted only have a reduced habitat effectiveness level for the life of the mine. Grizzly bear use would be possible, but at a reduced level due to human disturbance during mine activities. After the mine was completed these acres would be fully usable by the bear.

24. 4-126. Last paragraph. Where are the areas targeted for mitigation lands and potential conservation easements. What agencies or organizations have been approached to purchase, accept and monitor these easements? (1196)

Mining activity is likely to cause serious adverse impacts, such as loss of habitat, for several threatened or endangered species. So far as the consequences for wilderness are concerned the most serious of these adverse impacts would be those affecting grizzly bears. Because grizzlies are wide ranging animals those using the habitat that would be directly impacted by mine development are without doubt an important component of the wilderness wildlife resource. Any adverse impact to the grizzly bear habitat in the area outside of the wilderness would therefore have a significant impact on the wilderness. The fact that the carrying capacity of grizzly bear habitat would be severely reduced by mining activity is well documented in the DEIS. Furthermore, we do not believe that the proposed, so-called mitigation, "habitat replacement", will do anything of significance to alleviate the damage. If the areas that might be acquired by purchase or easement are, in fact, good grizzly bear habitat, these areas are undoubtedly already being used by the bears. Thus, acquisition of these areas would add nothing to the available habitat. All that might possibly be accomplished would be that some areas, which are already serving as bear habitat, would be given a measure of protection from future encroachment. In short we challenge the concept of habitat replacement as mitigation for loss of grizzly bear habitat. Furthermore, we would call attention to the fact that the population of grizzly bears in the Cabinet/Yaak Grizzly Bear Ecosystem is far below the numbers needed to assure recovery of the bear in that area. Any action that will reduce the amount, or effectiveness, of bear habitat in that ecosystem constitutes a serious impediment to grizzly bear recovery, and is unacceptable. (1653)

Far-ranging mammals such as the grizzly are clearly suffering from low population numbers and the possibility of extinction in the lower forty eight states. This bear recovery area should be respected as a highly sensitive site. The proposed project could potentially lower grizzly numbers enough to threaten the overall goals of the bear recovery program in the CMW region. (1223)

Pages 4-105 through 4-107, Alternative II, Grizzly Bear: There is not an adequate discussion in the DEIS or Biological Assessment of potential mitigation to reduce the potential for adverse impacts to grizzly bear. Habitat acquisition to compensate for lost or degraded habitat needs to be addressed. (1589)

Response: The mitigations lands were not identified in the draft or supplemental EISs, nor are they included in the final EIS. The replacement habitat was selected due to 1) other threats to its security, and 2) value as suitable habitat. The organizations and agencies to be involved in the management of replacement habitat are identified in the Biological Assessment (see Appendix B).

The mitigation plan has been updated to better reflect the compensation provided by land acquisition or easements.

Private land owners are not the only source of mitigation. Federal land would provide habitat improvements and replacement habitat through road obliterations and closures. Mitigation lands are not provided just though purchase. Conservation easements or land exchanges are also considered acceptable. The 'replacement' habitat lands being considered are identified and their suitability as habitat has been analyzed, however, the release of that information is exempt under the Freedom of Information Act (FSH 6209.13) because the selection of actual mitigation lands from the list of potential lands is pre-decisional. This is based on not knowing the exact lands that will end up being selected. Because this information is pre-decisional, early release may result in 'harm' when knowledge could be used to increase land prices. Memorandums of Understandings would be developed, prior to any on ground activity, between Sterling; Montana Fish, Wildlife, and Parks; U.S. Fish and Wildlife Service, and the U.S. Forest Service that would identify responsibilities of each party concerning the mitigation lands. Mitigation priorities were established with 'on-site (in Rock Creek drainage) mitigation having higher priority than 'off-site' (outside of Rock Creek drainage). An implementation schedule is in place to ensure timely protection of replacement habitat.

25. Page 3-87. Table 3-26. Please explain the ORD listed for the various bear units in relation to the statement on page 3-78 concerning elk. "Open road density is currently at 0.96 miles per square mile, higher than biologically sound levels". Also pg. 3-70 "The average road density in an area encompassing Compartment 711 and parts of Mackay Creek drainage (BAAs 7-6-1 and 7-5-2) is 1 mile of open road per square mile." Do bear and elk ORD overlap? (1780)

Response: The ORD value given in the section on Habitat Fragmentation has been rounded to the nearest whole number (0.96 = 1 mile). The analysis areas for grizzly bear differ from those used for elk because grizzly are a much wider ranging species. The assumptions used in the displacement analysis are based on current scientific research.

26. Of the threatened and endangered species, the grizzly will be the most adversely effected. The Cabinet-Yaak ecosystem is of critical importance to the viability of the grizzly bear. It connects the Northern Continental Divide to the Selkirks, providing a means by which the bears may travel to the other remaining populations in Northern Rockies. This will help insure genetic viability by preventing inbreeding depression. The significant issues concerning the grizzly are the loss of habitat effectiveness, adequate distribution of bears, acceptable level of mortality risk and compliance with the Interagency Grizzly Guidelines. Habitat effectiveness will be reduced below the minimum 70% in two of the effected three BMU's (Rock Creek DEIS 1995: B-14). No provision to allow for changing habitat needs exists. Bears movement is determined in part by the availability of food, which is in turn a reflection to seasonal habitat variation (Person 1975). Zager and Jonkel (1983) demonstrate the importance of spring habitat and the need to incorporate this understanding into good bear management. They conclude that "low elevation riparian areas and snow chutes on south and west aspects are used extensively early in the season." This description closely resembles that of Rock Creek. The fact that the Rock Creek Proposal fails to address the habitat needs of the bears in the spring is of critical importance. Adequate distribution fails on open-road density, which will be less that 0.75 mi/sq. mi (Rock Creek DEIS 1995: B-19). The effects of roads on grizzly bears and their

habitat was demonstrated by McLellan and Shackleton (1988). They showed that roads correspond to a habitat reduction of 58% within 100m of a road, regardless of traffic level. This is of special interest because one of the primary mitigation measures of Alternative IV is limiting road access and partial road closure. (Rock Creek DEIS 1995: 4-139) McLelland and Shackleton's findings dispute the effectiveness of limiting road traffic as a means of habitat maintenance. (1592)

Response: The effects to grizzly bear noted in this comment are disclosed in the EIS (Chapter 4 and Appendix B). The mitigation plan has been updated and expanded to show the value of each mitigation method.

27. The fragmentation and edge effects of the two mines pose potentially significant risks to the grizzly population. Fragmentation would also occur as a result of the increased housing requirements as the area's population increased. (1592)

Response: The effects of fragmentation of habitat have been disclosed in Chapter 4.

28. The project falls within the Cabinet-Yaak Ecosystem for grizzly bear recovery. This ecosystem is already small, isolated ,and contains a maximum of 15-20 bears, recently up listed by court order to " endangered" status. All of the action alternatives would result in the loss of 500 additional acres of bear habitat and significant reductions in habitat effectiveness on 2400-3600 more.

Current habitat suitability for grizzlies on 3 of 4 BMU's already exceeds the known tolerance level of bears for disturbance. This proposal can only worsen the cumulative impacts of similar associated actions. The U.S. Fish and Wildlife Service has spent considerable time and money on transplanting 4 female grizzlies into this endangered population since 1990. This proposal now suggests that other federal agencies are about to approve actions which could completely negate this effort - once again at taxpayer expense! (1935)

Response: To ensure secure habitat for the grizzly bear the Kootenai National Forest, in conjunction with the U.S. Fish and Wildlife Service (USFWS), has established standards and guides that must be met. In addition, consultation with the USFWS is conducted to determine any additional measures which may be required to protect the grizzly. The proposed project, as described in the final EIS and the associated mitigation measures meets the requirements for providing secure grizzly habitat.

29. Grizzly bear habitat will be destroyed, 542 acres by construction, 2150 acres of disturbance during operation. Habitat effectiveness is set at 70%, BMU 4 and BMU 5 will not meet that percentage under alt 4, the one I am alluding to in all of my comments. ORD of .75 will not be met in any of the BAA's. Opening size, movement corridors, cover requirements and seasonal components will not be met.

With planned logging by FS, the entire lower grizzly recovery zone will be fragmented with activity. I wish to know all planned timber sales in the attached map's BMU segments for 1998-2030. There is no adequate mitigation plan for the grizzly bear if ASARCO is allowed to use the Rock Creek Drainage. (1207)

Response: The known, foreseeable future, timber sales and other projects within the affected BMUs are identified in Table 6 of the Biological Assessment (Appendix B). They are also shown in Chapter 2, part IV: Description of Reasonably Foreseeable Future Activities. While individual active bear analysis areas (BAAs) do not meet desired open road density levels, the bear management units (BMUs) as a whole do. Cover and seasonal habitat components are provided in the displacement areas (see Chapter 4 and the Biological Assessment in Appendix B)

30. The gray wolf, an endangered species and a widely ranging mammal, may use Rock Creek drainage but use is not confirmed. Gaps in information like this about the proposed project area are unacceptable. It is known that there is a suitable prey base for wolves in the Rock Creek area, and unconfirmed sightings of wolves near the area have been recorded. Why have efforts to determine the presence of wolves in the area not been conducted continuously throughout the mine evaluation process? Obviously this is a task that could require weeks, months, or even years of monitoring to accomplish. Perhaps the DEIS team is afraid that wolves will be shown to frequent the

area, and that the site will become a political hotbed of contention? In an case, these basis wildlife inventories must be completed before a final EIS is begun. (1223)

Response: Formal surveys for gray wolf have been conducted on the Cabinet District in 1994, 1995, and 1996 by Jay Mallonee of Wolf Haven International and his crew. In addition, each report of a wolf is followed up by the district wildlife biologist. All reports of wolves, whether a sighting is confirmed as a wolf or not, are added to the district database and used during environmental assessments.

31. What specific measures are the agencies proposing to prevent or minimize (not mitigate) effects on...grizzly bear that protects and follows the Endangered Species Act? (1438)(1440)(1732)(1737)(1738)(1741-1744)(1746)(1747)(1913)

Response: Many of the changes in project design required for Alternative V are included with the intent to prevent or minimize effects on grizzly bear. These include reduction in miles of road reconstruction and construction; new ventilation adit location in a cliff area that would not impact grizzly bears, new mill site location that reduces the intrusion into potential movement areas across the Rock Creek drainage, and removal of clover from seed mix to reduce potential for bear/human encounters.

32. The west side of the Cabinet Mountains provides important spring habitat, which is very limited in BMU 5(Made, 1983). All drainages on the east side of the Cabinet Mountains are very important year-round habitat and very important in the overall recovery scheme. How has this information changed since 1983? How can this area be "very important year-round habitat" in 1983, and then become expendable in 1995? This would appear to be an inconsistency of unprecedented proportions. (1595)

Response: Habitat status and importance has not changed. The original analysis reflects this (see Chapters 3 and 4) as does the Biological Assessment which shows the project is likely to adversely affect the grizzly bear and its habitat.

33. Issue 2: Add Bald Eagle: Although the DEIS implies elsewhere that bald eagles will not be affected, where is the justification? Where are the data showing the potential effects of metals added to Rock Creek and the Clark Fork by the mining activities on bald eagle reproduction? Where are the analyses of potential biomagnification of metals in the food chain (i.e., sediment to protists to invertebrates to fish to eagles). There is virtually no reason to expect that bald eagles will not accumulate higher levels of some heavy metals after several years of active mining. The water management plan provides no assurance that heavy metals will be removed from effluent before discharge into the Clark Fork. Where is your analysis of metals contamination of surface waters after mine closure? How high can we expect the levels in eagle-fat tissue to be after 5 years, 10 years, 30 years? How will this impact the eagle population that winters in the lower Clark Fork? The same questions apply to Peregrine falcon, which consume fish-eating ducks. p. 2-118: Issue 6: What about CMW wetlands? (1288)

Response: An analysis of the effect of metals to bald eagles has been included in the final EIS Chapter 4 and the Biological Assessment (Appendix B).

34. Page 2-125, Other Threatened and Endangered Species, paragraph 6: Destruction of a bald eagle nest is referred to, but there is no indication in the DEIS how the nest might be destroyed or whether this nest destruction would be directly associated with development of the Rock Creek Project. Also, reference to this nest destruction does not appear in Chapter 4 of the DEIS or in the Biological Assessment (BA). (1589)

Response: Chapter 2 was in error and the table has been corrected. There would be no loss of a bald eagle nest, however there is the potential to impact one nesting pair of bald eagles. Should one of the birds in the pair be hit by a vehicle, the loss of that pair would delay achieving the desired occupancy level for eagle breeding areas (68% per Montana Bald Eagle Management Plan [Bald Eagle Working Group 1994: pp iv and 15]). Delay would be until the remaining bird paired with another eagle and reoccupied the breeding territory.

35. Habitat losses and disturbance effects may also jeopardize the success of the on-going attempts to recover the Cabinet/Yaak grizzly bear population. The long term viability of that population should be secured before additional impacts are allowed. (1591)

Response: To ensure secure habitat for the grizzly bear the Kootenai National Forest, in conjunction with the U.S. Fish and Wildlife Service (USFWS), has established standards and guides that must be met. In addition, consultation with the USFWS is conducted to determine any additional measures which may be required to protect the grizzly. The preferred alternative, as described in the final EIS and the associated mitigation measures would meet the requirements for providing secure grizzly habitat.

36. Page 4-102, Threatened and Endangered Species, paragraph 1 and 2 (Summary): The determination is made that, "Impacts to bald eagles under Alternative II would be major and potentially significant." It appears that an increase in traffic associated with the proposed project is assumed to have major and potentially significant impacts on bald eagles. This determination of major impact potential should be accompanied by a discussion of existing traffic volumes and frequency of road kills as they currently relate to eagle mortality. Projected traffic volumes and increased frequency of road kills need to be addressed relative to existing conditions. For example, what is the percentage that traffic is projected to increase under Alternative II? It would also be desirable to discuss the likelihood that wintering bald eagles would most likely be attracted to road kills as opposed to nesting eagles which forage more heavily on fish. Paragraph 2 refers to residences built close to active nests and in wintering and feeding areas. This summary is not discussed in the following DEIS text nor is it addressed in the Biological Assessment. Are new residences being built close to nests expected as a result of the proposed project or from some other factor such as continued population expansion in the area, unrelated to the project?

Page 4-103, Alternative I, Bald Eagle, paragraph 1: The potential impact of increased traffic levels that will accompany increased development with or without the proposed project would increase the risk of bald eagles being attracted to road-killed wildlife. If this impact as a result of increased traffic from the proposed project is major and significant, it would seem reasonable that increased traffic without the project would also be a major concern. Under existing conditions, it is stated that with the No-action alternative bald eagle use along the lower Clark Fork River would continue to increase. This increase is predicted even though traffic is resulting in road-killed wildlife which are attractive to bald eagles. Presumably, based on the discussion in the DEIS, traffic levels would increase to such a high level that road kills would pose a major and significant risk to eagles. If road kills are not currently a major risk (evidenced by the statement that bald eagles are expected to increase along the lower Clark Fork), at what point does increased traffic pose a major and significant impact? (1589)

Response: An analysis of existing, and future increases in road kills and traffic levels has been included in Chapter 4 and the Biological Assessment. The analysis on effects of potential new residences constructed near eagle nesting sites has been updated. The information may be found in Chapter 4, Threatened and Endangered Species and in the Socioeconomic section of the final EIS as well as in the Biological Assessment.

37. Page 4-102, Threatened and Endangered Species, Introduction, last paragraph: The second sentence beginning, "In the Biological Assessment..," is incorrect. The Biological Assessment did not determine that Alternative II may adversely affect the bald eagle. (1589)

Response: Chapter 4 was incorrect. The formal document entitled "Biological Assessment" by definition only includes the analysis of the indicated preferred alternative. However, an analysis of effects to Threatened and Endangered species is made for all alternatives. That analysis is documented directly in the EIS in Chapters 2, 3, and 4 as appropriate. The determination of "May Adversely Affect" for the Bald Eagle under Alternative II is correct. The analysis of effects on bald eagle was updated.

38. Pages 1-9: The DEIS does not state whether formal consultation concerning the USFWS' biological assessment has begun or will begin sometime in the future. The public should certainly be made aware of the consultation meetings (open to the public?). (1288)

Response: Formal consultation with the U.S. Fish and Wildlife Service (USFWS) was a part of the analysis done between the draft and final EIS. Formal consultation, including the USFWS Biological Opinion (Appendix E), will be used in making the final decision. The requirements of the Biological Opinion have been incorporated into the preferred alternative.

39. Another problem with Alternative IV is the displacement scheduling plan. Proposed timber sales in the area and the Montanore Mine further add to the stress caused by resource extraction. (1592)

Response: The displacement schedule shown in Chapter 4 - Threatened and Endangered species: grizzly bear section and in the Biological Assessment has been reviewed by the U.S. Fish and Wildlife Service and found to meet the intent of the recovery plan.

40. Adits in the Wilderness: Not only will these detract from the human wilderness experience; they will further disrupt the grizzly bears and other sensitive species. (1914)

Response: Environmental impacts from the wilderness adit are disclosed in the biological assessment (Appendix B) and in Chapter 4 - Threatened and Endangered Species : grizzly bear section.

41. The protective measures outlined for grizzly bear protection is reprehensible. The procedures outlined are that out of a 1970's management plan. The bear management plan and the mine operations, as stated on page 2-131, would result in a ``potential delay in the recovery of the grizzly bear in the Cabinet- Yaak ecosystem due to the proposed project." The ESA mandates are to minimize the effects to the recovery of an endangered species, not to increase it from the construction of a mine. (2026)

Response: The statement made on page 2-131 of the draft EIS is in error. Full disclosure of effects to the grizzly and its habitat are found in Chapter 4, and the Biological Assessment (Appendix B). The Endangered Species Act mandates Federal Agencies to use their authority to "promote the conservation of threatened and endangered species." Through the Biological Assessment and formal consultation with the U.S. Fish and Wildlife service (see the Biological Opinion in Appendix E of the final EIS) the final decision results in the conservation of the grizzly in the Cabinet/Yaak Ecosystem.

42. It has not been proven that there is a real problem with temporary displacement of the bear. There is a real problem with the idea of habitat loss, in fact it would only be temporary displacement. There is no reason for mitigation as it is only temporary. The agencies have estimated only 20 bears live in the total Cabinet Mountains areas. This should be enough room for the grizzly bear to utilize, without setting aside more area. There is not sufficient population of incorporate a little common sense into these issues. As more and more lands are being acquired by the federal and state government for wildlife mitigation local communities taxpayers are forced to carry the bill. In Lincoln County we have lost allot due to the grizzly bear and I think we need to consider that people are an important part of the equation. (1612)

Response: See response to TE-500-1. Mitigation does not require land acquisition. Other methods to assure habitat protection are acceptable. There may be no change in the tax base, depending on the method of mitigation selected.

If a conservation easement is granted the taxable value may change but the lands would not be removed from the rolls. If a land exchange occurs, those lands acquired by the Forest Service would be removed from the tax rolls, but payment in lieu of taxes would be made. Those lands traded by the Forest Service would be added to the tax rolls. A conservation easement would prevent construction of new residences and development of a newly discovered mineral deposit only until the time frame agreed to in the easement (likely to be a minimum of 35 years).

43. It is estimated that the grizzly bear would loose 542 - 608 acres of spring & fall habitat from the construction of this project. The Tribe does not understand how the lead agency could allow future destruction of a listed

endangered species on lands that the Forest Service is assigned to protect. The Tribe believes that zero destruction of the native territory of the bear should occur. (2026)

Response: The habitat being lost has been compared with the values of replacement habitat, that is also under threat of loss. Replacement habitat is of greater value that the lands being lost due to the project. The result is higher quality habitat protected for the grizzly. See Appendix B, Biological Assessment - mitigation plan.

44. Page 4-102, paragraph 2 - The speculation of housing construction impacts on eagles or other species is not referenced to any analysis, set of facts or even a description of how this could occur. The repeated use of this type of speculation does not serve the public or produce a useful analysis. Please provide facts, projections and some sort of analysis for such statements. Your "analyst" may find it interesting that two pairs of eagles successfully nested with in city of North Vancouver British Columbia (population several hundred thousand) this past year. (4502)

Response: The housing construction impacts on eagles are tied to the socioeconomic analysis (which are based in part on the Troy mine results. The impact would occur because the primary areas of residence construction would occur within one mile distance of the Clark Fork or Bull Rivers. This area has been identified as suitable bald eagle habitat. Removal of trees to create space for housing construction would remove potential nesting, roosting, and perching habitat. The activities would create a disturbance that may displace eagles from historic use areas. Since the actual level of construction is unknown, the impacts are 'speculative' and, therefore, there are no mitigations to provide replacement habitat.

45. Page 4-104, paragraph 2 - Speculation of a car hitting an eagle, then that same eagle being from a local nesting pair, then that Upper Columbia Recovery would be delayed is the worst sort of undocumented, unfounded speculation. Without documenting the present likelihood of an accident and the increased likely hood of an accident with increased mine traffic this speculation should not be included in an EIS. What is the status of the eagle in the Upper Columbia now? Is the population really sensitive to one individual death? If so, why do I hear talk about delisting the eagle,. Why is there no discussion of these issues? (4502)

Response: An analysis of the likelihood of a vehicle collision with a bald eagle was conducted and is in the agencies' analysis file. Since the only eagles in the vicinity of the proposed mine activity for most of the year are a nesting pair, should an accident occur, the likelihood of the eagle being a member of that pair is high. The Upper Columbia bald eagle population is still listed as threatened under the Endangered Species Act and there are no immediate measures to delist it. The analysis on bald eagle has been updated to better reflect impacts to the total recovery population.

TE-501 Aquatic T&E Species

Note: Due to the interconnected relationships between the general fisheries comments and those for bull trout, persons should also read the comments in FISH 600 to 602.

1. Page 3-60, Threatened, Endangered and Sensitive Species, paragraph 3: Reference is made to "The small number of nursery streams…." The number, location, and definition of "nursery streams" needs additional discussion. It is not clear in the DEIS whether Rock Creek and Bull River are considered nursery streams for bull trout. (1589)

Response: Bull River and Rock Creek both act as nursery streams for bull trout, as do several other streams between the State line and Thompson Falls. We are intentionally vague about the specific location of threatened, endangered and sensitive species so that threats to the species are not unnecessarily increased through disclosure of important habitats.

2. Page 3-59, Fish, paragraph 3: The statement that bull trout numbers have declined since the Cabinet Gorge Reservoir was built in 1953 requires a citation or explanation of how this conclusion was reached. According to Huston (1985), bull trout populations have maintained about equal numbers between 1960 and 1980. From studies conducted by Gaffney (1955) and Huston (1988), it appears that bull trout comprised about 2-3 percent of the population sampled by gill netting. Gill-netting studies in 1982 and 1987 (Huston 1988) failed to catch any bull trout; whereas Barnard and Vashro (1986) caught 0-3.4 percent bull trout in Cabinet Gorge gill netting studies in 1986. The statement that bull trout populations in Cabinet Gorge have declined appears to conflict with the statement in the Biological Evaluation, attributed to Pratt and Huston (1993), that "the bull trout population in Cabinet Gorge Reservoir is small, but relatively stable." The interpretation of the author in the Biological Evaluation that the bull trout population in Cabinet Gorge Reservoir is not currently viable also appears to conflict with opinions of Pratt and Huston. (1993).

It is not clear in the Biological Evaluation if the "author" is the federal agency with responsibility to administer the National Forest Management Act or the consultants contracted for authorship of the document. Clarification is needed concerning acceptance of the Forest Service of opinions stated in the Biological Evaluation. Although Wayne Johnson and Doug Perkinson signed the BE as reviewers, there is no indication that the Forest Service concurs with the analysis and opinions expressed in the BE. (1589)

Response: The information in the draft Biological Evaluation has been incorporated into the final EIS and into the final Biological Assessment for bull trout (see Appendix B). Some of the information has been changed due to additional data and information obtained since the draft EIS. As Pratt and Huston (1993) indicate, the bull trout meta-population between Pend Orielle Lake and Thompson Falls declined (and apparently stabilized) since 1953 and closure of the dam. The agencies disagree with Pratt and Huston over the long-term viability of this bull trout meta-population - in our opinion there is a significant risk that bull trout will disappear from this area unless their numbers are substantially increased, or unless a migratory run of bull trout is re-established. The Forest Service concurred with the conclusions of the draft Biological Evaluation at the time of its preparation, but now concur with the changes in the final EIS and the findings of the Biological Assessment in the final EIS.

3. Rock Creek is important for Bull Trout - a species nearly on the endangered species list. No risks should be taken with its spawning habitat. The DEIS says soil erosion will occur and therefore will affect the water quality. (1268)

Response: With the listing of bull trout under the Endangered Species Act, the environmental consequences section has been revised based on new data collected since the draft EIS was completed. Alternative V reduces these adverse effects to a minimal level.

4. Please also note that a Federal judge has recently ruled that the Forest Service may not be adequately protecting Bull Trout and that permitting this mine would lead to the destruction of one of two remaining spawning sites for Bull Trout in the lower Clark Fork watershed. (1401)

Response: The Court in this case did not consider the Rock Creek Mine proposal. Although Alternative V (preferred) is likely to adversely affect bull trout habitat and some individuals, it would not jeopardize the existence of the Columbia River population nor the Rock Creek bull trout subpopulation.

5. Any negative impacts to Rock Creek from mine development and operations affects the potential for restoring connectivity, productivity, and the exchange of genetic material of lower Clark Fork River/Lake Pend Oreille bull trout populations. (1445)

Response: The agencies formulated Alternative V to address this concern. Further restoration work will be needed in the lower Clark Fork to restore connections between populations, but this is beyond the scope of this final EIS.

6. Any increase in sediment loads in Rock Creek or its tributaries would have drastic detrimental effects to the continued existence of resident bull trout in Cabinet Gorge Reservoir. Once these populations are lost, no amount of reconstruction of Waters of the U.S. during reclamation will bring them back. To accept the elimination of one of the two adfluvial spawning streams for the Cabinet Gorge bull trout population seems highly irresponsible while at the same time the Governor of the State of Montana considers the recovery of bull trout as a top priority and is working to develop a recovery plan. (1625)(1626)

Bull trout was a candidate for federal endangered listing, but the Montana Governor has committed to local recovery efforts; as one of only 2 spawning tributaries left on the lower River losses due to increased sedimentation, channel instability, higher water temperatures, and toxic spills would set back the State's efforts. (1351)

Response: The sediment effects from modern-day landuse practices is substantially less than drastic unless a catastrophe occurs. In most cases these effects are far less than natural variations in stream conditions that fish tolerate each year. Unavoidable effects are offset or reduced by a mitigation program. Spills of mill reagents or petroleum products represent a risk that cannot be avoided, even if the mine is not permitted. All action alternatives represent an increase in risk of accidents relative to the No Action alternative. Nonetheless, Alternative V minimizes the risk of effects, contributes long-term reduction of sediment in Rock Creek, and while potentially adversely affecting bull trout individuals and habitat in Rock Creek, would not jeopardize the Columbia River population.

7. The DEIS indicates that the impacts from proposed activities would significantly impact viability of bull trout and westslope cutthroat trout populations, especially the Cabinet Gorge bull trout. The anticipated increase in sedimentation in Rock Creek, which is already close to critical levels, would further reduce fry emergence causing spawning failure, which has the potential to extirpate bull trout from Rock Creek. DEIS at 2-133. Adversely impacting bull trout, a C-1 species being considered for listing, would be in violation of the National Forest Management Act. (11)

Response: The National Forest Management Act is only violated when an action fails to maintain the viability of a species and protect biodiversity. Since bull trout are now listed (non-viable species), all actions must contribute to recovery or at least not jeopardize the existence of the population, and Alternative V would do this over the long term.

8. Rock Creek is recognized as an important drainage for native fish species in the lower Clark Fork fishery. Both forks of Rock Creek are dominated by bull and westslope cutthroat trout populations. In addition, there is strong evidence that bull trout migrate from Cabinet Gorge Reservoir into Rock Creek for spawning. Both bull trout and westslope cutthroat trout are listed as sensitive species by the USFS and as species of special concern by the Montana Department of Fish, Wildlife and Parks. Rock Creek contains the highest densities, and second-greatest numbers of bull trout and westslope cutthroat trout of any tributary to either Noxon or Cabinet Gorge Reservoirs.

Rock Creek may also be an important stream for future bull trout enhancement activities as part of the Governor's statewide bull trout recovery effort. Given the Forest Service's mandate to provide adequate habitat for viable populations of sensitive species, and Governor Racicot's professed commitment to bull trout recovery, the DEIS must disclose all potential impacts to these native fish, and more importantly, the alternatives available to prevent these impacts. The most protective measures feasible should be required as a project component. The DEIS has failed to do so. (1223)(1779)

Response: Actually, the evidence for migratory bull trout spawning in Rock Creek is relatively weak. Alternative V's protection, abatement and mitigation measures are specifically designed to benefit resident and migratory bull trout habitat (real or potential).

9. All of the alternatives associated with development of this project would impact resident bull trout populations through increased sediment subsequent to road construction and runoff. One of the most important bull trout spawning streams, Rock Creek, already has fine sediment levels approaching critical levels. Before action on the Rock Creek project can proceed, the Forest Service should require ASARCO to pay for the reduction of existing sediment sources in the Rock Creek drainage. Sediment must be reduced to a level where it does not compromise spawning for bull trout. (1603)

Response: Sediment mitigations were included for Alternative III through V in the supplemental EIS. The sediment mitigation plan was further modified for Alternative V in the final EIS. See Chapter 2 for description of mitigation plans and Chapter 4, Hydrology and Aquatics/Fisheries for description of impacts.

10. Page 3-56. Bull Trout. No mention is made in the DEIS document about the relicensing of the Noxon and Cabinet Gorge Dams or the fact that they are counting on resources within Rock Creek for part of their mitigations in regards to the Bull Trout. Agencies are required to take steps, including protecting habitat to keep species from reaching the state where they are listed as threatened or endangered. With the Cabinet Gorge dam having eliminated 90% of available spawning and rearing habitat and a stable but fragile population of the Bull Trout in Lake Pend Oreille, it appears that there is no room for mitigation measures for the Rock Creek population and its habitat. (1384)(1429)(1780)

The Federal Energy Regulatory Commission and Washington Water Power are currently in the process of relicensing the Noxon and Cabinet Gorge Dams in the lower Clark Fork River. A major component of the relicensing process is mitigation of impacts to fish and wildlife caused by dam operation. Specifically, the Montana Department of Fish, Wildlife, and Parks and Idaho fish and Game plan to re-establish fish passage through the dams in order to improve spawning and survival rates for bull trout in the lower Clark Fork River. The DEIS fails to mention dam relicensing and the impacts that the Rock Creek project will have on the proposed bull trout mitigation plan. (1223)(1957)

Rock Creek has been generally recognized as one of the most promising sites for bull trout spawning habitat enhancement activities. [We are] concerned that mining actions along Rock Creek will negatively impact efforts to maintain the few existing isolated populations. It may also impact any habitat mitigation and enhancement activities as part of the developing multi-state Bull Trout Recovery Plan or as part of WWP's ongoing relicensing efforts. (1779)

No analysis of WWP's upcoming relicensing of the Cabinet Gorge and Noxon Dams; WWP will have to do big mitigation for bull trout and Rock Creek is one of only 2 spawning tributaries for bull trout in the lower Clark Fork River. If Rock Creek becomes unavailable due to mine water pollution or sediments from construction (it's already at threshold sediment levels), this would severely limit WWP's mitigation abilities - The lower River is already on Idaho's list of impaired streams because of metals; metals have shown up in the sediments at the delta and in fish in Lake Pend Oreille. (1351)(1923)

Response: Relicensing of the dams, and any mitigation measures associated with that effort, has not progressed to the point where dam-related mitigation and enhancement would be reasonably forseeable in terms of this impact assessment. Alternative V would take steps towards restoration in

one watershed by reducing sediment impacts, but real solutions to bull trout abundance and fish passage issues could have a far more profound impact on conservation of bull trout than this proposed mine will - thus the importance of the dam relicensing process. Even with the mine, there will be ample opportunity to improve habitat in Rock Creek and effectively benefit bull trout.

11. Page 3-62, Lake Pend Oreille, Threatened, Endangered and Sensitive Species, paragraph 1: The Lake Pend Oreille bull trout population is reported in the DEIS to be stable. Is this population considered to be a meta-population of Rock Creek population. Is the Lake Pend Oreille population considered to be viable. (1589)

Response: The original bull trout meta-population in Lake Pend Orielle extended upriver at least to the mouth of the Flathead River, and perhaps beyond and included Rock Creek. Because bull trout are listed as a threatened species, all meta-populations that are listed are by definition non-viable in the long term. Of the remaining bull trout populations in the vicinity, the Lake Pend Oreille populations are the strongest.

12. The footnote to Table 17, page 3-53, indicates that all fish sampling was done in the summer period. We note that bull trout are fall spawners, and suggest that this time of year should be evaluated for use by fish coming up from the Clark Fork or Cabinet Gorge Reservoir and utilizing Rock Creek as a spawning area. (1214)

Response: Fall redd counts that look for spawning bull trout are conducted each year in Rock Creek, including the baseline data. It appears there is only a remnant migratory run of bull trout in Rock Creek, although redd counts may not be a reliable measure of spawning in a stream which contains so little spawning gravel.

13. Page 4-80: states that bull trout populations in the Cabinet Gorge Reservoir are supported by two tributaries: Bull River and Rock Creek. The small number of nursery streams increases the probability that the population would be unable to recover from catastrophic events. In addition, the bull trout population is low enough to put genetic diversity in jeopardy. Given the precarious state of the fish in the system, the loss of Rock Creek as a spawning and rearing tributary could push the bull trout toward elimination in this drainage. It is important to note that Forest Service regulations require that "operator[s] shall take all practicable measures to maintain and protect fisheries and wildlife habitat which may be affected by the operation." 36 CFR 228.8(e). The DEIS must discuss whether, and to what extent, these measures are being required. To date, the DEIS does not state how this requirement will be met. (1223)

Page 1-8: "KNF is required by the Endangered Species Act to ensure that any actions it approves will not jeopardize the continued existence of a threatened or endangered species or result in the destruction or adverse modification of critical habitat." Rock Creek is one of only two Bull trout spawning streams in the Lower Clark Fork River Ecosystem. How is the loss of this critical spawning habitat consistent with the KNF's responsibility? (1288)(1598)(1941)

What specific measures are the agencies proposing to prevent or minimize (not mitigate) effects on the habitat of bull trout...and follow the Endangered Species Act? (1438)

Response: The final EIS corrects this deficiency (see Chapter 4, Threatened and Endangered Species, Alternative V). Loss of Rock Creek spawning habitat is not consistent with policy, and we believe that Alternative V in the final EIS conforms to these requirements for protecting the habitat. A biological assessment for bull trout can be found in Appendix B.

14. Governments and communities have been frustrated attempting to deal with Endangered Species ramifications in their region. Here we are dealing with the states of Montana's and Idaho's, as well as local, recommendations that the decline of the Bull Trout not be listed as endangered, but that we manage it collectively and locally. Rock Creek is primary spawning habitat for Bull Trout and somehow the effects this project may have are conveniently ignored. (1446)

Response: The final EIS evaluates effects on bull trout extensively in Chapter 4 and the biological assessment. This project, if approved, would begin long after the decision to list the species as threatened was made, so the project and who manages the species are not connected.

15. This project will violate the Endangered Species Act and the National Forest Management Act, not to mention shoot Governor Racicot's Montana Bull Trout Round Table in both feet. Bull Trout will die for this mine: "in the unlikely ...event of a tailings impoundment failure, impacts on the aquatic environment would be long term. Spills of heavy metals could have long-term impacts on the aquatic environment....loss of bull and/or westslope cutthroat trout could be...permanent" (DEIS: 4-180-181). It is not a question of mitigation. There is no way this mine can exist and pollute Rock Creek and the Clark Fork and still have Bull Trout persist in these waters. (1670)

Response: Perhaps conservation and recovery of bull trout in Rock Creek would be somewhat less difficult if there were no mine, but avoidance of mining in Rock Creek does not necessarily mean bull trout will be safe. It is our professional judgement that Alternative V in the final EIS can actually aid in the long-term recovery of the species as long as there are no significant catastrophic events (either natural or mining-caused).

16. When will KNF consult officially with the USFWS concerning its biological assessment? Assuming the pertinent meetings are open to the public, when will they be announced? Where will transcripts be published? (1288)

Response: Formal consultation with the U.S. Fish and Wildlife Service (USFWS) is required when a project would adversely affect a listed species or its habitat. Since the Biological Assessment for the preferred alternative in the final EIS concluded that the activities are likely to adversely affect bull trout, formal consultation was initiated with USFWS. Please examine Appendix B for the Biological Assessment. Endangered Species Act Section 7 consultation procedures are closed to all except the two Federal agencies involved, and occasionally an applicant. The USFWS's Biological Opinion contains a few substantive changes in mitigation measures relative to any of the threatened and endangered species in the project area, including bull trout. Then those measures have been included in the final EIS.

17. Page 2-133, Sensitive Aquatic Species, paragraph 3: It is stated that Rock Creek is one of two major spawning areas for bull trout inhabiting Cabinet Gorge Reservoir. Spawning of bull trout from Cabinet Gorge Reservoir in Rock Creek has never been verified and the characterization of Rock Creek being a "major" spawning area is not supported by existing data. From the data it appears that during some years, primarily when stream flows are adequate, a few bull trout may enter Rock Creek from the Clark Fork River/Cabinet Gorge Reservoir. There is no documented evidence that successful spawning occurs.

Barnard and Vashro (1986) reported, "The use of Rock Creek by spawning runs originating in Cabinet Gorge Reservoir is probably limited. A small vertical waterfall of approximately 2 m vertical drop exists about 50m from the mouth of the creek. This waterfall created by a log jam may limit access to the creek for spawning fish. Also, the ephemeral nature of flows in Rock Creek, especially in the autumn, would make it difficult for a species to establish a permanent spawning run." (1589)

Response: New information acquired since the 1986 study found no factor other than dewatering to be inhibiting fish migrations in Rock Creek. We do have documented evidence of migratory spawning fish and probable spawning in Rock Creek. Further, of all the tributaries to the reservoir, only Rock Creek and Bull River are consider highly suitable for bull trout. The term "major" may be confusing - in the case of bull trout and migratory bull trout in particular, Rock Creek and the Bull River are effectively all that remains of bull trout associated with Cabinet Gorge reservoir. Other streams nearby either have what is believed to be transient bull trout, or the species has been extirpated. In short, these two streams are critical to conserving the species in the area.

18. Page 3-55, Fish, paragraph 2: It is stated that, "Rock Creek may support both resident and migratory bull trout." In Chapters 2 and 4 of the DEIS, the uncertain nature of "may support" is replaced by assumption that, in fact, Rock Creek does support a migratory population of bull trout (emphasis added). This assumption is demonstrated in the statement on page 2-133, paragraph 3 that Rock Creek is a "major spawning" area for Cabinet Gorge bull trout. In both Chapter 3 in the DEIS and in the Biological Evaluation, the differences (e.g., genetic, behavioral, and ecological) and similarities between migratory and resident bull trout populations need to be addressed. In the DEIS, the discussion leaves the reader with the indication that migratory and resident bull trout have characteristics of separate species. The degree to which genetic exchange takes place between migratory and resident bull trout populations should be addressed, because this information is important in assessing viability of bull trout in Rock Creek, Cabinet Gorge and Bull River. (1589)

Response: Rather than engage in a lengthy treatise on the ecology of bull trout in this document, we give readers the pertinent facts on which to base a judgement. Science has yet to find any genetic distinction between resident and migratory bull trout, and we regret any inferences to the contrary. Resident bull trout may in fact have the potential to become migratory, large, fish-eating bull trout. Although the abundance of resident bull trout in Rock Creek is encouraging, long-term conservation of the species is fundamentally dependent upon maintaining (or restoring) a migratory bull trout run that links this watershed with other populations of bull trout. Viability of bull trout is not solely a function of the abundance of one life-form. In Rock Creek, both resident and migratory bull trout would be subject to cumulative effects and thus Sterling would be responsible for mitigating or preventing impacts resulting from development of the Rock Creek mine.

19. Page 4-80, Alternative II, Fish, paragraph 3: The statement is made that bull trout populations in Cabinet Gorge Reservoir are supported by two tributaries: Bull River and Rock Creek. Although it is not stated, the word "supported" probably refers to migratory bull trout spawning which has not been verified in Rock Creek. Paragraph 2 of page 3-55 indicates that it has not been established that migratory bull trout spawn in Rock Creek; however, Chapter 4 is unequivocal in the assumption that spawning of migratory bull trout not only occurs in Rock Creek but is of considerable importance to the entire bull trout population in the Clark Fork drainage. The last sentence in the paragraph indicates that the Rock Creek drainage is of critical importance to bull trout in the entire Clark Fork drainage but, there is no analysis of the contribution of the possible migratory bull trout presence in Rock Creek to the bull trout population throughout the drainage including Lake Pend Oreille, Blackfoot River and tributaries, and Rock Creek (east of Missoula) and tributaries. (1589)

Response: The referenced sections have been revised to correct these disparities. The value of Rock Creek for conservation and recovery of bull trout in the lower Clark Fork is a judgement founded on the State of Montana's bull trout "management" plan. These plans designate the Cabinet Gorge and Noxon reservoirs (plus their tributaries) as one management unit with distinct goals, and highlight the importance of Rock Creek and several other tributaries. This reader is inferring something unintended in the value-laden words "critical", "major" and others. The goal of recovering the bull trout is not to make Rock Creek the primary spawning stream for either the two reservoirs or the whole Clark Fork drainage - it is to restore a resilient population in many streams and reconnect them via migratory fish. Rock Creek, like several other streams, are essential in recovery and are likely our only options for a species with such discrete habitat requirements.

20. Idaho has closed its last bull trout harvest waters (Lake Pend Oreille and the Clark Fork River), while Montana is considering an action which negatively impacts a valuable bull trout spawning tributary -Rock Creek. I fail to understand what the Corps and Montana DEQ can be thinking about to even consider letting this project go through. (4474)

Response: We as a society have a need for various metals, and Rock Creek is one location where several metals appear to be economically extractable. The various permitting agencies are charged with the responsibility to see that this use reasonably protects other important values. It remains for the decisionmakers to identify an acceptable course of action. It would not be in the public interest,

and in fact is illegal, for State and Federal agencies to arbitrarily preclude an activity that is otherwise legally permissible at this location.

21. In light of Rock Creek's critical Bull Trout habitat and other considerations, designing storm water control systems capable of only handling up to a 25-year/34-hour storm event is inadequate. Every effort must be made to safeguard against discharge of sediment, acids, or other materials into Rock Creek and the Clark Fork River. (1196)

Response: Chapter 2 of the final EIS indicates a requirement to handle a 100-year/24-hour precipitation event. This requirement addresses weather events that are minimally forseeable over the life of the mine. An absolute requirement (i.e., no risk of effects) is not logically possible.

22. Any permits and the EIS need to incorporate and address the bull trout recovery plans. (1925)

Response: As of the publication date for this EIS, there are no bull trout recovery measures that are mandatory or planned for the project area. We have taken the more general INFS goals and objectives into account, and have also consulted with the U.S. Fish and Wildlife Service (USFWS) (see Appendix B for the bull trout Biological Assessment and Appendix E for the USFWS Biological Opinion).

23. Of particular concern is sediment that will be generated by the project and its impacts on bull and westslope cutthroat trout, and the direct, and indirect loss of grizzly bear habitat through increased open road densities in the Cabinet-Yaak grizzly bear recovery area. The Agencies must provide a full disclosure of how this project complies with 1) NFMA, 2) ESA, and 3) Governor Racicot's bull trout recovery plan. (1223).

Response: The final EIS includes aggressive and comprehensive sediment abatement and mitigation measures, as well as many other proactive protection measures, intended to conserve habitat and these species. The State of Montana "bull trout recovery plan" is not official policy at this time, but Alternative V does take steps consistent with that plan. Please examine the Biological Assessments for bull trout and grizzly bear, found in Appendix B of the final EIS. Compliance with the Endangered Species Act would be demonstrated by meeting the terms and conditions of the U.S. Fish and Wildlife Services Biological Opinion. The requirements of the Biological Opinion (Appendix E) have been incorporated into Alternative V. As with all other NEPA/MEPA documents, we are required to disclose when an action is not consistent with all applicable laws and regulations. You will find this disclosure in the final EIS.

24. Published data (journal references obtainable from Prof. G.J. Atchison, Dept. of Animal Ecology, Iowa State University) show that salmonid fishes exhibit behavioral avoidance of waters contaminated with low levels of heavy metals. How will this affect bull trout spawning in affected areas, during and post mining? In the immediate surface waters affected? In downstream Pend Oreille spawning areas? Where is this discussed in the DEIS? (1288)

Response: The placement of the outfall in Cabinet Gorge Reservoir is expected to be far enough away from the mouth of Rock Creek that bull trout will not avoid this potentially important staging area. The dilution provided by Cabinet Gorge Reservoir should reduce the concentration of trace metals discharged from the outfall to background levels by the time the water reaches Rock Creek and other downstream locations.

25. Page 4-78, Alternative II, Sediment, paragraph 1: The statement that reduced spawning success in Rock Creek could affect fish populations in Cabinet Gorge Reservoir is not true. Most fish in Cabinet Gorge Reservoir have no reproductive link to Rock Creek. If the unverified possibility that migratory bull trout spawn in Rock Creek is assumed, it is possible that impacts to Rock Creek could have an effect on the Cabinet Gorge population of bull trout. The magnitude of the impact would depend on the proportion of Cabinet Gorge bull trout that may spawn in Rock Creek compared to the reproduction occurring in Bull River and elsewhere. Neither the DEIS or the BE discuss the possibility that bull trout may spawn in Cabinet Gorge Reservoir. Barnard and Vashro (1986) reported

being informed by Huston that he had observed both brown trout and bull trout spawning beds in the delta formed in Cabinet Gorge Reservoir at the mouth of Rock Creek. The potential impacts of sediment do not adequately consider the reductions that would occur with mitigation and assume that deposited sediment would not be flushed out during high flow periods. It is conceivable that drainage basinwide mitigation of sediment release from roads, clearcuts, and other areas subject to erosion could decrease suspended and deposited sediment levels in Rock Creek. With reduced levels of suspended sediment, flushing of deposited sediment would be more effective than under current conditions. (1589)

Response: The statement that reduced spawning success in Rock Creek could affect fish populations in Cabinet Gorge Reservoir was qualified in the final EIS by indicating that it could be true only to the limited extent that the migratory form of bull trout are present in Rock Creek.

26. Page C-16, paragraph 1, Preliminary Section 404(b)(1): The DEIS states, "With the inclusion of these best management practices and state soil and water conservation practices as well as reduction of existing sediment sources outside the permit area within the Rock Creek drainage, any project-related increase in the suspended particulates and turbidity in Rock Creek should not have a significant impact on the fishery."

This statement may conflict with the conclusion in paragraph 2, page 24 of the BE that states: "In view of the audit results, it is unreasonable to assume that all sediment impacts will be eliminated through use of BMPs. Page 27, paragraph 3 of the BE states: "..., I find that the proposed project is likely to result in a trend toward federal listing or a loss of viability of the Rock Creek and Cabinet Gorge Reservoir bull trout population." Paragraph 4 states: "The ASARCO/Rock Creek project threatens the continued existence of bull trout because of increased sediment loading."

The potential impacts of sediment on bull trout predicted in the BE appear to be much more severe than predicted in the DEIS or Section 404(b)(1) compliance. Although the BE, DEIS, and 404(b)(1) are prepared pursuant of different regulations (i.e., National Forest Management Act, NEPA, and Clean Water Act, respectively), there should be consistency in interpretations and conclusions. (1589)

Response: Appendix B has been rewritten to reflect the findings of the Biological Assessment which supersedes the BE.

27. Alternatives II and III identify significant impacts to bull trout (C1 status) and westslope cutthroat trout populations due to the potential loss of Rock Creek as a spawning and rearing tributary of the Clark Fork River. Impacts to bull trout are of particular concern due to the potential for this project to contribute towards a need to list bull trout as endangered or threatened. Impacts to fisheries resulting from Alternative IV need further explanation concerning the relative contribution of resident bull trout and migratory bull trout in Rock Creek toward sustaining the Cabinet Gorge/lower Clark Fork River bull trout population. These issues should be addressed in the FEIS. (1933)

Response: The environmental consequences section has been revised based on new data collected since the draft EIS was published. The resident bull trout stock in Rock Creek is the largest found in the lower Clark Fork tributaries. We assume that some resident bull trout, and a remnant migratory bull trout run in Rock Creek, are still mixing with other stocks in the Clark Fork. The number of resident Rock Creek bull trout leaving the system and survive is unknown, but could well be those trout become migratory fish.

DRAFT EIS
RESPONSES TO COMMENTS

AQUATICS AND FISHERIES

Invertebrates and Algae FISH-600
General Fish Species and Habitat FISH-601
Sensitive Fish Species FISH-602
Amphibians FISH-603

FISH-600 Invertebrates and Algae

1. Page 3-50 - aquatic invertebrates baseline conditions. Is information presented and discussion inadequate. The bug community composition of Rock Ck. indicates a stressed ecosystem in my opinion. The minimal discussion given here tends to obscure and trivialize this. A stream that has long dry-up periods in the majority of its length has a serious problem. The old timers claim that Rock Ck didn't use to dry up. (Pratt and Huston 1993) The EIS should identify this as a major problem in Rock Ck and attempt to evaluate the cause. Furthermore, baseline information should be presented for Miller Gulch and E Fk Bull River. (1504)

There is no display of the macroinvertebrate data collected by the consultants working for ASARCO. (1991)

Response: The affected environment section have been revised based on new data collected since the draft EIS was completed, and a more quantitative evaluation was added to Chapter 4. Invertebrate data are presented in Chapter 3, but in a summarized form.

2. Pages 4-78, 4-81, and 4-82; Page 4-78 concludes impacts from suspended sediments on aquatics/fisheries under Alternative II would be significant in the short term. Page 4-81 concludes that impacts from sediment to Rock Creek would be potentially significant under Alternative III. Page 4-82 makes no conclusion regarding sediment impacts under Alternative IV. Also, the discussion for Alternative IV fails to address aquatic invertebrates. (1912)

Response: Chapter 4 has been changed to add a paragraph discussing potential impacts to aquatic invertebrates under Alternative IV. Our conclusion is that, because of mitigation measures, impacts from sediment to Rock Creek would be minor and potentially significant under Alternative IV.

3. The DEIS mentions impact on aquatic invertebrates but ignores the complex food chain built on them. (1482)

Response: The aquatic foodchain in Rock Creek is not very complex, probably because of the highly variable physical conditions and naturally low productivity. Impacts to aquatic invertebrates result from changes in the physical environment and impacts to the foodchain at trophic levels below invertebrates. This, in turn, affects the few fish species, amphibians and some birds that feed on invertebrates.

4. Acid mine drainage is frequently a problem when mining nonferrous metals because of the presence of sulphur compounds in the ore. Acidic pH is highly toxic to most aquatic life: below a pH of 5, most fish life dies (Greber et. Al. 1979). Acidic pH increases the solubility and thus the toxicity of most metals (Lawa 1993). Aquatic community level experiments have documented major shifts in species composition and decreases in species diversity as acidity increases (Baker and Christensen 1991). Deleterious sublethal and lethal effects on zooplankton, benthic macroinvertebrates, periphyton, and fish have been demonstrated (Baker and Christensen 1991). Acidity can kill organisms directly, affect their success through alterations of the food chain, or cause deleterious changes in ability to feed, navigate, or reproduce (Baker and Christensen 1991).

The toxicity of acidic water depends on pH, calcium levels, and inorganic monomeric aluminum concentrations (Baker and Christensen 1991: Laws 1993). Aluminum is one metal which has enhanced toxic action due to changes in chemical speciation at low pH (Baker and Christensen 1991; Laws 1993). However, low pH can increase the solubility, mobility, and thus toxicity of many metals regardless of whether low pH enhances the metal's specific mode of toxic action. Furthermore, the type of receiving system for the acidic discharge has an impact on the toxic effect of the acidity (Laws 1993). For example, headwater type streams typically have surface water which has not had time to leach buffering substances from soil and rock (Laws 1993). A stream with unreactive rock covered with a marginal layer of soil and vegetation also will have low buffering capacity (Laws 1993). Rock Creek and Miller Gulch are characterized by very soft water, and should be considered extremely sensitive to impacts of acid mine drainage and metals contamination. (1223)

Response: A sentence will be added to Chapter 3 indicating that Rock Creek would be very sensitive to the effects of acid mine drainage because of its soft water. However, Chapters 3 and 4 (Geology and Water Quality sections) in the final EIS demonstrate that acid mine drainage to Rock Creek is highly unlikely given the nature of the orebody.

5. Page 4-74, Spills and Impoundment Failure, paragraph 5: The extreme improbability of impoundment failure should be noted. (1589)

Response: The text in Chapter 4 has been modified to indicate that spills and tailings disposal facility failures are improbable events.

6. Road building and construction will lead to sediment overload in the creek. How is this going to affect aquatic insects, plant life, fish, amphibians and all other parts of the ecosystem either directly or indirectly related to this stream? (1371)

Response: Taken together, Chapters 3 and 4 indicate little risk of "overloading" Rock Creek with sediment under the preferred alternative. The effects of sediment are disclosed in Chapter 4. In general, human-caused sediment increases are typically minor, and have a small negative impact on the aquatic community except for these species that are better-adapted to fine sediment. The problem with human-caused sediment is that many of the new sediment sources do not go away, and thus the stream does not return to its natural condition. The preferred alternative includes many measures meant to ensure no net increase in stream sediments.

7. Page 2-133: states that all action alternatives would impact resident populations of bull trout and westslope cutthroat trout in Rock Creek. These impacts would be the result of increased sediment loads from road construction and runoff. However, in order to meet Forest Service sensitive species requirements, sediments effecting potential spawning and rearing sites cannot be allowed to reach the stream. The Agencies must detail how all threatening sediments will be kept out of the stream. The DEIS fails to disclose impacts that may be caused by metals and ammonia toxicity, habitat destruction caused by excess algae growth, and reduced dissolved oxygen levels in the water column. Also, there is not discussion of the impacts that constructing and operating the tailings impoundment will have on ground water ecology in the "hyporheic zone" along Rock Creek and the Clark Fork River.

The DEIS does not adequately explain the impacts that a tailings slurry spill would have on fish and aquatic life in Rock Creek and the Clark Fork. Yet experience at the Troy mine clearly indicates such spills are like to occur. Consider the following: p. 4-74: states that ASARCO's Troy Mine suffered a tailings slurry line spill in 1984, resulting in about 400 tons of tailing entering Lake Creek.

Page 4-74: states that research done by Hansen on the short-term impacts of Troy Mine on Lake Creek found that the abundance of ten taxa of aquatic macroinvertebrates downstream of the Troy Mine tailings impoundment was significantly different relative to upstream control stations and premining baseline period. All of the differences appeared to be attributable to tailings contamination. These same impacts can be expected to occur at Rock Creek and they must be fully discussed. In addition, to prevent and minimize these impacts, the revised DEIS should also evaluate an alternative that includes a double-walled slurry line. (1223)

Response: The environmental consequence sections have been revised, and include new information collected since the draft EIS was issued. Forest Service sensitive species policy requires minimizing impacts, and maintenance of a viable population, not outright avoidance of all impacts. The preferred alternative (Alternative V, Chapters 2 and 4) meets these requirements through aggressive sediment abatement measures and upfront mitigation for the small, unavoidable effects of project construction.

We anticipate no measurable effect on the Rock Creek aquatic community from mining-caused metals and ammonia, and no nuisance algae blooms or oxygen problems. The paste tailing facility, together with ground water pumpback systems, should preclude ground water impacts and measurable effects on Rock Creek and the Clark Fork River under Alternative V.

An impact on the Rock Creek aquatic community from tailings contamination is a remote possibility, but not "expected." Chapters 2 and 4 outline the measures taken to minimize the risk of a tailings pipeline rupture including a double-wall pipe, and the range of outcomes should this low probability catastrophe occur. The effects of a tailings spill are not predictable because the location, magnitude and timing of an accident are unknown and crucial to an assessment of impacts. We do disclose in Chapter 4 that the impacts could vary widely for these reasons.

8. Page 2-77: states a conceptual monitoring plan for aquatics and fisheries is found in Appendix H. A conceptual plan is not good enough. ASARCO and the Agencies must develop the final monitoring plan for aquatics and fisheries and present [it] in the revised DEIS. (1223)

Response: As a condition of project permits, Sterling must submit a detailed monitoring proposal that satisfies all the requirements in the final EIS, the Record of Decision, and in agency policies and technical review comments. Sterling cannot develop the project simply on the basis of the final EIS.

9. How will you mitigate impacts to aquatics and fisheries if there is a spill or pipeline rupture? (1207)

Response: Mitigation strategies for accidents vary with the unique circumstances involved. In general you should expect some cleanup, mitigation for direct and indirect impacts that occurred prior to cleanup, new monitoring requirements, and modifications to project permits to reduce the possibility that the accident will recur. The final EIS preferred Alternative does include measures to minimize the risk of accidents (speed limits, pipeline monitoring, emergency containment ponds and dikes, road widening, low mobility tailings, etc.).

10. Issue 2 mentions predicted impact to bull and westslope cutthroat trout due to increased sediment. Considering the near-endangered listing for bull trout, we don't understand why this project is even a consideration. (3752)

Response: The Rock Creek drainage is managed under the laws and regulations written for National Forest System lands and by the State of Montana. Therefore, the watershed is available for multiple uses including mining, particularly since there is a reasonably exploitable mineral deposit present. If the bull trout is listed as a threatened species, the Endangered Species Act regulations simply demand that any project promote recovery of the species — listing would not preclude mining or any other activity if it can be designed to produce no net or significant impact on a listed species.

11. Page 3-57: Where are data to support the last paragraph's statement concerning zooplankton? What zooplankton are present in the reservoirs? What population numbers are you talking about? (1288)

Response: As indicated in the final EIS text, there have been no comprehensive surveys of zooplankton populations in the reservoirs. The qualitative statement made in the text about low zooplankton abundance is based on best professional judgement that suggests that abundant zooplankton populations are typically present only in lakes and reservoirs where water exchange rates are much lower than they are in the Cabinet Gorge and Noxon Rapids reservoir. Rapid water exchange makes it difficult for planktonic animals to keep themselves at their preferred depth in the water column.

12. In the Aquatics/Fisheries Monit. Plan, Appendix H, bulleted item 3, percent dominant taxon' species, genus, family level? Probably meaningless to monitor changes in invertebrate populations unless specialists are hired who can key insects and other invertebrates to at least the generic level. In several of these sections??in fact, throughout the DEIS? Literature citations are given for which full citations do not seem to appear. And personal communications, letters to and from individuals, ASARCO reports clearly in conflict of interest, and other nonreferenced printed materials are inappropriate sources of information. (1288)

Response: The definition of percent dominant taxon is already given. Communications and reports cited are on file and available for public review.

13. Appendix H-10: states that the aquatics baseline data collected within the Rock Creek project area from 1985?1988 appears to be inadequate and that an updated baseline monitoring program would be developed and approved by the Agencies prior to the beginning of the proposed project. This approach is unacceptable. The public and decision ? makers cannot accurately predict impacts to ground and surface water quality because, in addition to the inadequate baseline data on aquatics, the baseline water quality data … is also inadequate. (1223)

Response: Appendix K has been revised but the monitoring plans are still conceptual and provide a framework around which a final plan must be developed should the mine be permitted. These are the minimum requirements, not the maximum. The agencies have the authority to increase future monitoring is results from past monitoring showed trends towards potential violations or problems in order to better develop new mitigations to resolve or prevent the problem or violation. The final monitoring plans would be subject to agency review and approval and would be available to the public for the cost of copying from the agencies.

FISH-601 General Fish Species and Habitat

1. Pages 4-73 to 4-74, 4-82 to 4-84: This portion of the DEIS provides discussion on the expected impacts to aquatic resources in the event of spills. We believe statements about expected short-term impacts from spills need to be qualified. A toxic spill which pulsed through the system might only have short-term impacts on aquatic invertebrates, but could eliminate multiple year classes of fish. In the case of depressed stocks of fish, such an incident could lead to local extinction. The potential for long-term chronic effects on aquatic biota also deserves further analysis and discussion. Several references are made to a mitigation plan for both Rock Creek and Bull River, but we were unable to find a description of the plan. A key statement in the DEIS appears on p/4-82, where it states "despite mitigation measures, impacts to these species (bull and cutthroat trout) are likely to remain significant under Alternative IV. With significant impacts to the Rock Creek fishery a recognized outcome of mine development, potential benefits from restoring connectivity in the lower Clark Fork - Lake Pend Orielle bull trout population are reduced. This section of the DEIS provides essentially no analysis, discussion or disclosure of the potential for long-term, chronic or lethal impacts to the lower Clark Fork fishery. In summary, we do not believe the DEIS provides a complete analysis of the potential impacts to fisheries and other aquatic resources in the lower Clark Fork system. (1445)

Evaluate the environmental baseline data, to ensure that it will be adequate for comparisons of pre-and post-mining physical and chemical conditions and aquatic community health (diversity, richness, and evenness as outlined in the U.S. EPA's Rapid Bioassessment Protocol, or a comparable measure of aquatic community health). Data on low flow and high flow years should be used in this analysis. (1223)

Baseline data collection is incomplete with regard to aquatic invertebrates. Although data was reportedly collected over a four-year period from nine stations identified in the Rock Creek drainage, only two stations have complete data sets, according to the DEIS. Further baseline data should be collected to fully evaluate potential impacts to aquatic invertebrates within the drainage. (1779)

DEIS pp. 3-48 to 3-58: Where are the baseline data for Rock Creek, Cabinet Gorge Reservoir, and Lake Pend Oreille? Please explain why the minimal data recorded here are said to be baseline. What significance do the graphs of macroinverts on DEIS pp 3-51, 3-52 have? Figs 3-11, 12, 13 show only #s of organisms/sqft. How does this illustrate anything for baseline analyses? Figure 3-14 shows data for three orders of aquatic insects and an "other" category. Besides several other "major" and key "minor" orders of insects, what about myriad other noninsect invertebrates that can be significant in evaluating baseline conditions in streams e.g., oligochaetes, snails, crustaceans, microinvertebrates attached to submerged leaves, rocks, et al? Where are the baseline analyses of the stream ecosystems, e.g., biomass production, rates of bottom decomposition, major sources of nutrients and energy, importance of detritus, etc? Most of the "literature" references on these pages are ASARCO s. Who actually did these analyses and wrote the statements in the DEIS. This section clearly demonstrates why it is inappropriate for a mining company or its subsidiary consulting companies to perform scientific studies that have vital implications for public lands and resources. Macroinvertebrates are important, but amateurs too often focus on a few groups of macros because they lack expertise with other groups, which often are equally, sometimes more, important to meaningful analyses. Why were competent professionals not retained to collect, analyze, and publish adequate baseline data? Why are adequate literature reviews of the present resources not included in the DEIS or other Rock Creek documents? There is no basis here or in any Rock Creek documents for future comparisons that will demonstrate whether ASARCO's Rock Creek Project is or is not having adverse effects on the Rock Creek ecosystem, including the aquatic biota. (1288)

Response: Definitive statements about the effects of a spill are not possible given the many unknowns involved. We do disclose the probable bounds of those impacts in Chapter 4. None of the possible accidents associated with this project would result in elimination of the fish population. A significant fraction of the fish population is upstream of all proposed project facilities and activities except for the upper mill site under Alternatives II and III and thus safe from accidents under

Alternatives IV and V. Further, a significant fraction of the stream network is dewatered for long periods, and thus is sporadically used by fish and could be safely cleaned up during dry periods with minimal impacts to the aquatic community. Long-term chronic effects are expected to be minor and largely unmeasurable under Alternative V.

Chapter 2 includes a revised, and more specific, description of the mitigations in Alternative V. Alternative V would somewhat improve the potential for bull and cutthroat trout recovery because stream sediment conditions would improve over the long term although there would still be the potential for impacts during construction.

Chapter 4 indicates no significant effects to the lower Clark Fork, either physical, chemical or biological. This is primarily a consequence of substantial dilution of project effects by the river, immobilization of many effects by the reservoir, and the relatively small changes coming from the Rock Creek drainage. As we note in Chapter 4, however, the insignificant effects on the Clark Fork River do represent a net increase in total loading of some constituents.

2. Page 3-56 Table 3-19: Metals concentration in fish: Please provide a discussion of the criteria for mercury contaminant levels in fish destined for human consumption. Same for Table 3-21. Were whitefish tested for mercury? Why was lead not tested? (1504)

Response: A sentence was added to Chapter 3 indicating that mercury concentrations in Rock Creek fish tissues are below action levels for edible fish, and thus are safe to eat. Whitefish were tested from Cabinet Gorge reservoir and found to have metals levels comparable to Rock Creek trout. Whitefish are not year-round residents of Rock Creek. The State of Montana fish tissue sampling method does not routinely look for lead contamination.

3. Chapter 4 on Hydrology & Aquatics/Fisheries must be completely redone and the effects and their magnitude reanalyzed and rewritten to reflect an objective view. (1632)

Besides not presenting the sediment mitigation plan, the DEIS failed to discuss many of the adverse effects this project will have on fish and other aquatic species. We request the following issues be addressed in the revised DEIS as well. (1223)

Response: Chapters 3 and 4 have been significantly revised for clarity, and to incorporate new information and new data collected since the draft EIS was completed. The assessment of aquatic effects is based on the facts and best professional judgement, is free of any bias for or against mining.

4. Page 3-58, Fish, Table 3-20, Average Monthly Catch Per Net Night for Fish Captured in Gill Nets in Four Locations on Cabinet Gorge Reservoir, July-November 1985: It is not clear where the average values shown for 1985 and 1960 have been obtained from. It appears that averages for 1985 come from the listed sites (C-1, C-2, etc.). It would be helpful to know how the 1960 averages were derived. In the table notes, sites CG-1, CG-2, etc. are listed. Are these the same as C-1, C-2, etc.? The totals in the table do not appear to be added correctly. (1589)

Response: Table 3-20 in the draft EIS has been replaced with Table 3-27, Fish Abundance: Cabinet Gorge Reservoir, 1994-1995.

5. Generally, the baseline information presented is sparse and consequently of little scientific value. Information on mitigation streams is not presented and there is little information presented on the stream that will be essentially destroyed, Rock Creek. Little quantitative data is presented as a basis for comparing different streams, stream locations, and comparisons to other streams in the KNF. Fisheries investigations have not determined or have not reported the genetic purity of native trout species. This baseline data is inadequate. (1595)

Response: Quantitative data (physical, chemical and biological) are presented for Rock Creek in Chapters 3 and 4 in several sections (Aquatics/Fisheries and Hydrology). NEPA and MEPA regulations require substantive rather than encyclopedic disclosure of information. The baseline data and subsequent investigations fully satisfy the regulatory requirements for a project like this one. Chapter 3, Aquatics/Fisheries, includes a description of the genetic status of cutthroat in Rock Creek.

6. Assessment of aquatic habitat losses in Rock Creek is little more than to state that essentially the whole stream system will be lost. Perspective is needed as to the types of habitats lost and their importance to the Rock Creek drainage as a whole. (1595)

Response: None of the alternatives would result in a loss of Rock Creek and its aquatic values. Chapters 3 and 4, Aquatics/Fisheries together describe the types of habitats and the potential impacts to those habitats. Any effect to Rock Creek reaches that flow year-round would be particularly important. The most critical impacts relate to the potential for increased sediment during construction, pipeline ruptures, and spills of mill reagents or other chemicals being transported to the site.

7. Assessment of affects on aquatic life do not adequately consider existing metals stresses, possible streamflow changes, and accident conditions. There is no adequate assessment of cumulative effects, including the above factors plus predicted increases in metals concentrations and loadings. The effect of loss of productivity, diversity and uniqueness of aquatic life in Rock Creek is poorly addressed. Impact assessment is grossly inadequate. (1595)

Response: The final EIS contains a complete revision of the aquatics impact assessment. Only those effects linked to significant issues (Chapter 2) are disclosed. If a concern is not addressed in the final EIS, it is because it was not raised as an issue during scoping, no impact was possible relative to this concern, or because the impact was so insignificant as to be discountable. The cumulative impacts subsections at the end of each resource section in Chapter 4 have been expanded to include new reasonably foreseeable activities added to Chapter 2.

8. Page 4-77, 4th Full Paragraph, 1st and 2nd Sentences: These sentences note that on the Flathead National Forest, 40 percent fine sediment (less than 0.25 inches) is an upper limit for bull trout spawning areas and that no further development may take place until sediment source reduction is undertaken [and reduces fines below 40 percent]. Page 3-47 (1st Full Paragraph) notes that Rock Creek already averages 43.1 percent fines and ranges as high as 56.9 percent fines. A restriction similar to that on the Flathead Forest should be incorporated. In general, Alternative III would reduce fishery impacts compared to Alternative II due to the incorporation of mitigation measures. Alternative IV would further reduce impacts by relocation of the mill site and other mitigation measured and a general decrease of ground disturbance in the West Fork of Rock Creek.

There would be impacts to the Rock Creek fishery under all mine development proposals. There have been no genetic surveys to indicate whether the Rock Creek fish populations (particularly bull trout) differ from fish populations in other Cabinet Gorge tributaries. Genetic testing should be conducted to determine the potential contribution of proposed off-site mitigation measures (Bull River). (1947)

The significance of sediment effects upon bull trout, and therefore, of erosion in the Rock Creek watershed is a significant issue. We are pleased that erosional effects of the preferred alternative will be less than for ASARCO's proposed action, but are still concerned about sediment delivery to Rock Creek and resultant effects upon aquatic life. We note that Rock Creek already has close to critical levels of fine sediment in spawning gravels (2-133), and increased sedimentation would reduce spawning success and significantly impact Cabinet Gorge bull trout. (1214)

Response: The text has been clarified regarding fine sediment present in Rock Creek. The high sediment levels are believed to be the worst-case condition for a small fraction of the watershed, and not indicative of the average condition. We have formulated Alternative V to further reduce the

potential for effects to Rock Creek, and to achieve a reasonable likelihood of a cumulative reduction in Rock Creek fine sediments. A restriction like you recommend is not warranted, since we believe the majority of high sediment levels in Rock Creek are due to erosion of streambanks rather than erosion of road surfaces and other disturbed areas. Off-site mitigation proposed for Alternatives III and IV has been eliminated in Alternative V in the final EIS because on-site mitigation proposed as part of the preferred alternative should be sufficiently protective in the long-term.

9. Concerning macroinvertebrates, have I missed the DEIS's analysis of the crayfish (Pacifastacus?) fishery in the lower Clark Fork? Why are population estimates not discussed, with projections of future trends re the Rock Cr. project? Was (is) the crayfish fishery not a potentially harvestable (commercially exploitable) resource in the affected area? Where is your analysis? (1288)

Response: The effects on the Clark Fork River, the reservoirs and Lake Pend Orielle can be found in Chapter 4, Aquatics/Fisheries. As one component of the reservoir biological community, effects on crayfish were considered. Our conclusion was that crayfish would not be measurably affected by the mine without a catastrophic event. The crayfish fishery was closed several years after it began to avoid conflicts with recreational anglers, and as a response to an apparent rapid reduction in older animals.

10. [We are] especially concerned that the DEIS's proposed acreages for sediment mitigation appear to be based entirely on areas of project disturbance without the required consideration as to the effect of Best Management Practices (BMPs) on reducing impacts or the fact that the sediment load from natural disturbance may vary significantly. Sediment load estimates should reflect the efficacy of proposed BMPs and mitigation should consider the quantity and distribution of potential load reductions rather than their areal extent. In addition, the DEIS's conclusions regarding potential impacts to fisheries appear to ignore the effect of mitigation measures stipulated in the Biological Assessment and EIS, which would require sediment loading from the project be offset by a reduction in natural sediment loads prior to construction activities. The DEIS fails to point out that implementation of these measures would create a net improvement in the existing fishery habitat. (1589)

Response: The benefits of proposed best management practices were included in the final EIS effects analysis. The environmental consequences section has been revised to include mandatory sediment abatement and mitigation measures. These measures are now based on the magnitude of the impact, rather than the acreage. The cumulative effect of Alternative V is expected to mean an actual reduction in stream sediment and long-term recovery of one element of habitat quality.

11. We have serious concerns about the viability of populations of native fishes in the project area. [We] historically benefitted from the fish that freely moved throughout the Clark Fork River system. Today the abundance of those populations of fish is reduced and their viability is in question as a result of fragmentation of the river system by dams and degradation of the watersheds. Continued watershed development increases the risk to these populations. Today the populations of westslope cutthroat and bull trout in the Noxon Rapids section of the Clark Fork River must rely on the Bull River and Rock Creek for completion of the spawning and rearing phases of their life histories. This circumstance in which the larger population relies on only two tributary systems is precarious and not given to the long term perpetuation of these species. It is for these reasons that we believe additional impacts from mine development and operation in the Rock Creek Drainage elevate to an unacceptable level the risk of extinction of both the local and the mainstem populations of native fish. (1591)

Response: The fragility of existing fish populations has been noted in the final EIS and the Biological Assessment (Appendix B). This analysis indicates that adverse effects on individuals of these species are likely, and the Rock Creek Mine project does represent an increased risk of effects from unpredictable accidents.

12. The measured value of 43% fines in Rock Creek indicates high disturbance in the watershed and low survival to emergence of fry. Brook trout in Rock Creek are an additional threat and a further indication of the need for a high level of habitat protection. Incremental losses of habitat quality may shift the competitive advantage further toward brook trout. These habitat limitations should be addressed before considering the permitting for any mine development. We recommend that ASARCO and the Forest Service mitigate these impacts and document habitat improvement prior to initiating activities that increase the risk of further cumulative impacts to the system. We recommend reduction of existing road miles in the drainage and postponement of timber sales until habitat improvement is documented. (1591)

Response: The environmental consequences section has been revised based on new data. The high sediment levels are restricted to a fraction of the watershed, albeit an important fraction. The preferred alternative includes road relocation, sediment abatement, and mitigation projects that together should reduce sediment levels over the life of the project. The potential threat from brook trout is addressed also. There are no proposed timber sales for the Rock Creek drainage. If any are proposed, the environmental impact analysis for them would have to look at cumulative impacts with the Rock Creek Project, if approved.

13. Page 3-56, Fish, paragraph 1: The initial sentence, "Several fish population trends are apparent." is not correct. The shift in species composition appears to be caused by sampling bias rather than population shifts. (1589)

Response: The statement that several fish population trends are apparent has been deleted because of lack of conclusive evidence.

14. Page 4-73, Aquatics/Fisheries, Summary, paragraph 6: Statement that "Stream habitat would be directly altered by construction of the mill site, ..." conflicts with statement concerning Alternative IV, "By moving the mill site to the confluence area, direct habitat impacts to the West Fork of Rock Creek and its unnamed tributaries would be reduced or eliminated." (pg. 4-82, para. 6). (1589)

Response: The statement that stream habitat would be altered has been changed to indicate that habitat could be altered depending on the alternative.

15. Page 4-76, Aquatic Habitat, Sediment, paragraph 6: Average total suspended solids (TSS) for Rock Creek is 3 mg/L (see Table 3-3, DEIS). A 33 percent increase would yield an average TSS of 4 mg/L which is significantly less than 25 mg/L. Suggest revision of first sentence from "estimated to increase" to "estimated to temporarily increase." Suggest revision of second sentence to "TSS is estimated to average approximately 4 mg/L and would be considerably less than the level of 25 mg/L considered by DHES Water Quality Division to be "highly protective" of cold water fisheries." Asarco has committed to control of noxious weeds. Any potential increase in runoff and sediment yield due to knapweed infestation would be reduced or eliminated by Asarco's noxious weed management program. (1589)

Response: The text has been modified to indicate that total suspended solids (TSS) effects are short-term (1-5 years). The percent increase value is the increase in total sediment load transported during highflow periods. The TSS values increase from 22 to 24 mg/l during highflows - a substantially different value than the average TSS for a year (3 mg/l). Noxious weeds would increase even with weed control efforts. Research has shown that noxious weeds can increase sediment yield.

16. Page 4-81, Alternative III, Sediment, paragraph 5: The statement that, "Any reduction in spawning success in Rock Creek could impact fish populations in Cabinet Gorge Reservoir," is not true. Most of the fish in Cabinet Gorge Reservoir have no reproductive link with Rock Creek. If the statement were modified to read, "Reductions in spawning success of migratory bull trout could impact bull trout populations in Cabinet Gorge," a link between Rock Creek and Cabinet Gorge would be understandable, assuming that migratory bull spawning does occur in Rock Creek. (1589)

Response: Alternative V has been formulated to avoid these effects, and is preferred by the agencies. We have several sightings on record that indicate at least a remnant migration of two salmonids from Cabinet Gorge to Rock Creek. Thus, impacts in Rock Creek could have consequences to Cabinet Gorge.

17. Page 4-82, Alternative III, Fish, paragraph 2: The statement "...impacts to these species would remain significant under Alternative III," is not supported by previous discussions of aquatic habitat and sediment. In fact, the sediment mitigation measures could result in potentially significant beneficial impacts to fish. (1589)

Response: In spite of mitigation measures, impacts under Alternative III are likely to remain significant because mitigation is not extensive enough to offset unavoidable impacts of construction. There would be fewer and potentially less severe impacts under Alternative V due to changes in various mitigation plans.

18. The DEIS suggests an Aquatic and Fisheries Monitoring Plan would include a survey to identify sediment sources, and methods of reducing them during or prior to mine construction. However, on page 2-78, the DEIS states that "sediment catchment basins would be installed in road ditches in areas where fine sediments could be transported to streams from application of sand during winter." This activity would have a negative impact for spawning habitat within the streams, represents an increased maintenance burden and, in addition to increased sedimentation, during critical post spawn and pre-emergent periods for bull trout. The potential exists to introduce oil and grease from the roadway into the aquatic system. Mitigation measures for potential impacts to the aquatic resources of Rock Creek and maintenance activities for sediment catchment basins should be included in the Final EIS. (1779)

Response: The final EIS now includes a preferred alternative (Alternative V) that results in a long-term net reduction in sediment over the long-term. This change was made possible by new sediment information collected in 1997. The sediment abatement program (avoidance) would also help minimize the risk of petroleum effects.

19. Additionally, the proposed relocation of FDR No. 150 nearer to Rock Creek increases the likelihood of sediment loading. Seasonal runoff and surface drainage channeled to the creek, vegetation removal for roadway construction, winter snow removal, and increased traffic on a graveled surface all will contribute to increased sedimentation of Rock Creek. Increased sediment loading combined with potential toxic conditions of mine activity stormwater runoff could severely impact spawning habitat within Rock Creek and may be inconsistent with habitat maintenance or enhancement. (1779)

Response: A portion of FDR No. 150 would be relocated away from Rock Creek. The most heavily used portion of FDR No. 150 would be surfaced with asphalt to reduce impacts to the stream. The application of best management practices, a streamside sediment mitigation program, and sediment containment measures around most facilities is anticipated to reduce sediment loading to Rock Creek over the life of the project.

20. DEIS pp 3-57 through 3-62 Clark Fork/Cabinet Gorge Reservoir; Lake Pend Oreille: Please explain why there is such a paucity of information here. Please explain why the agencies think the reviewing public should be satisfied with this anecdotal summary (more like a dismissal) of all the plant, invert, and fish resources of the lower Clark Fork? Please explain how these minimal paragraphs provide an adequate basis to compare the status of these important natural resources before, during, and after mining. Do these sections represent all the literature available on the aquatic inverts in Cabinet Gorge and Lake P.O.? For example, Page 3?61: The only aquatic invertebrates in Lake Pend Oreille are zooplankton?

Even the small amount of info presented is largely meaningless. For example, p. 3-57, complete par 2: Nothing against Huston, but a single pers. comm. does not mean anything in science. What does "...is almost always the

same..." mean? I live on Cabinet Gorge Reservoir, have taken water temps, and know this statement is false, but as with the Huston reference here, it would be inappropriate for the permitting agencies to take my single sentence (personal comm) as authoritative. The second sentence is also highly suspect; if this is meant to lead the reader to believe that Cabinet Gorge has few or no refuges for salmonids, it is totally inappropriate in this context; it could only mislead the naive reader. Why is this statement in the DEIS? And the third sentence in the par, does this mean that d.o. levels are adequate because the water flushes through rapidly? Or is it trying to relate uniform temps to d.o. levels. Or? And the last sentence: Have drawdown limits in Noxon Rapids reduced Cabinet s drawdowns or made them lower (more pronounced) as stated? (1288)

Response: Admittedly, there are fewer baseline data presented for some resource areas for Cabinet Gorge Reservoir and Lake Pend Oreille compared to Rock Creek. However, because the anticipated impacts of the project to these waterbodies are expected to be minor to nonexistent, the description of the baseline data is adequate. Additional detail is presented in reports on file with the agencies. The EIS is intended to provide only a summary.

The referenced statements about temperature and refuges are supported by baseline data on fish abundance which indicate that salmonids are relatively rare in the reservoir. Drawdown limits for Noxon have reduced the magnitude of Cabinet Gorge drawdowns as stated.

21. Page H-10 "The aquatics baseline data collected within the ASARCO Rock Creek project area from 1985?1988 appears to be inadequate for the following reasons" a. reference sites would not be comparable to potential impact sites b. seasonal data from some sites are incompatible c. some baseline sites were not sampled consistently because of low flow problems d. additional surveys are needed to better understand bull trout populations and the amount and condition of spawning habitat. (1780)

Response: This concern is addressed by text in the final EIS.

22. Page 3-47, paragraph 2 - The discussion of sediment and fisheries is confusing. There is a description of fine sediment from one site. What is the source of this sediment? What is the overall condition of the stream, is there suitable spawning habitat or not? On page 4-76 and 4-77 the discussion of impacts indicates an increase in sediment production but does not put it into perspective. The last paragraph page 4-77 indicates that USFS guidelines don't allow increased sediment if a 40% tolerance level is exceeded. Is it exceeded now and do the projections result in an exceedence? (4502)

Response: The text has been clarified regarding fine sediment and spawning habitat present in Rock Creek. Suitable spawning habitat appears to be rare within Rock Creek. The USFS guidelines were exceeded in 1993. Projections of future exceedances of this guideline differ by alternative. Under Alternative V, sediment source reductions mitigations would more than compensate for the projected impacts from increased sediment loading.

23. I am concerned about the impact that the mine will have on the fish and wildlife in the nearby area. It has been said that the mine's metals and waste will pollute the land and water. If this is true, won't the mine destroy the wildlife and its surroundings? (1739)

Response: The impacts to the area's fish and wildlife have been documented in the EIS in Chapter 4 under Aquatics/Fisheries, Biodiversity, and Threatened and Endangered Species.

24. Toxic elements may be diluted in a large body of water, but they become concentrated in the food chain, and the DEIS has not adequately addressed the long-term effects of this over time. (1632)

Response: Not all chemical compounds bioaccumulate. The chemicals used in the milling process do not have significant bioaccumulation potential are not expected to be toxic or bioaccumulative. The chemical and physical properties of all mill reagents are described in the appendices to the final EIS.

25. Because the DEIS inadequately disclosed water quality impacts, it provides little idea on how aquatic life will be affected. (1526)

Response: The environmental consequences section has been revised based on new data collected since the draft EIS was completed. Additional information and analysis about nutrient and metals loading was incorporated into the final EIS. The potential impacts to aquatic life in the Clark Fork River and Lake Pend Oreille are discussed in Chapter 4, Hydrology and Aquatics/Fisheries. A brief discussion about fish avoidance from the MPDES permit has also been incorporated into the Aquatics/Fisheries section.

26. The DEIS further indicated that dilution of toxic water at Lake Pend Oreille alleviates concerns about potential impacts in the lake as well as potential impacts to migratory fish from the Lake which use the lower Clark Fork as a spawning and rearing area or migration corridor needed to be considered. The department currently operates a kokanee hatchery on the lower Clark Fork, and a toxic flow from upriver could affect the migration corridor and the ability of the hatchery to meet production goals. Kokanee salmon are the primary forage base for the trophy fishery in Lake Pend Orielle. (1445)

Response: This issue was discussed in Chapter 4 of the EIS. The water discharged into the Clark Fork River from the wastewater treatment plant must meet the limits in the MPDES permit (Appendix D) and would also comply with non-degradation standards. Therefore, the water would not be considered "toxic" and no impacts to fisheries are anticipated.

27. Page 3-29 - The narrative does say, "concentrations of Cd, Cu, Pb, & Zn at times exceeded numeric water quality standards during the baseline period." concern: This statement minimizes the fact that the average concentrations (as shown above) exceeded criteria. Exceedances must have occurred many times. Then comes the statement that despite these high levels of metals, a self-supporting salmonid fishery is present and appears to be limited only by the amount of habitat with perennial flows. This indicates that the agencies are making a very wild assumption that the metals already present in Rock Ck. are not causing stress to the fishery or to the aquatic life of Rock Ck. Agencies, please justify this assumption. (1504)

The statement that a salmonid population exists despite the exceedances of metals (page 3-29) does not mean there is no existing impact of the water quality on salmonids and other aquatic life. It only means that some level of a population is able to maintain itself with this stress. (1214)

Response: The statement "self-supporting salmonid fishery appears to be limited by the amount of habitat" have been deleted because of lack of supporting evidence.

28. The fathead minnow (Pimephales promelas) is one of the most tolerant fish species used in toxicity testing. This species is widely used in laboratory analyses mainly because it is easy to maintain. As a member of the cyprinid family, it is not closely related to salmonids, which are the fishes of interest and importance in the Rock Creek area. Salmonids, such as rainbow trout (which are also used in toxicity testing), would be much more meaningful test animals for this determination. They are much more sensitive to virtually all potentially harmful chemicals and suspended materials in the water. Please explain why fathead minnows can provide data pertinent to Montana s fisheries in these toxicity tests? Please explain how the MDEQ can consider issuing a permit requiring testing on a species of minnow that is considered an undesirable trash fish in western Montana. (1288)

Response: Standard test species would not use salmonids.

29. Please explain why acute toxicity tests performed only semiannually on a highly tolerant species are pertinent to maintaining water quality standards in the Clark Fork drainage. Why only semiannually? When exactly? Why not monthly, at least? Why acute toxicity? Why not more sensitive tests that would help protect water quality for salmonids? For example, why not sublethal toxicity tests, chronic tests? In behavioral toxicity tests, salmonids have been shown to avoid waters containing relatively low levels of dissolved copper and other heavy metals. Why do

none of the Rock Creek documents discuss this? Is it not likely that bull trout will avoid spawning habitat in Rock Creek, whether there are acutely toxic levels of copper, etc in the water or not? Where is your discussion, analysis, of this key subject, relevant to western Montana s sport fishery? A starting point might be a call to Dr. Gary Atchison, a behavioral toxicologist at Iowa State University, Ames, IA. (1288)

Response: The proposed effluent limits are intended to protect water quality in the receiving water. The purpose of the whole effect toxicity tests is to determine if a synergistic effects is present in the effluent or detect the presence of an unknown toxicant.

Semiannual sampling for both minnows and invertebrates is recommended (standard) frequency. The permit would require monthly sampling if toxicity is detected. The species used are standard reference species which are suitable for laboratory purposes. An entire section was added to the Statement of Basis in fish avoidance (see Appendix D).

30. Water Quality - The frequency of sampling is not adequate to detect changes that could result in chronic or acute toxicity. Specific criteria of effect and how they will be determined is needed. Aquatic life ? The fish monitoring program is not adequate. More locations, greater frequency and an assessment of all techniques to limit sampling mortality are available and must be explored. It is essential to specify criteria of effect for benthic life, fish life, periphyton, and the aquatic systems as a whole. (1595)

Response: Criteria of effect and the specific details of the monitoring program will be finalized as part of the remedial action plan.

31. Biological community structure established by ASARCO in their EBR's shall remain unaltered. This means that no shifts in diversity, evenness, or richness according to EPA's Rapid Bioassessment Protocols should occur in these bodies of water. Sampling of these bodies of water should be done at a minimum each season, with numerous samples representing low and high flows, as well as average flows. (1223)

Response: Thank you. The description of monitoring program has been enhanced.

32. Aquatics Monitoring: We recommend that toxicity testing of the mine effluent and of potentially affected ambient surface waters (e.g., Rock Creek below mill site and below tailings impoundment; Clark Fork River below mine be incorporated into the monitoring plan. (1214)

Response: Thank you for your comments. These ideas will be considered in the final water resources monitoring plan. Toxicity testing would be conducted on effluent samples. Instream monitoring of fish and macroinvertebrates would be conducted as discussed in Appendix K. Instream biological monitoring is more sensitive to changes (ecological or biological) than is toxicity testing.

33. The DEIS (page 4-71) indicates that the 0.4 acre WUS losses for Alternative IV will occur with the construction of the utility corridor and main access road. We suggest that opportunities for incorporation of aquatic habitat features into bypass channels be considered if possible to avoid the temporal losses. It may be possible to design and construct stable, nonerosive bypass channels incorporating aquatic habitat features while the mine is operating. A copy of the "Handbook for Reclamation of Placer Mined Stream Environments in Western Montana", InterFluve, Inc., which describes complexities involved in planning, designing and constructing such stable biologically functional stream channels, has been sent to the Kootenai Forest hydrologist. Concern about bull trout spawning habitat and Rock Creek sediment levels should dictate that bypass channels should, above all, be stable and not contribute sediment to Rock Creek. (1214)

Response: The agencies have access to the reference document. However, there are no bypass channels proposed for Alternative V. Diversion channels to divert storm water runoff from undisturbed areas around the mill site would use design elements to create a geomorphically stable channel.

FISH-602 Sensitive Fish Species

1. Impacts to Rock Creek Spawning areas for Bull Trout and Westslope cutthroat could seriously impact fish populations in that segment of the Clark Fork River. Both of these fish have been designated species of concern by Montana's Department of Fish, Wildlife and Parks. Rock Creek is one of two known spawning grounds in the lower Clark Fork River for Bull Trout. (1371)(1416)(1781)

The Troy Mine/ASARCO is currently being sued by the Cabinet Resource Group due to its violations of the Clean Water Act of discharges into Lake Cr., southwest of Troy, MT. Is the Kootenai Tribe of Idaho to believe that the Troy Mine is a "model mine" to make basis of design off of?

The Tribe is currently monitoring the Kootenai River. Some of initial findings that are coming to light as a result of these studies. Cross sectional sampling of the Kootenai River found that levels of Mercury, Selenium, and Lead are at levels higher than EPA's accepted Water Quality Standards Aquatic Criteria. Sediment analysis resulted in levels of Arsenic, Copper, and (once again) Lead exceed the same criteria. This is in a river system that is larger than the Clark Fork River, it also has an endangered species, the white sturgeon, and several other fish species that are pending to be listed on the Endangered Species List. Are we to believe that violations will not occur from yet another ASARCO project and destroy another river system that currently has two fish species residing in that system that are pending listing on the ESA? (2026)

It was the Kootenai Tribe of Idaho's understanding that the Forest Service's newly defined role to protect current natural resources from further and future decay. Not only is the Forest Service not meeting this role they are promoting it by eliminating a primary watershed utilized by two threatened species (Bull and Cutthroat Trout). (2026)

Response: The sediment mitigation measures in Alternative V, together with other abatement and avoidance measures, are specifically intended to reduce impacts to these fish and improve spawning conditions in the long run. Agency responsibilities are addressed in Chapter 1.

2. Loading of nutrients and dissolved metals threaten already sensitive or threatened species (westslope cutthroat and bull trout) in R.C. drainage. (1489)

The State of Montana DEQ recently lowered their Arsenic Standards for their Water Quality Standards. This is also lower than that of the nationally accepted EPA standards. This standard has very close ties to the mining community. It is also very coincidental that the Rock Cr. Mine proposal came to its full being at the same time as this standard was reduced. Is the Kootenai Tribe of Idaho to believe that water quality standards are not to be violated? Are we to believe that this project will not generate elevated levels of Arsenic? Are we to believe that Arsenic, a common poison bought in the free market to kill pests, will not hurt or kill an already fragile system of the Bull and Cutthroat Trout of the Rock Cr. drainage? (2026)

Response: The final EIS (Chapter 4) indicates minimal nutrient and metals loading to Rock Creek and the Clark Fork River. These effects were found to be consistent with state water quality regulations, the limits proposed in the MPDES permit, and conservation of these fish. It is beyond the scope of this EIS to evaluate the impacts resulting from the change in the State's arsenic standard for water quality.

3. Page 2-77 to 2-78: The DEIS states that mitigation plans would be required "to address maintaining populations of sensitive fish species in Rock Creek and to reduce sediment in spawning gravels." No plans are provided in the DEIS, suggesting that plans would be developed after a decision was made on the DEIS. Without full analysis and disclosure of what benefits might be derived from the mitigation plans, we question how the decision maker can properly weigh the impacts to the fishery and aquatic resources will not be impacted. The apparent need for mitigation plans indicates the fishery will be impacted, jeopardizing future options for restoring

metapopulation connectivity in the lower Clark Fork system, and possibly eliminating a source of genetic diversity to Idaho fish populations. Also, the DEIS states that an "unaltered vegetation zone would be left between Rock Creek and the road and utility corridors, where possible during new construction, to protect bull and westslope cutthroat trout habitat." While we concur that unaltered vegetation zones can be beneficial in buffering impacts to streams and aquatic communities, stipulating their presence "where possible" may lead to inadequate protection. Given the importance of Rock Creek to sensitive species, it would seem appropriate to clearly define what the buffers will be and how effective they are likely to be in order to allow full consideration by the decision maker. (1214)(1445)

Response: Alternatives III through V include mitigation plans for sediment. A buffer zone cannot be used wherever FDR No. 150 crosses a stream. The buffers and other best management practices used to minimize sediment would minimize or eliminate road construction effects as required by the Forest Plan and INFS.

4. The DEIS readily accepts the damage to be inflicted on native aquatic species and their habitat, notably the bull trout and westside cutthroat. Both these species, their viability in peril across the intermountain West, are in dire need of human efforts to protect their remaining habitats. This project takes a big step in the other direction, further fragmenting stream habitat and adversely impacting water quality throughout the watershed. The likely effect, we can surmise from experience elsewhere, will be a reduction in the biological vigor of both species, leading them further toward listing under the ESA and, ultimately, extinction . (1728)

Response: A final EIS simply discloses our best judgement of effects - it neither accepts nor rejects the outcome, but leaves it to the decisionmaker to identify the desired outcome. The final EIS includes a preferred alternative, Alternative V, that minimizes this outcome compared to the other action alternatives.

5. The EIS does not properly address…irrevocable destruction of habitat for westslope cutthroat and the now "Endangered Species List" bull trout .(1923)

Problems which emerge from the project's draft environmental impact statement include: No reliable measures for protecting bull trout and west slope cutthroat in Rock Creek drainage, one of the last decent spawning systems in the area for these beleaguered species. (1732)(1737)(1738)(1740 - 1744)(1746)(1747)(1913)

Response: The agencies do not believe that implementation of the proposed action would result in irrevocable destruction of fisheries habitat, although there would be the potential to adversely affect some components of the habitat and individual fish. However, Alternative V minimizes impacts to fisheries habitat in Rock Creek.

6. My fear is that the water discharged into the Clark Fork River from the ASARCO tailings pond will pollute Rock Creek, damaging Bull Trout spawning beds, the Clark Fork, and the Lake, even if it operates as well as possible. (1681)

Response: None of the action alternatives include a tailings water discharge to Rock Creek or the river, but there is a discharge of treated mine adit water into the Clark Fork. The impact to the river is minor due to dilution, but does represent an increase in loading. Alternative V was developed to minimize the amount of water seeping through the tailings facility and potentially entering the Clark Fork River via ground water recharge. See Chapter 4, Hydrology, for a discussion on impacts to surface and ground waters.

7. Under Idaho fish and game studies, we have found levels of contaminated sturgeon, oo-site eggs and parts of the sturgeon in which those levels, according to EPA documents, was at levels five times greater than EPA standards, according to the Gold Book, 1986 -- five parts per million. These things need to be addressed. You have a potential listing of the bull trout in this system. What will it do to that? (1966)

Response: The studies you reference contain a mathematical error - when corrected the "contamination" levels found in the Kootenai River fish are not significantly different from background levels. The Rock Creek Mine project will not increase DDT or DDE levels, and metals effects will be within State standards.

8. The DEIS fails to disclose adequate information about the proposed mine's impact on fish in Rock Creek and the Clark Fork River. Rock Creek and the Clark Fork provide valuable habitat for two of Idaho's most important resident fish - bull trout and westslope cutthroat trout. Both fish also have significant regional impact of changes in fish populations and species viability resulting from impacted habitat or migration and living conditions. The DEIS also needs to examine more options for reducing or eliminating the proposed mine's impact on resident fish. (1936)

Response: The environmental consequences section has been revised in the final EIS to address this concern.

9. Considering the stated likelihood of loss of native bull trout and westslope cutthroat trout under all action alternatives, a genetic study of the Rock Creek populations is warranted. These populations could be genetically pure, and could therefore be candidates for listing under the Endangered Species Act. If these populations are genetically pure, they could represent important and distinct subpopulations of these fast-disappearing species and the proposed mine area should be considered critical habitat for this species of high concern. The genetics of the westslope cutthroat trout in the mine area should influence the EIS team's decision on the no-action alternative to mining in the area. (1223)

Response: Cutthroat trout have been genetically tested as noted in Chapter 3. The cutthroat are partially hybridized within the drainage, but some individual fish are still genetically pure. Bull trout have not been tested, but based on population censuses in Rock Creek and genetic testing in the Bull River, they are assumed to be pure and distinct from bull trout in Idaho.

Many of the features of the proposed project were added specifically to avoid aquatic/fisheries impacts (for example best management practices, buffer zones, road resurfacing, road relocation, containment ditches around facilities, pipeline monitoring, etc.). Other mitigations added for other resources would also reduce impacts on aquatics and fisheries. Alternative V was developed in response to remaining concerns about water, fisheries, and wildlife species.

10. The proposed mining and support activities will affect sensitive fish species (westslope cutthroat and bull trout) and/or those proposed for listing as endangered. The effects on these species could include habitat loss or degradation, and increased mortality risk. Impacts to bull trout and westslope cutthroat trout in Rock Creek would be reduced under alternative IV by establishing a 300-foot buffer zone around the confluence mill site. However, despite proposed mitigation measures outlines in the DEIS (Appendix H 7-9), impacts to these species are likely to remain significant under Alternative IV. (1595)

It appears that unmitigated activity in the drainage could cause a decline in the populations of these trout. (1991)

Response: This is the prime reason that Alternative V was added to the final EIS. Because Alternative V minimizes or avoids these outcomes, it is the preferred alternative. However, the 300-foot buffer zone was also a component of Alternative IV in the draft and supplement EISs.

11. Given the decline in the bull trout over much of its range and concern over loss of habitat, there should be increased information on resident and migratory bull trout within the basin. The proposed observations on bull trout spawning are inadequate. It is known that different populations of bull trout may spawn every year, every other year or every 3rd year. The data obtained may not portray the true use of Rock Creek by migratory bull trout. The DEIS acknowledges that "...fish are more difficult to monitor on a regular basis because they are not found in

all drainages, can be transient within a reach, excluded from area by physical barriers (e.g., waterfalls), and generally have more limited habitat requirements." (DEIS, H-7).

The DEIS goes on proposing that fish populations in Rock Creek be monitored only at 2-year intervals at a variety of stream reaches representing impacted and unimpacted conditions. There is only a cursory recommendation that baseline sampling sites "should" be included in the monitoring plan sites, and that population densities would be estimated only where adequate sample sizes permit.

Once again, this proposed monitoring plan fails to adequately address concerns about the protection of sensitive species. Impacts from material spills and pipeline ruptures potentially could affect water quality and aquatic life in Rock Creek and the Clark Fork River, including Cabinet Gorge Reservoir. There is no Emergency Action Plan currently in place in the DEIS to deal with an accidental discharge of toxic or hazardous materials or sediments. This lack of contingency plans is unacceptable. Fisheries information presented is incomplete. A Biological Evaluation for Fish Species should be provided as an appendix. Considering that effects on aquatic life were identified as a significant issue and that three fish species have some form of special concern classifications, the fisheries section should provide more information. Information presented in the fisheries section is of limited value in comparing site-affected waters to each other or to other waters on the Kootenai National Forest (KNF) because of the lack of detail and brevity of the data and discussion and the lack of comparison with data from other comparable systems, both impacted and unimpacted. (1595)

Response: Monitoring of fish populations is supposed to document the response of the fish to a particular activity. This goal becomes a problem when the actual monitoring procedure kills or injures the fish being monitored, or monitoring sites do not contain the fish at some point in time. For this reason, the final EIS monitoring requirement for fish functions more as a backup to other monitoring procedures, rather than the primary means of examining the effectiveness of aquatic protection measures. Monitoring sites have to be selected on the basis of where activities occur - the baseline data assumed a somewhat different project design than that in Alternative V, so several monitoring sites will have no baseline data and will have to rely upon inference and trend monitoring. Federal law requires mines to prepare a spill prevention, contingency and counter-measures plan before operations begin - the applicant has submitted a draft plan but must finalize it prior to acquiring operating permits from the Forest Service. By regulation, the content of an EIS is intended to summarize available information as it relates to significant issues and be understandable by all readers.

12. The population of these sensitive (fish and wildlife) species in and around the waterways being put at risk should be determined along with their demographics. The impact on these populations from polluted water or risk of spills and leakage should be studied thoroughly before any action is taken to implement this project. The population study should be based on the principles of conservation biology and the knowledge of the species. (1633)

Response: State and Federal regulations only require a project proponent to characterize the resource values to be affected. The baseline data available for this project satisfies that requirement. Rather than subject Rock Creek to artificial pollution prior to making decisions on permits, the process emphasizes disclosure of effects based on the scientific literature, prevention of expected effects, and monitoring to verify the effectiveness of those measures.

13. Page 2-3, 1st Paragraph, 1st Sentence: "The proposed mining and support activities may affect sensitive fish species (westslope cutthroat and bull trout) and/or those proposed for listing as endangered." The end of the sentence should read "proposed for listing as threatened or endangered (bull trout)." (1947)

Response: This section of the final EIS has been completely revised.

14. Page 4-80, 6th Full Paragraph, 2nd Sentence: The errata inserted "minor and" before "potentially significant." A more accurate characterization would be "minor to major and." (1947)

Response: The final EIS text has been changed to indicate that the magnitude of impacts from spills and impoundment failure could be minor to major.

15. What fisheries survey information is available to provide baseline data to determine the effects on the fisheries' population? (1991)

Response: Chapter 3 sections on Aquatics/Fisheries and Hydrology summarize the available information, which in some cases is as recent as 1997. Surveys by other agencies are also available.

16. Page 4-75: states that some of the reagents proposed for use in the milling process are known to be toxic to aquatic organisms. Xanthates are potentially harmful to rainbow trout populations at concentrations that may be encountered in receiving waters near mining operations. The DEIS does not discuss the likelihood of a reagent spill or its potential affects [on] bull and westslope cutthroat trout, and other aquatic life in the receiving waters.

Page 4-75: states concentrate would contain copper, silver, and residues from processing and would be shipped from the mill to the railroad in trucks. If a truck were to have an accident, or a train were to derail, concentrate could spill into Rock Creek or the Clark Fork River, both copper and silver are toxic to fish. Silver is one of the most toxic metals to aquatic life. How would such a spill effect the viability of these native fish?

Page 2-133: states that moving the mill site to the Rock Creek confluence eliminated project-related impacts to populations of bull and westslope cutthroat trout in the West Fork of Rock Creek as well as reducing sediment impacts to spawning habitat and fish populations in Rock Creek below the confluence with its East fork.
Page 4-82: states that fish populations in the headwaters portions of the West Fork of Rock Creek would remain relatively undisturbed.

These statement[s] are not true. There will be 178,000 tons of waste rock at the exploration adit portal. These materials are a source of nitrogen, metals, and suspended sediments to the West Fork of Rock Creek above the confluence mill site. In addition, there will be impacts from road reconstruction, bridges, and an increased potential for poaching. In addition, seeps and springs from the underground mine workings could impact the West Fork. These impacts on fish and aquatic life must be presented in the revised DEIS. (1223)

Response: The risks and effects associated with milling reagents are disclosed in Chapter 4 of the final EIS, including accidental spill effects. The risk of concentrate spills has been reduced in Alternative V by requiring the transport of concentrate via a pipeline to the rail siding. The EIS acknowledges that the risk of a catastrophic event or spill does rise with all action alternatives, but the precise effects are largely unpredictable given all variables relating to possible accidents (time, location, severity, speed of cleanup, etc.). The reader is correct about the errors and oversights in the draft EIS. Chapter 4 has been revised to disclose the effects to the West Fork from the exploration phase of mining.

17. Page 4-76: states that since the fall of 1989, the tailings water was acutely toxic in 15 of 19 tests. Toxicity during the latter part of the operation is believed to be caused primarily by elevated levels of ammonia, copper, and other metals. Based on the Troy toxicity data, the DEIS must assume that the Rock Creek tailings impoundment water would be high in metals and potentially toxic to aquatic life. These impacts must be discussed in the revised DEIS. Again, under Forest Service and MT DEQ regulations, discharges of toxic materials are prohibited. (1223)

Response: Tailings pond standing water would likely be equivalent to the conditions found at the Troy facility. However, what is more meaningful are the conditions created if this water were to seep underground and enter surface waters occupied by fish - this requires some consideration of biological remediation by soils and dilution in the receiving stream. This issue is largely moot,

however, since the final EIS preferred alternative includes a paste tailings deposit that is largely inert, has dramatically reduced seepage, and has no perpetual standing body of water.

18. The potential effects of rail loading and potential derailments on habitat for bull trout in the adjacent Cabinet Gorge Reservoir are not addressed. (1288)

Response: We do not examine the effect of such an accident as if it were a planned element of the project. Accidents, by their nature, are not foreseeable. Such an accident could occur almost anywhere during transport, occur at any time of the year, result in a large range of spill amounts, and involve other equally important elements critical to an impact assessment. We, instead, acknowledge that development of the mine does result in an increased risk of such accidents, and we identify the probable bounds around the likely outcome of such an accident.

19. It is proposed that storm water discharges from the mill site and adit areas will be discharged into the West Fork of Rock Creek. Rock Creek has been identified by Washington Water Power as containing the highest densities, and the second greatest numbers of bull trout and westslope cutthroat trout of any tributary to either Noxon or Cabinet Gorge Reservoirs. Both the states of Idaho and Montana are working toward bull trout recovery plans in an attempt to prevent this species from being listed as an Endangered Species. Yet throughout the DEIS it is proposed that Rock Creek will become the outlet for any storm water, excess flows from the adit, possible ground water flows, delivery of sediment, etc. This is also included within the draft permit on page 3 of the Statement of Basis, Section 003, where it is stated "Storm flow in excess of this capacity will be by-passed to the West Fork of Rock Creek." Storm water capacity for a 10-year, 24-hour event, is greatly under designed.

The pollution prevention plan should quantify ground water or shallow surface flow above the mill site and its effect on discharge or outfall control to the West Fork and East Fork of Rock Creek. The permit should attempt to quantify ground water discharge to the lower reach of Rock Creek at the critical 7Q10 low flow. This may directly affect bull trout because of aggravated low flows during fall spawning. Chapter 4 of the DEIS, Environmental Consequences, covers the potential loss of habitat for bull trout. We support Alternative IV as it reduces the threat of negative impact to this species. Bull trout is the first species of fish to be eliminated from a water body as a result of degradation. It does not appear any effort is being made to mitigate the loss of bull trout habitat. (1991)

Response: The reader should examine the final EIS chapters dealing with the design of alternatives, and the environmental consequences as well as the revised Statement of Basis for the proposed MPDES permit in Appendix D and the bull trout Biological Assessment in Appendix B. These sections have been substantially improved compared to the draft EIS, and should resolve the issues you raise.

20. Additional studies should be directed toward answering the questions concerning how to address the potential loss of bull trout and westslope cutthroat trout habitat in Rock Creek. (1991)

The company needs to provide better protection for the bull trout. (1998)

Response: Additional studies were conducted in 1997 (Watershed Consulting 1997) and 1998 (see Appendix N) in order to formulate mitigation measures that effectively protect these two species, and probably result in a net long-term improvement in the watershed under Alternative V.

21. Bull and Westslope Cutthroat Trout are given no mention of protective status or mitigation measures that ASARCO will employ or even address. On pages 2-59, 2-60, 2-77, 2-78, H-7, H-9, no mention goes towards these two threatened species. [We do] not understand how these fish could be blatantly left out of a document of the nature of a DEIS? If this is the type of management that will be employed by ASARCO, what information will not be made open to the public for damages that are occurring to the system? Rock Creek has been designated as a primary spawning area for Bull Trout and also for the cutthroat. On page 2-133, the DEIS states that All action

alternatives would impact resident populations of bull trout and westslope cutthroat trout in Rock Cr.~ How much activity or destruction does it take before action is taken to stop such destruction? The DEIS also states ….degradation of Rock Cr. bull trout spawning habitat would significantly impact Cabinet Gorge bull trout.~ Once again, the NEPA REGULATIONS state that when the word significantly is used, substantial documentation and studies must be made in order to justify the procedure of implementing the requested project. The DEIS also states that if this project occurs, elimination of these fish populations would occur due to siltation to the creek. (2026)

Response: The cited pages are excerpts from the mine development plans submitted by the applicant. The preferred alternative (Alternative V) is fundamentally different from Alternative II. Bull and westslope cutthroat trout are addressed throughout the EIS, but specifically in the Threatened and Endangered Species and the Aquatics/Fisheries sections, respectively, of Chapters 3 and 4 and Appendices B and K. It is not the purpose of an EIS under NEPA or MEPA to provide justification for implementing an alternative. An EIS discloses potential impacts should an alternative be implemented. The Record of Decision will document the decisionmakers rationale for approving or denying the proposed action or one of the alternatives. The decision could be made despite significant impacts as long as they had been disclosed in the EIS but they cannot result in violation of federal and state laws and regulations.

22. Overall, the draft permit does not adequately detail how the direct and indirect negative and long term effects on bull and west slope cutthroat trout will be eliminated. The impacts to these aquatic life beneficial uses are woefully underestimated. This is particularly true with respect to the draft permit's incorrect determination that mine drainage discharges to the Rock Creek system are not covered by a traditional NPDES permit regime. Also, as noted above, the inadequate sediment retention designs will result in significant adverse impacts to aquatic life beneficial uses in the system.

Direct discharge during storm flows will increase sediment and possibly metals loads in both the West Fork and mainstem of Rock Creek, which will impair beneficial uses, particularly fisheries. Based on this fact, the DEIS's biological evaluation, at p. 1, concluded that "the project is likely to result in a trend to federal listing or loss of viability for the bull trout." This fact alone necessitates the Forest Service's denial of the Plan of Operations. (1223)

Response: The environmental consequences section was revised based on new data collected since the draft EIS was completed. Impacts to bull trout are minimized by Alternative V.

FISH-603 Amphibians

1. Coeur d'Alene salamander - A FS Sensitive species and Montana/Idaho species of Special Concern. Although not found in the Rock Creek drainage to date, there has been no systematic survey undertaken to assess its status. The Coeur d'Alene salamander is known in nearby drainages (Marten Creek, Vermillion Creek) and the presence of numerous springs and seeps (Hydrology Section of the Draft EIS), indicate a strong possibility of its presence. Page 4-89 of the Draft EIS states that this salamander "would not be affected" by the project activities. I strongly disagree. This salamander was directly impacted by road building in the reconstruction of US. Hwy 2 west of Libby and on the west side of Lake Koocanusa. Road construction, building sites, and mine shafts all have the possibility of not only destroying habitat but individual salamanders. I think this needs to be reassessed, particularly in view of its status as a sensitive species. (1975)

Response: Chapters 3 and 4 indicate that aside from no observations of this salamander, suitable habitat for this species is very limited in Rock Creek and is largely outside the zone of influence from project activities.

2. Leopard frog - The last paragraph on Page 3-81 of the Draft EIS summarizes the demise of the Leopard Frog. "The sighting of leopard frogs during the baseline study may represent one of the last reports of the frog in west central and Northwestern Montana." Preliminary surveys done for the ASARCO Rock Creek project in 1985 found the leopard frog at ponds along the Clark Fork in front of Noxon and in marsh areas between Hwy 200 and the BN RR tracks near the proposed railroad loading site. This population is, or was, the only known population in all of western Montana outside one near Missoula and now one near Eureka.

Historically the Leopard frog was common throughout all of the valleys of western Montana with more than 40 historic locations. I was unable to find any leopard frogs at the Noxon site this past summer but I encourage you to take the time and effort to assess this situation before impacting on such a critical situation. Our 1995 survey report is recommending that this species be listed as Sensitive - for obvious reasons. (1975)

Response: Thank you for the additional information. The railroad siding location has been changed slightly from what we proposed in the draft EIS in order to avoid northern leopard frog habitat.

3. Boreal toad - Professor R. B. Brunson of the University of Montana stated in the late 1970's that the Boreal or Western toad was the most common batrachian (frogs and toads) in western Montana. Its status since then has been downhill. The southern populations from Colorado west and south are candidates for listing on the Federal Endangered Species List (currently precluded by higher priority species) and the northern populations are being recommended. In the past two years, we have one sighting of this toad in the Cabinet district - that just recently in nearby Swamp Creek. We know of only 11 sites throughout the entire Forest where there was breeding this past summer. It is reasonable to assume (pg 3-81) of the Draft EIS) that the Boreal toad is or was in the Project area. Short, time-constrained surveys at Copper Lake, Cliff Lake and Rock Creek Meadows during the past three summers failed to reveal its presence but such surveys are by no means conclusive. As with the Leopard frog, I would urge to undertake a systematic survey in order to determine its status before any permits are issued. We are also recommending to the FS that the Boreal toad be listed as a sensitive species. (1975)

Response: The preferred alternative in the final EIS has been formulated to minimize adverse effects on aquatic environments. We thus conclude that this species is not likely to be affected by the project.

4. Tailed frog - An on-again, off-again sensitive species. Although recent surveys in the KNF have shown this species to be more common than thought, it remains a species with a very restricted habitat, i.e. clear, cold, fast moving streams at mid to upper elevations. The status of populations within any streams of the KNF are poorly known. Based on my two years of field work in the KNF, including fish shocking on many streams, I believe there is little difference between the total number of streams that contain the Bull trout and the number that contain the

Tailed frog. Both play the same ecological role in stream dynamics. Given its presence in the upper reaches of Rock Creek and its sensitivity to aquatic changes, there is a strong possibility it will be directly affected by stream modifications. (1975)

Response: The locations of previous tailed frog sightings will not be affected by the activities in Alternative V. We have also added mitigation measures that are likely to result in a net improvement in stream conditions as long as there are no accidental discharges.

5. It is stated in the DEIS that potential impacts to reptiles and amphibians cannot be determined at this time. Is this vague statement sufficient, considering that one of the last recorded observations of leopard frogs in west central and Northwestern Montana is from the ASARCO baseline study in Rock Creek drainage? General trends in amphibian and reptile populations in the United States indicate that many species are declining or disappearing. Further studies on reptiles and amphibians in the Rock Creek drainage are clearly warranted. Establishing the extent of the Rock Creek leopard frog population is an obvious starting point. If the population is viable, perhaps this drainage will be an important recovery zone for the frog. (1223)

Response: The affected environment and environmental consequences sections have been revised. We conclude that the preferred alternative, Alternative V, is unlikely to affect reptile or amphibian species as a whole, but that individuals may be affected in discrete locations. This will not lead to a trend towards listing of a species. The previous sighting of a leopard frog was outside the permit area for the project.

6. Toxicological data should be used to evaluate impacts on amphibians and aquatic mammal species as well. (1248)

Response: Standardized toxicity tests for the species in the Rock Creek watershed have not been developed. We will include toxicity tests in monitoring, but will stay with well-studied species so that we can take advantage of published research.

7. [We are] concerned that the potential detrimental effects of the mining operation on the alpine lakes in the Wilderness Area have been ignored. Page 4-74 states that while there are no known fish populations in these lakes, reduced water levels would impact amphibians and other aquatic life. This seems to be an attempt to write off populations within a closed system, and ignore the place these lakes have in the whole ecosystem. While we acknowledge leaving 400 feet of rock between the mine and the lakes should protect water levels, we are also concerned that adequate baseline data has not been taken to fully determine how the lake interact with ground water sources in the area. (1991)

Response: These subalpine lakes do represent ephemeral habitat for aquatic invertebrates and a salamander. These animals have adapted to the annual fluctuations in water volume. Alternative V would not affect these animals directly, nor do we anticipate indirect effects or loss of lake water to the underground workings. Since these lakes lose water each summer and fall, we assume there is a shallow ground water connection with adjacent intermittent streams. Please see additional comments and responses in GEO101 regarding subsidence and the various sections pertaining to Water Resources, WTR300 et seq. as well as Chapter 4 sections for Geology and Hydrology.

DRAFT EIS
RESPONSES TO COMMENTS

FOREST PLAN

Forest Plan FPL-700

FPL-700 Forest Plan

1. DEIS (IV-2) states that the project would require three amendments to the forest plan for grizzly bear, old-growth and big game winter range. While you mention in the DEIS that hundreds of acres under the Forest Plan will have to be amended, you do not disclose what exactly needs to be amended or how that process even works. We assume, given your lack of explanation, that the Plan would be amended so that the objectives in the Rock Creek area would no longer include bear management. In fact, we believe that this area will be turned into a SINGLE USE (i.e. industrial mining) instead of its current multiple use. How do you justify this? What are you planning to amend in the Plan and how do those amendments happen? This is an abuse of the provisions in NFMA that allow amendments to the LRMP. (1355)(1780)(1916)

Response: The Forest Plan guides all natural resource management activities and establishes management standards for the Kootenai National Forest. The Forest Plan establishes management direction in the form of prescriptions consisting of goals, objectives, standards, and guidelines. This direction may be established to apply throughout the forest plan area (forest-wide direction) or they may be established for only a part of the forest plan area (management areas). The National Forest Management Act (NFMA) 36 CFR 219.10(f) states "The Forest Supervisor may amend the forest plan. Based on an analysis of the objectives, guidelines, and other contents of the forest plan, the Forest Supervisor shall determine whether proposed amendments would result in a significant change in the plan."

The NFMA allows for changes in the Forest Plan. The Rock Creek project proposes to change land management allocations from Management Area (MA) 11 (timber/winter range), MA 13 (old growth) and MA 14 (grizzly bear management) to MA 23, electric transmission corridor and MA 31 mineral development. This actually is accomplished in one amendment. The actual MA amendment with the new MA 23 and 31 management area standards is contained in Appendix O. The reason for this change is to identify the management allocation for these areas with their associated goals, objectives, standards and guidelines. A preliminary analysis has been completed which states that the amendment would be a non-significant amendment to the Forest Plan. The final determination will be made as part of the Record of Decision for this document.

Grizzly bear recovery is a major goal and objective for this area. To meet recovery needs mitigation has been included in Chapter 4, Threatened and Endangered species. Even though management areas 23 and 31 focus on a single use, objectives for all resources are considered.

2. It is urgent and essential that the DEIS discuss the impacts of amending the Forest Plan for the Kootenai Forest; failing to meet visual quality objectives for the Kootenai Forest and noise pollution being heard in the wilderness area. (1613)(1438)

Response: The draft and subsequent EISs evaluated the effects of noise in the Cabinet Mountain Wilderness created by the project (see Chapter 4, Sound). The evaluation of impact to the visual resources can be found in Chapter 4, Scenic Resources. Mitigations proposed to minimize the impacts may be found in the above referenced sections.

Additional analysis has been conducted regarding impacts of amending the Forest Plan. The Forest Plan amendment changes the management allocations of the lands where permanent facilities would be located. Changing land allocations does not have any resource effects. However, the EIS has fully evaluated and disclosed the effects of the proposal and states that there will be some significant resource effects from this project. The project will meet the standards and guidelines for Management Area (MA) 23 and 31. See also response to previous comment.

3. The preferred alternative in the final EIS should not require any amendment or exception to the Forest Plan that results in reduced environmental protection. The Forest Plan already provides insufficient protection for fish, wildlife, water quality and visual qualities. Any deterioration in these standards in the Forest Plan on behalf of this project are subject to legal challenge. (1220)(1670)(1917)

Response: All projects must be consistent with the Forest Plan. If they are not, the project must be modified, dropped, or the Forest Plan amended. A Forest Service project proposal to amend the Forest Plan to allocate the Federal lands affected to mineral development and transmission line corridors is included in the final EIS. The 1872 Mining Law gives Sterling the right to mine this deposit and remove the copper and silver. Through the permitting process, the Kootenai National Forest may incorporate management requirements to minimize or eliminate effects on other forest resources. The preferred alternative incorporates mitigation measures to provide reasonable environmental protection and meet state and federal laws.

4. The Forest plan will be amended so management allocation on 273 acres would be consistent with the intended use. The DEIS fails to disclose that the Forest Plan is already contested. How will the Agencies be able to modify this plan if it is already suspected of being out of compliance with Forest Service guidelines, particularly with regards to open road densities and the grizzly bear recovery plan? (1223)

Response: The fact that people may not agree with the Forest Plan is outside the scope of this decision. Please refer to the grizzly bear biological analysis in Appendix B for information regarding how the project would meet open road density and recovery plans.

5. Where in the DEIS have the agencies discussed the amendments that would be necessary in the Kootenai Forest Plan? These would include changes in MA designations, and visual quality objectives. (1438)(1732)(1737)(1738)(1741-1744)(1746)(1747)(1913)(1923)

Response: The draft EIS in Chapter 4, Forest Plan Direction, discussed in detail the changes being proposed for the Forest Plan. Additional analysis has been conducted regarding impacts of amending the Forest Plan. The project will meet the standards and guidelines for MA 23 and 31. The final EIS includes more discussion about the changes to the Forest Plan and also includes copies of the amendments in Appendix O.

6. Page 4-4, Table 4-2, Changes to Old Growth (MA 13) by Alternative: It appears that the percentage of MA 13 in Compartment 711 would not fall below the ten percent minimum specified in the Forest Plan. The percentage, however, is calculated using both old growth and replacement old growth. It is not clear why the Forest Plan would need to be amended if the amount of MA-13 would not fall below ten percent under all of the alternatives considered. The row in the table "% reduction from current old growth" needs additional explanation. (1589)

Response: The amendment regarding old growth would change the management area (MA) from MA 13, old growth, to MA 23 and 31. Although this project includes changing MA allocations, including some out of old growth (only one acre under Alternative V), the minimum management standard of 10 percent old growth would still be met. The intent is to display how the area would be managed. Because of the proposed project, some areas within the project boundary would not be available for management as currently identified in the Forest Plan. The Forest Plan would be amended to show how the lands should be allocated and to thus minimize management conflicts.

7. The project will violate the National Forest Management Act because it will turn a scenic vista into a panorama of a parking lot and factory. (1670)

Response: The NFMA will not be violated should this project be approved. Only a small percentage of the drainage will be impacted by mining facilities.

8. Rock Cr. (according to available data in Tables 3-3, -4) is that of a pristine quality. If that is situation, how can the US Forest Service allow such a destructive process to occur? (2026)

Response: Under Forest Service regulations, it is the agency's responsibility to determine what needs to be done to allow mining to occur with the least impact while complying with federal and state environmental regulations. The Forest Service cannot actually deny a permit, but may determine that certain mitigations or conditions must be incorporated into a plan of operations before mining could commence. If the company chooses not to incorporate those requirements, then mining cannot commence unless the company wins an appeal on the decision. The preferred alternative, Alternative V, contains many mitigations and alternate requirements that would either minimize, prevent, or reduce an impact or the risk of an impact relative to the other action alternatives. See Chapter 2 for descriptions of the alternatives and comparison of impacts and Chapter 4 for the analysis of impacts.

DRAFT EIS
RESPONSES TO COMMENTS

MEPA/NEPA PROCESS

MEPA/NEPA Process NEPA-800
Alternatives NEPA-801
Cumulative Impacts NEPA-802

NEPA-800 MEPA/NEPA Process

1. After a general review of the DEIS it is apparent that many needed studies are being postponed until the final EIS. This avoids public comment and violates NEPA. (1355)

Environmental impact studies are occurring after a permit, not before . (1265)

Please have the current DEIS rewritten to account for all missing baseline data, scientific inaccuracies, missing analyses, and to include elimination of ambiguities on the resulting impacts. The problems alluded to make it impossible from the current options to know beforehand what you, and we, are getting into. You and I must know. You cannot accept lack of information, cost-cutting methods, slipshod analyses and failures as a foregone conclusion. It's a complete EIS, or no permit! (1710)(1345)

The DEIS is unacceptable, and more time and effort must be given to gather and record baseline data by neutral qualified parties. Government agencies must fulfill their duties and obligations. They need to be up front and honest with the citizens, listen to them, and then follow through with the demands of the people. They must protect the people and environment of our country. (1265)(1283)(1371)(1501)(1522)(1587)

Valid and reliable data are seriously lacking in the DEIS. Experimental water treatments, uncertainties about hydrological effects on Wilderness waters, lack of data on the effects of the toxins on humans and other life forms, and lack of certainty of maintaining biodiversity in fragmented and already heavily impacted ecosystems are some of the scientific deficiencies in the analyses. Reliance on such flawed information for decision making is a violation of the National Environmental Policy Act and the Montana Environmental Policy Act. (1670)

Response: CEQ 1502.22 states if incomplete or unavailable information is essential to making reasonable choices among the alternatives and that the overall costs of obtaining that information is not exorbitant, then the agency shall obtain and include the information in the EIS. Since release of the draft EIS, more information has been obtained on the geochemistry and acid-producing potential of the Rock Creek tailings and waste rock. The Agencies' have been working with EPA and Idaho DEQ on identifying monitoring needs and trigger points for evaluation adit development. Additional information collected during construction of the evaluation adit and during mining is utilized to confirm that the impacts do not exceed those predicted. Additional mitigations would then be required if the impacts were greater or worse than predicted. Sufficient information exists for determining impacts to biodiversity; although collecting additional data for monitoring impacts would be required. Collecting additional information on the hydrogeology of Rock Creek ore body and overburden would require costly drilling from the surface within the Cabinet Mountain Wilderness and would not likely add substantially to the prediction of impacts to surface and ground water. It is also possible that Sterling would not get permission to conduct such activities.

Additional studies were conducted for bull trout, harlequin ducks, furbearing animals (lynx, fisher, wolverine), and additional ground water data was acquired for the tailings paste facility site since the draft EIS was released. Modelling for sediment was conducted, seepage through the tailings paste facility was modelled, modelling for impacts to grizzly bears was rerun, and a biological assessment for bull trout was completed and included in the supplemental and final EISs. There was a revised water management plan, wetlands mitigation plan, and draft MPDES permit developed for the new alternative included in the supplemental EIS.

The collection of more baseline type data is an important component of monitoring compliance of the project with the permit and predicted impacts. Advancement of the project or approval of certain

project facilities hinges on some monitoring data showing acceptable levels such as the rock mechanics monitoring and waste rock geochemistry. Additional baseline information beforehand would make the analyses in the EIS more detailed and somewhat more accurate, but the agencies do not believe that it would substantially change the predicted impacts of implementing the proposed project. The analyses in the EIS are based on generally accepted theoretical approaches or research methods used by the scientific community.

2. *There was not an adequate job of notifying the public. (1353)*

Response: In March 1995 the lead agencies mailed out a newsletter with a self-addressed stamped postcard asking persons on the mailing list to specify whether or not they wanted to receive an copy of the entire draft EIS or just the summary when it was released. The response to that mailing and the return of postcards the U.S. Postal Service could not deliver, narrowed the mailing list down to approximately 150 people, organizations, and agencies wanting copies of the entire EIS. At the same time the newsletter was mailed out, a press release was sent to several local and regional newspapers and radio stations informing everyone of the availability of the document and asking people to contact the agencies for copies of the document.

In October 1995 when the draft EIS was released, a press release was again sent out to an even wider distribution of local and regional newspapers, radio stations, and television stations. A letter informing people and organizations who had not responded to the March mailing or had indicated they did not want any copies but wanted to be kept posted on the status of the project was also sent out at the same time as the draft EIS was mailed.

Approximately one week prior to the hearings on the draft EIS in November 1995 another press release was sent out to the wider distribution of newspapers, and radio and television stations. Similar notices were sent out for the supplemental EIS.

The amount of notice to the public regarding the draft EIS and later the supplemental EIS and the public hearings for each document constitutes adequate notice.

3. *The public comment period ended before all the information was available to the general public. (1321)*

You also have not provided the minimum 45-day comment period required under NEPA to much of the public. Agencies ran out of copies of the DEIS shortly after its release, and by the time folks received copies of the 2nd printing, they didn't even have 30 days let alone 45. In addition, folks who signed up to receive copies at the hearings probably haven't even received them by today's comment closing date! You should reopen the DEIS to full comments now and keep them open through the discharge permit sessions--period! (1196)(1263)(1276)(1296)(1349)(1351)(1374)(1482)(1526)(1698)(1730)(1737)(1740)(1914)(1916)(1935)

It appears that ASARCO and the I.D. team are rushing this public comment period before distributing a complete and thorough DEIS document for public study. Is this legal? I request that the I.D. team extend the public comment period until after a complete DEIS is finished and distributed. (1405)(3420)

The time allowed for comments was inadequate given the difficulty of finding the document. Some of the ASARCO documents are at the Univ. of Montana library and some at the Missoula Public Library, and documents are checked out at the former. Finding the draft document was almost impossible until the last moment, allowing inadequate time for review. (2066)

Response: Under NEPA, 1506.10(c) requires a minimum 45-day comment period and 1506.10(d) provides the means for extensions of that time period. ARM 26.2.652(2) provides for a 30-day comment period on a draft EIS and allows the state to extend it up to an additional 30 days. The comment period on the draft EIS for the Rock Creek Project was open for 60 days from October 6 to December 5, 1996. Therefore, the lead agencies complied with both federal and state regulations. The comment period was reopened for an additional 60 days, January 11 to March 12, 1996, to allow for the collection of public comments relative to the draft water discharge permit and related water quality issues.

Even though there are certain deadlines set for submittal of public comments, the public is welcomed and encouraged to remain involved in the process. Numerous notices of availability were published as noted in response to the previous comment.

Full and complete copies of the draft EIS were available for public review at the following locations from October 6 on: the Forest Service offices in Trout Creek, Libby, and Missoula; the Corps of Engineer and DEQ offices in Helena; the public libraries in Noxon, Heron, Libby, Missoula, Thompson Falls, the state libraries at the University of Montana and Helena; and the public libraries in Sandpoint and Clark Fork, Idaho. The agencies cannot specify how these libraries make the documents available to the public. In addition over 100 copies were mailed out to the mailing list available at the time the document was released. Two additional printings totaling nearly 200 copies were mailed out as public interest grew during the public comment period. The draft EIS was also available on the state bulletin board. Given this widespread public availability to the entire document, the public was not denied access to the draft EIS.

The 60-day comment period on the supplement provided additional opportunity for public involvement.

4. The Draft Environmental Impact Study is formatted unprofessionally with corrections, making for very difficult reading. (1290)

The two EIS chapters written by the reviewing contractor (which have been controversial) should be included in the EIS unedited, and the confusing addendum removed. (1501)

Finally, please require full review of the edits by the entire inter-disciplinary team responsible for the DEIS, i.e. compare the proofers copy and DEIS on a page-by-page basis, and secondly, extend the public comment period on the entire DEIS. (1351)(1438)(1643)(1654)(1730)(1737)(1923)(1935)(1957)

Additionally, the clarity and readability of the DEIS fails to pass muster with NEPA because of the extensive "eratta." The public should not have to wade through such confusion in order to provide meaningful input on this project proposal. (1526)(1670)(4502)

Response: Information from the errata, which pertained primarily to wildlife, vegetation and aquatics/fisheries and were considered to be substantive, have been incorporated into the supplemental and final EISs by the Rock Creek EIS interdisciplinary team unless additional information that altered analyses was received after the draft EIS was released. The IDT took into account those errata the agencies considered to be substantive during the preparation of the supplemental and final EISs and the inclusion of additional or more specific mitigations. Each team member reviewed their resource areas and identified errors, modified or expanded text, and approved final text prior to publishing the final EIS.

We would also like to point out that the agencies adopted a more rigorous writer approval system during the preparation of the final EIS which minimized the opportunity for errata resulting from (1) adding new text prepared by IDT members other than the primary writer for each section, (2) inconsistent or differing conclusions between agency specialists and consultants, (3) improper use of technical terms with legal definitions, and (4) incorrect editing done to improve readability (the EIS should be readable by the general public - Chapters 1-4 are not written for technical specialists). This system helped ensure that the interdisciplinary process worked and that assumptions, analyses, and conclusions were consistent between related resources. All changes to and final text of the final EIS and summarized analyses were approved by the consultants or agency staff responsible for writing the text for each section within the document.

5. The State and Federal agencies must fulfill their legal obligation to protect the public's interests regarding water quality, environmental and social impacts. (1335)

Will the agencies be looking out for the citizens' best interests or ASARCO's? Will they force ASARCO to fully comply with the existing laws that protect our environment, such as The Clean Water Act, The Threatened/ Endangered Species Act, The Wilderness Act, and The Air Quality Act? (1246)(1346)(1371)(1480)

Response: The mining permit and the plan of operations would not be approved by the decision makers if the implementation of the project would violate any state or federal environmental laws and regulations. NEPA and MEPA require that all environmental impacts be disclosed so that the decision makers may make informed decisions. The lead agencies have the authority when conducting inspections or responding to complaints to ensure that the company is in compliance with all permit conditions, laws, and regulations. All violations would be handled according to the laws and regulations establishing the agencies' enforcement processes. If a member of the public believes the agencies have not fulfilled their legal obligations, then a person has the right to seek administrative and/or judicial review of the agencies' decision.

6. The public has a right to opinions regarding their community but these opinions are solicited after a mining permit has been granted.(1265)

Response: The state's mining permit and Forest Service approval of Sterling's plan of operations have not been issued. The agency decisions will not be made until after the final EIS has been issued and will be documented in a Record of Decision.

7. The U.S. Forest Service and the Montana Department of Environmental Quality have been charged with altering the analytical findings that the scientists at OEA Research provided for the DEIS; consequently, these agencies misrepresented information and minimized detrimental impacts on aquatics, fisheries and biodiversity. The integrity of this document is in doubt. (1196)(1207)(1246)(1288)(1346) (1351)(1371)(1440)(1616) (1634)(1642)(1643)(1670) (1678)(1730)(1737)(1917) (1935)(1957)(1979)

Response: Pertinent to any discussion is an understanding of the role of a third-party EIS contractor in the EIS process. A contractor is responsible for providing a quality work product that meets agency (or, as applicable, interagency) standards in terms of (1) the law, (2) content quality, formatting and editing requirements (3) documentation requirements and (4) timeliness. Contracts require the contractor revise work products to meet agency standards if necessary. The agency is responsible for defending the work and agency specialists must concur with the assumptions, logic, and analytical processes used by a contractor who is providing information to an agency. When these requirements are not met either the contractor may be paid additional funds to make revisions or agency specialists may supplement or modify the work of the contractor to assure that agency standards are met.

The Agencies (the Montana DEQ and the U.S. Forest Service) attempted to prepare an unbiased discussion of the project and potential impacts in the draft EIS. Unfortunately there was a disagreement between OEA Research and the Agencies over the editing of the draft EIS for the Rock Creek Project. To get through the disagreement and get the draft EIS out to the public for review with minimal delay, OEA prepared draft errata for agency review. The Agencies and OEA met and developed a final list of errata for inclusion in the draft EIS. The final list resolved the issues between OEA and the agencies. In total, 99 errata items were adopted to prepare a 13-page supplement for inclusion in the draft EIS.

Foremost is that 54 of the 99 changes (55 percent) related to a formatting change adopted by the agencies. Such a change does not substantively change the analyses. The formatting change made in this instance was a decision to drop "conclusionary statements" from the document since NEPA requires disclosure of analysis of impacts only.

Conclusionary statements were requested of the writers, after completion of their analyses, to provide a cross-check on the project managers' and editor's understanding of submitted text. A typical statement would be framed to state that "impacts to resource "x" would be minor/moderate/major in the short/long term." The intent was also to summarize the magnitude and importance of the impact for the reader, as a supplement to the analysis. Conclusionary statements do not take the place of impact analysis required by MEPA and NEPA.

In discussing the effectiveness of conclusionary statements during final editing it was determined that these statements may in fact distract the reader from the analysis, thus reducing the utility of many comments submitted on the EIS. Based on these concerns the statements were removed. These statements were included in the errata sheet to provide timely resolution of OEA's perceived need for the statements.

A total of 45 additional errata were also included with the draft EIS for eight other reasons. These reasons follow.

1. The submitted text did not identify Alternative IV impacts to aquatic resources as significant. OEA changed their position on Alternative IV after the draft was printed, necessitating changes. Six of the 45 errata (or 13 percent) fall in this category.

2. The Agencies added text to address missing information. No OEA text was changed. However, upon review, OEA suggested additional edits. Twelve of the 45 errata (or 27 percent) fall into this category.

3. The submitted text was not changed; however, after printing of the draft EIS, OEA wanted additional editing. Six of the 45 (or 13 percent) fall in this category.

4. Consistent with Agency standards, project managers defer to agency specialists who have the greatest familiarity with the site and the resources being evaluated. As a result, one wording change was made to which OEA disagreed. When agreement was reached, one erratum was added to the sheet (or 2 percent of the 45 resulted from this type of occurrence.)

5. Consistent with Agency editing standards intended to ensure objectivity, emotionally charged words are not used and words with strict legal meaning are used only when the legal meaning is intended. Thus Agency changes were made to OEA text which later resulted in the addition of two errata items of the 45 (or 4 percent). The example is the deletion of "degradation" and "detrimental" as modifiers. With OEA's concurrence, the term degradation was dropped and detrimental was replaced in the errata sheet with the term "adverse."

6. Eleven errata result from wordsmithing and typographical errors and do not have substantive effects on the analysis. The Agencies had intended to make these corrections in the final EIS. However, OEA suggested that these be included in the errata. These errata constitute 24 percent of the 45.

7. One item was included in the errata-sheet because the Agencies erred when consolidating multiple texts of the camera-ready copy. (This is 2 percent).

8. Agency changes were made to improve the readability of the text, but were determined to be incorrect as a result of misunderstanding the submitted text in six instances. Thirteen percent of the 45 or 6 percent of the 99 errata fall in this category.

In preparation of the final EIS, the agencies have adopted a more rigorous writer approval system which will minimize the opportunity for errata needed as a result of the situations described in categories 2, 4, 5, and 8.

8. It is necessary that all design requirements and approved detailed designs be included in the EIS. (1501)

Why is ASARCO not required to complete the design of the tailings impoundment and the treatment and collection systems before they can apply for their permits? (1675)(1999)

The DEIS disclosure of impacts associated with construction and operating the tailings impoundment is inadequate for the following reasons: 1) The final design of the tailings impoundment is not presented, 2) the geochemistry of the mine wastes to be stored in the impoundment are unknown, 3) the seepage collection system design has not been finalized, and 4) the size of the "agency-approved mixing zone" and its associated ground water degradation have not been quantified and disclosed. Several statements in the DEIS demonstrate that the Agencies and ASARCO have to determine the final design specifications for the tailings impoundment: p. 2-134 although both designs would be subject to review and approval by the Agencies, the modified design for Alternative III (and IV) would be subject to a technical panel review including review of a feasibility study on the use of alternative methods to reduce seepage. The public and decision-makers cannot adequately evaluate and comment on the proposed project until the Agencies select their preferred tailing impoundment design. Therefore, we request the Agencies select a preferred alternative for the tailing impoundment and present a detailed analysis of it's design, operation, and closure in the revised DEIS. The public must be given sufficient time to review and comment on the final tailings impoundment design, etc., along with the other preliminary information issues contained in the DEIS - before a final EIS is published and a decision made by the Agencies. Without full public review of the final designs for all alternatives, NEPA/MEPA's mandate for full public review is thwarted. The Agencies cannot issue an incomplete DEIS with assurances that final design and other operational parameters would be "within the scope" of the first DEIS.

In addition, the failure to present design specifications for a number of the major mine facilities-- including the tailings impoundment, seepage collection system, and water treatment system-- prevents the public from reviewing and commenting on all relevant information, and the responsible Agencies from making informed decisions. We are

dismayed by the "permit now and design later" approach that Agencies have appeared to adopt for this project. The DEIS is replete with phrases such as "the final design has not been submitted" and "the Agencies will review these plans prior to permit approval." A DEIS is supposed to be a disclosure document, but this DEIS is not. In addition, we do not believe the Agencies cannot "fix" these problems in the Final EIS. Consequently, we request the Agencies prepare a revised DEIS to correct these and other deficiencies. These inadequacies must be addressed to assure compliance with the National and Montana Environmental Policy Acts. (1223)(1916)(1935)

Response: The EIS must describe the proposed project with sufficient detail to enable the decision-maker and the public to understand the environmental effects of the project. This does not require including all design details in the EIS. Final designs undergo agency reviews for compliance and adequacy. All final facility designs and other final plans are required to comply with the parameters and standards established in the preliminary design and should not result in environmental impacts greater than those discussed in the EIS. If implementation of the final design would be expected to result in impacts substantially greater than or different from what is discussed in the EIS, then additional environmental impact analysis is required.

9. The EIS should be reviewed by the independent contractor to determine the validity of the many assumptions which are based on the Troy mine. (1501)

Response: The interdisciplinary team (IDT) consists of people from the Montana DEQ, the U.S. Forest Service, and a third party contractor. Additional reviewers include staff from EPA, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, the Montana Department of Fish, Wildlife, and Parks, Idaho DEQ, and four tribes. A third-party contractor, Klohn-Crippen, did look at Troy data as well as Rock Creek data in its review of paste usage tailings disposal facility stability and acid rock drainage. See Chapter 6 for a listing of all persons involved in preparation of the draft, supplemental, and final EISs. The IDT has reviewed data from the Troy mine and has collected additional data and information to strengthen the assumptions the IDT used. These analyses relate to geochemistry, acid mine drainage, tailings disposal facility seepage, and are included in Chapter 4 in the Hydrology, Geology, and Geotechnical Engineering sections.

10. The Environmental Impact Statement is faulty and does not establish that there would be no significant environmental damage. (1450)

Response: NEPA and MEPA require that potentially significant impacts be analyzed and disclosed in an EIS and that reasonable alternatives that avoid or minimize impacts be studied and considered. The final EIS fulfills these obligations. NEPA and MEPA do not require the agency to select the most environmentally protective alternative. But the agencies are required to explain any decision that does not adopt all practical means to avoid or minimize environmental harm. (1505.2(c) and ARM 17.4.629(3)(g)). The decision and rationale ro the decision will be included in the ROD.

11. We are not satisfied that the recent (DEIS) addresses the true environmental impacts we will suffer as a result of ASARCO's proposed mine on Rock Creek. (1273)

I am concerned that the DEIS for ASARCO's proposed silver/copper mine upstream from Lake Pend Oreille is inadequate and does not offer the necessary environmental protections that are demanded from a project of this magnitude and this close proximity to one of the Rockies' most pristine lakes. (1439)

We are very concerned about the proposed Rock Creek Mine in Noxon, Mt. Many, many questions are still unanswered about the operation of this mine, and its effect on the ground water, the habitat, the rivers and lakes, the flora and fauna, and the pristine environment. The DEIS is incomplete and does not fully address many of these questions. (1682)

Response: Additional information regarding the descriptions of the proposed and agency-modified alternatives, reasonably foreseeable activities, the existing environment, and environmental consequences, including cumulative impacts has been incorporated into the supplemental and the final EISs. All reasonable alternatives have been investigated and all practicable mitigations have been incorporated into the agency-preferred alternative (Alternative V). Please look at Chapter 4 for the expanded analyses regarding ground water, surface waters (Clark Fork River, Rock Creek, and wilderness lakes), aquatics and fisheries, biodiversity (wildlife and vegetation), threatened and endangered species, and the Cabinet Wilderness. Additional discussion has also been provided in Chapter 2 regarding the mine operation, water management, reasonably foreseeable activities, and the summary of impacts.

12. As case in point, appointments to a "peer review board," which would accept or reject ASARCO's changes to the tailings pond design, will be made by KNF and DEQ. Given the actions by KNF and DEQ in "editing" the DEIS, what assurance can the citizens of Sanders County have that their best interests and concerns will be represented by a peer review board appointed by agencies that have already betrayed the public trust? (1634)

Response: See responses to earlier comments pursuant to agency editing of the draft EIS.

The technical panel reviewers for the final tailings disposal facility design, will consist at a minimum of technical staff from both lead agencies, including engineers, hydrologists, geochemists, and other specialists as needed. Other state, federal, and tribal agencies would be invited to include technical staff as well. If necessary, additional third-party consultants will be hired by one or both agencies to provide additional expertise on the panel. The final design is required to comply with the parameters and standards established in the preliminary design. These parameters and standards have been disclosed in the draft and supplemental EIS and commented on by the public. Any substantive deviation in the final design as well as potential impacts substantially different from or greater than those disclosed in this EIS would be subject to additional evaluation under MEPA and NEPA.

13. Why wasn't Idaho/Bonner Cty/Sandpoint councils and state authorities involved if the Clark Fork is Idaho's concern. (1301)

Response: Idaho's Division of Environmental Quality has had a person on the interdisciplinary team as a reviewer for over seven years because the Clark Fork River does go into Idaho and Idaho has responsibility for ensuring that its water quality standards are met. The agencies and city councils were sent mailings that went out to the general public. Neither council requested to participate in the process in greater detail.

14. Negative factors that ASARCO should address are: I ask that ASARCO be ordered to publish all the effects and impact that the mine will have on the surrounding area. A public hearing where the citizens can ask questions and ASARCO and other officials can secure answers may even be in order. ASARCO should also disclosed what it plans to do to reduce the negative effects. (1739)

Response: The draft EIS on the proposed Rock Creek Project was prepared by the Forest Service and the Montana DEQ to disclose the environmental impacts. Two public hearings were held to allow the public to submit verbal comments on the draft EIS on November 14 and 15, 1995, in Noxon, Montana, and Sandpoint, Idaho, respectively. Open houses were held prior to each meeting to allow for discussion on various aspects of the EIS and the applicant's proposal. Public hearings were also held in Sandpoint and Noxon for the supplemental EIS on February 11 and 12, 1998, respectively, as well as in Missoula, Montana, on February 10, 1998. The applicant has disclosed its plans to reduce environmental impacts in its plan of operations and mine permit application which was originally submitted in 1987 and has been modified with additional information up to the release

of the draft EIS. Additional information has been submitted regarding Alternative V for the supplemental and final EISs.

15. At both public hearings' open houses, as well as subsequent conversations with friends and neighbors, representatives of both the USFS and the State of Montana have repeatedly led people to believe that there is nothing that the agencies can do except permit this mine. People have been told over and over again that the "No Action Alternative" is not really a viable alternative, that the agencies can't say no, that the project is and will move forward, and that the NEPA process (as pertains to public comment) is not a democratic process. While it is true that there is no actual "voting" on alternatives, we ask you to explain just what kind of process public involvement and comment is if it's not democratic? You have actually acted to discourage public comment by leading people to believe that (1) there is nothing they or you can really do, and (2) that the project will be permitted no matter what they say. On the contrary, there are opportunities for the agencies to deny an operating permit, even under the 1872 Mining Law. We know that, and so do you–so why aren't you providing that information to the public? Also, since no decision should have been made yet at this stage of the process that would lead to a driving of the alternatives, how can you justify your statements to the public? (1916)

DEQ representative stated if Asarco meets State regs, they can start mining! Where do the public comments enter? (1987)

Response: Public comments are solicited to determine if the alternatives discussed were adequate, if there are any outstanding issues that had not been covered by the EIS, if there were any aspects or viewpoints of identified issues that need to be more fully covered or included, and to determine if there is any information that someone in the public knows about that should be incorporated. The large number of public comments received on this project has resulted in additional analyses and more detailed descriptions about the proposed action, its alternatives, the existing environment, and potential impacts. There was no intent on the part of the agencies to discourage public comments; instead the coordinators were trying to get people to submit more specific and detailed comments the interdisciplinary team could use to develop better mitigations to further reduce impacts or to better disclose impacts not previously thought to be significant. Changes and improvements to the EIS as a result of public comment will help the decision makers make the best possible and informed decisions.

The No-Action Alternative is a viable alternative; MEPA and NEPA require it as a means of comparing potential impact of implementing one or more action alternatives against the "status quo." But implementation of the No-Action Alternative usually requires that the permit can legally be denied.

In general, if a mining project can meet all state and federal environmental regulations, then there is no reason for the permit to be denied. Public outcry against a mining project alone is not a reason for denial although it can influence the incorporation of more or stronger stipulations or mitigations to reduce undesirable impacts. The 1872 Mining Act provides the means for acquiring mining claims and patents; there are no means for denial of a mining permit when legal requirements are fulfilled. The reasons and means for permit denial are discussed in Chapter 1, Agency Decisions and in the response to the next comment.

16. Despite two court decisions (Bennett) and an agreement signed by the state under the Schwinden administration that, at least in so far as hard rock mines in the western part of the state are concerned, MEPA gives DSL the authority to modify or deny a mining permit on social, economic, and/or environmental grounds, no mention of this is made on page 1-14, "agency decisions" or anywhere else in the document. In fact, it is flatly stated on page 2-14 that the DSL has no authority to deny the project, so long as "applicable" laws (i.e., water, air quality, and

reclamation) are complied with. The Bennett decisions are being ignored; the state's pledge is being dishonored. It is obvious that the no-action alternative has been included only as a matter of form, and that the agencies have no intention of giving it serious consideration, in violation of NEPA, MEPA, and the State constitution. (1698)

Response: The Montana DEQ is required to act upon Sterling's application for an operating permit under the Metal Mine Reclamation Act (MMRA) by either (1) granting the application, or (2) granting the application subject to conditions, or (3) denying the application. The Montana DEQ may deny the application for the reasons set out in 82-4-335(8) and (9), MCA, for failure to develop a plan that meets the requirements of 82-4-336 or 351, MCA, or for failure to comply with 82-4-360, MCA. These sections of the MMRA require that permittees submit adequate plans for reclamation and for air and water quality protection, require permittees to be in compliance at other sites they may have permitted under MMRA, and require submittal of ownership and control information and submittal of an adequate bond. In addition, as you noted under the Bennett decision, the Montana DEQ has interpreted MEPA as supplementing the basis upon which an operating permit under MMRA may be conditioned or denied. However, the 2001 legislature revised MEPA such that a state agency cannot deny or condition an operating permit unless the stipulations are necessary to comply with state laws and regulations. The Montana DEQ cannot deny or condition a permit in order to avoid or mitigate all significant environmental impacts identified in the EIS as some mitigations are not required by state law. The text in Chapters 1 and 2 has been modified to indicate this.

17. Our last comments on the NEPA issue surround the release of the DEIS without the draft discharge permit and water management plan. The water-related issues (mine storage, water treatment, discharge to the CFR,, tailings seepage) are some of the most significant impacts associated with this project. The discharge permit would have been ready within a month or two. Considering this project has gone on for some 8 years, why did the agencies insist on releasing the DEIS without the water information? What would it have mattered to wait another 6 to 8 weeks in order to have the project presented in its entirety to the public? Why didn't the USFS cooperate with Montana's Water Quality Bureau on timing? How could you ask the public to comment on environmental impacts, and more importantly, how could the DEIS analyze these environmental impacts & disclose them to the public absent this information? (1916)

In addition, I object to having the EIS disseminated in pieces. The water quality section is still not completed, yet we are being asked to comment on the project without seeing the section that contains information most pertinent to the concerns of the people downriver from the project. I realize that we will be able to comment later, but this makes for a disjointed, unsatisfactory process. (1642)(1678)

Since one of the primary concerns is the impact on the waters of Rock Creek itself, of the Clark Fork River and of Lake Pend Oreille, I believe that to require comments on the DEIS before we see the completed water management plan is an absolutely critical flaw in the NEPA and EIS process. (1914)

Response: The applicant's revised water management plan on which the draft MPDES permit was based was described in the draft EIS. The descriptions of the Tailings Impoundment Seepage and Storm Water Control and Water Use and Management portions of Alternative II in Chapter 2 were taken from both the original and the revised plans. This information for Alternative V in the supplemental EIS was taken from the applicant's 1997 water management plan for Alternative V.

The laws that regulate the mining permit and the water discharge permit do not require that the respective applications and approvals run concurrently. In the past, water discharge permits have been issued prior to, at the same time, or after the mine permit has been issued. It may assist in the environmental impact analysis process if they do run concurrently, but there is no legal requirement to do so. The agencies attempted to conduct both the EIS analyses and the draft MPDES permit

preparation concurrently, but different project priorities between the Permitting and Compliance Division and the lead agencies led to the draft EIS being completed before the draft discharge permit was prepared. Because it could not be determined at the time how long it would take for the draft water discharge permit to be completed and because the agencies did not believe that the impacts would change substantively with the completion of the draft MPDES permit, a decision was made to release the EIS without it. Nonetheless, the preparers of the draft EIS used the same information for environmental analyses that was available for preparing the draft water discharge permit for the proposed Rock Creek Project and worked closely with Water Quality Division (now Water Protection Bureau). Both the EIS and the Rock Creek Mine permit application state that the project would have to comply with a discharge permit. The water discharge permit standards and effluent limitations have been incorporated into the analyses in Chapter 4, Hydrology. A revised draft MPDES permit was included in the supplemental EIS and the proposed MPDES permit has been incorporated as Appendix D in the final EIS.

18. The document is poorly organized, information scattered and difficult to track. For example- the Air Quality information, analysis, and permit information are scattered throughout two volumes. How can a reviewer be assured that all relevant information has been located? The index is inadequate and seriously deficient. It is of virtually no use in attempting to locate major portions of information….Use independent, specially trained, impartial consultants to write the document, not local Forest Service or state staff. And make Asarco pay for it. (1196)

The entire document is too long, is poorly written and is difficult to follow. To better serve the MEPA/NEPA disclosure function it would be useful to separate the voluminous speculative conclusions (..potentially significant impacts… etc.) and extensive mitigations from the description and analysis sections. Considering the length of time this document has been in process I would have expected something more polished and easier to read. (4502)

Response: The EIS is formatted according to a generally accepted outline which is specified in 40 CFR 1502.10. The Index has been expanded in an effort to assist in locating key information. The draft MPDES and air quality permits were included in the supplemental EIS and final versions of these documents have also been included in the final EIS as appendices. Regardless of the resource that might be affected by the proposed project, the description of the current condition of the resource is found in Chapter 3, Affected Environment. Likewise, the discussion of impacts for each resource, plus a few additional technical areas like geotechnical engineering, is found in Chapter 4, Environmental Consequences; and impacts are summarized in Chapter 2, Comparison of Alternatives, and the summary. Although EISs are not meant to be encyclopedic, a complex project with many issues of public concern requires more information and details that increase the size of the document.

19. The DEIS for this mine proposal violates a number of state and federal environmental requirements, and consequently, that a revised DEIS must be written. Our primary concerns relate to the likely violations of Montana and Idaho water quality regulations and the Forest Service's duty to minimize adverse impacts from mining operations on public lands. (1223)(1916)(1935)

The DEIS and MPDES Fact Sheets violate NEPA in that they do not disclose the plan of operations for numerous aspects of the proposed project. (1504)

Response: The draft EIS and MPDES Fact Sheets published by the agencies do not violate state and federal requirements including MEPA and NEPA. EISs are disclosure documents to be used by public officials to make better decisions. However, EISs are not meant to be encyclopedic and,

therefore, all details cannot be included. Plans and draft or preliminary designs for the various mining facilities are on file at the lead agencies offices and are available for public review.

The draft EIS and the MPDES fact sheets published by the agencies are intended to comply with MEPA and NEPA. The draft and supplement EISs as well as the draft MPDES permit have been revised based on public comment and additional information to ensure compliance with applicable statutes including both the Metal Mine Reclamation Act and the Water Quality Act.

The EIS describes many designs — some are conceptual, others are in a preliminary stage. Final design details depend in a large part on the alternative selected, and in part, information that can only be gathered as a result of significant site disturbance. Thus the requirement for agency review and approval of final designs is for the purpose of ensuring that designs fall within the bounds of conceptual and preliminary designs and do not result in a substantive change in the previously disclosed impacts.

Alternatives and mitigations have been developed to minimize impacts. These alternatives and mitigations are described in Chapter 2 and evaluated in Chapter 4 of the EIS.

20. The agencies should go back to the very poor DEIS and renovate it before considering anything like an MPDES permit. And if there are substantive changes in the proposed plan, the public must be given an opportunity to comment on those plan changes. (1196)

It appears that other alternatives and options are going to be studied. Will there be a supplemental DEIS? (1248)

Supplemental DEIS should be prepared that provides a new and detailed analysis of water quality issues including peak daily flows and the impact on bull trout recovery. (1635)(1643)(1925)(1995)

Response: A supplemental EIS was prepared to disclose a new alternative developed in response to public comments on the draft EIS and new information leading to new analyses obtained by the agencies as required by NEPA and MEPA (1502.9(c) CFR and 17.4.621 ARM respectively.

The new alternative, Alternative V, in the supplemental draft EIS was driven by issues raised in public comments on the draft EIS; primary issues were surface and ground water quality, visual quality, and tailings disposal facility stability; other issues resulting in new mitigations include wildlife, fisheries, and aquatics. The new alternative addressed in the supplemental and final EISs incorporates the use of paste technology to deposit the tailings on the ground surface, alternate waste water treatment systems, and an enclosed rail loadout facility. New information was obtained regarding habitat for fisher, lynx, and wolverine. More data was collected on harlequin ducks. A Biological Assessment (BA) for bull trout was developed and the BA for other threatened and endangered species was updated. The use of GIS data resulted in more accurate measurements over manual methods and changed acreage numbers in a number of places throughout the EIS. The final EIS incorporates applicable information from both the draft the supplemental EISs.

21. The DEIS should have evaluated the ability and performance of the state and federal agencies to enforce permit requirements and environmental laws. This includes past enforcement and monitoring record, funding commitments and identification of potential problems that could inhibit the agencies from doing their job (ie., potential or planned funding shortfalls, changes in legislation, etc.). This is especially critical because the DEIS admits a lot of uncertainty about the effects of some aspects of the operation, and therefore defers analysis and enforcement of several items by the agencies until after the mine is permitted. Because MEPA and NEPA documents are supposed

to disclose potential effects of actions, they should also disclose all potential scenarios--including those dealing with agency abilities--affecting how much impact the mine will generate. (1526)(1960)

Response: MEPA or NEPA do not require the enforcement and monitoring abilities of the regulatory agencies to be analyzed in an EIS nor does the legislature allow the Montana DEQ to defer its enforcement responsibilities under the Metal Mine Reclamation Act or the Water Quality Act for funding reasons. The impacts of a proposed action on the human environment are covered, not agency abilities, funding, or past actions. Should the project be permitted, considerably more data will come in as part of final design. This data will need to mirror the assumptions made in the EIS. If new data shows more impacts than depicted in the EIS, further MEPA/NEPA analysis may be needed. The analyses are not deferred. The EIS evaluates significant issues of public concern. However, review and approval of final design is deferred.

22. In the Final Environmental Impact Statement, please include a table which displays all of the probable violations of environmental laws as compared to the probably violations of mining laws. (1670)

Response: It would not be possible to predict and describe probable violations of environmental and mining laws. Violations could occur if the operation did not comply with one or more laws and/or the approved mine permit and associated permits. Review of individual laws and their regulations would identify how each defines a violation and the penalties.

When preparing an EIS, the preparers must assume that if a proposed plan can work and meet applicable standards and regulations, then the company will comply with the plan if approved. If there is a known probability that some facility could fail and result in a permit violation, then the EIS discusses the risk of failure and the possible impact(s) of such a failure. This has been done specifically for tailings impoundment failure and mine subsidence and more generally for other facilities and plans.

23. I found the organization of the DEIS seriously flawed in its failure to describe the complete Alternative IV in one continuous sequence. Your document requires the reader to formulate Alternative IV by organizing in her/his mind bits and pieces of information from Alternatives II and III. (1288)

Response: The agencies were attempting to keep the size of the document under control by not repeating entire sections of description that did not vary from one alternative to another. Recognizing that this could result in some confusion, a comparison table of features of the alternatives is included in Chapter 2, Part V: Comparison of Alternatives of the final EIS. The description of the preferred alternative, Alternative V, has been expanded to describe all aspects of the alternative even those items carried forward from one or more other alternatives.

24. The DEIS has so many untested or inadequately-tested methods and incompletely-designed aspects that it is hard of me to believe that even ASARCO would be so naive as to have submitted it for public review at this stage. (1914)

Response: The draft EIS is a joint agency document; not the applicant's (ASARCO or Sterling). Nevertheless, the applicant has provided additional information when it was determined that existing information was inadequate for completing the environmental impact analysis. Additional information had been submitted by the applicant for preparation of the draft EIS and more data, plans, and more detailed designs were prepared and submitted for review and preparation of the supplemental and final EISs as a result of public comments. See also prior responses to comments on design adequacy,

25. Asarco is also concerned that very little consideration or acknowledgment of the general lack of impacts associated with the construction and operation of nearby Troy Project was used in the DEIS to assist in determining the potential for project-related impacts. It is rare that an almost identical mining project has been developed and operated by the same project applicant in close proximity to a new project being evaluated in a DEIS. The DEIS failed in not more closely considering the operational history of the Troy Project, including the long-term local economic benefits derived from the project, in examining the potential for impacts associated with the Rock Creek Project. (1589)

Response: Additional data from the Troy Mine has been incorporated into the final EIS with regards to geochemical analyses, acid-mine drainage and socioeconomics. See Chapters 3 and 4, Geology, Hydrology, and Socioeconomics.

26. Page 2-109, Noranda Minerals Corporation: Since the future development status of the Montanore Project is unknown at this time, the DEIS needs to consider how long this project's previously approved permits will remain valid, and how this may affect the project's ability to proceed with development in the future. Given the very real uncertainty now involving the near-term forward movement of the Montanore project, Asarco does not feel that it is appropriate for the agencies to identify "cumulative" impacts occurring from the Rock Creek Project, and to identify proposed cumulative mitigation requirements based on the near-term development of the Montanore Project. The identified cumulative mitigation requirements have a very significant effect on the Rock Creek Project, and need to be re-evaluated in the Final EIS based on the most recent information concerning the potential near-term development of the Montanore Project, including the time frames involving validity for previous permit approvals granted for the Montanore Project. (1589)

Response: The Montanore Project has been permitted under the Metal Mine Reclamation Act and the agencies do not have any reason to withdraw that approval nor has Noranda Minerals Corporation requested withdrawal of the permit. Therefore, it must be considered in cumulative impact analyses in the EIS. Text in the final EIS has been modified to indicate that the Montanore Project has not been constructed and that there is no known timeframe for its construction and operation at this time.

The Certificate of Environmental Compatibility and Public need for the construction of the Montanore 230-kV transmission line was granted to the Noranda Minerals Corporation and Montana Reserves Company by the Board of Natural Resources and Conservation on June 3, 1993. This certificate expired on June 3, 1998 and Noranda or a new owner would need to apply for a new certificate for this or a similar facility in order to develop the Montanore project as permitted.

27. The agency people have clearly demonstrated an inability to represent the best interests of the public; please have the comments to the DEIS interpreted and compiled by independent experts, not the people who wrote the document in the first place. (1732)(1737)(1738)(1741 - 1744)(1746)(1747)(1913)

Response: The EIS has been prepared primarily by third-party consultants as allowed under MEPA. However, certain portions of the document have been prepared by Forest Service and state employees. A process called "Content Analysis" was used to identify and sort public comments. For more information on this process, please contact the Forest Service. Using this process, substantive comments were identified and then sorted into 18 major categories and several subcategories within most major categories. The interdisciplinary team reviewed the comments and then grouped similar comments, merged identical ones, and moved all or portions of comments that were miscategorized to more appropriate categories. The technical specialists for each resource were then responsible for preparing responses to each comment or group of similar comments. A list of commentor identification numbers is attached to the end of each comment or group of comments to track who submitted the comment or comments. The original letter or letters from which the comment was taken are in project files at the Montana DEQ in Helena, Montana, and the Kootenai National Forest Supervisor's Office in Libby, Montana. Persons interested in reading the detailed comments can

review them at the agency offices or request a copy of a letter or the file for the cost of copying and postage. A full set of comment letters fills numerous 3-ring binders.

28. Kootenai Tribe of Idaho is pleased that the DEIS acknowledges the fact of impacts at ``varying level'' and that significant impacts may and will occur if this project goes forward. The Tribe request that the NEPA Regulation be enacted and that substantial study and documentation be conducted on all of the issues that are outlined on pages 2-117, 118. Washington Water Power is currently going through their re-licensing process on the Noxon Rapids and Cabinet Gorge Dams. They have conducted substantial studies on how operations of their projects will affect the environment. Their study plans should be used as a model of how this documentation and support should occur. (2026)

Response: The detailed studies being prepared by Washington Water Power (now Avista Incorporated) are driven by the Federal Energy Regulatory Commission regulations pertaining to dam licensing. The agencies have made use of information in those reports when possible to supplement information collected by the applicant and its consultants for the Rock Creek Project. Public comments resulted in the preparation of a supplemental EIS as required by MEPA and NEPA. Please see other comments in this section regarding public comments on lack of information.

29. Given the EPA's low rating of the original DEIS, the agencies should go back to the very poor DEIS and renovate it before considering anything like an MPDES permit. (1196)

Response: The rating given by the EPA on the draft EIS was EO-2 (Environmental Objections, insufficient information). In response to public and agency comments, a supplemental EIS was prepared and EPA's rating went up to EC-2 (Environmental Concerns, insufficient information).

30. The Superfund status of parts of the Clark Fork, toxic train spills, potential for other train or truck spills from ASARCO, the loss of fish habitat from dams, as well as the potential runoff from ASARCO's proposal need to be addressed as cumulative effects to the Clark Fork River. (1637)

Response: The inclusion of superfund sites and activities on the Clark Fork River, loss of fish habitat from dams, and toxic train spills is beyond the scope of this document. The remaining items are already included in the analyses.

31. My first concern is the lack of data & scientific conclusions in the DEIS especially pertaining to a project of this size, with the potentially environmental damaging consequences, and given ASARCO's past track record of supposedly low impact mine sites. (1321)

Response: An EIS is not encyclopedic in that it is not to display all information and data possible, but to summarize that information and data which are necessary for the analysis of the project being proposed. Since the publication of the draft EIS, the Agencies have gathered data to more fully delineate changes to alternatives and to mitigate or modify identified impacts. More information was gathered for some of the following areas: sensitive plant and wildlife species, water quality treatment, Rock Creek stream analysis, sediment production, alternative description, bull trout, acid rock drainage, air quality, lined tailing impoundment, tailing impoundment design, water quality, etc. Changes can be found in these respective sections in Chapter 4 of the final EIS.

32. The picture painted by the EIS was very negative with the worst case scenarios being emphasized. This in not reality for most. The environmentally sound practices used by ASARCO were not given equal focus as a deterrent. The way it is written implies that ASARCO purposefully intends to violate state and federal laws. This needs to be corrected. (1358)

Response: The applicant submitted their plan of operations in 1987 which started the Agencies' analysis of their proposal. Many things about the project have changed over time. The applicant has elected to keep the plan for the most part as originally submitted. They knew changes would be

made and that these changes would be placed in subsequent alternatives developed by the Agencies. In analyzing the impacts of an alternative on a resource, through the probability of an impact might be slight, the Agencies need to show what could happen. The EIS lays out a conservative analysis in which the possibility of problems is fully considered. The Troy Mine has been used extensively as an example of what has worked.

33. The draft EIS should site examples of similar mines and environmental conditions, compare what the environmental impacts are, and clearly state when they are unknown and potential risks. (1751)

Response: NEPA and MEPA require the Agencies to identify the affected environment and the impacts of the proposal on it. Where appropriate for reader understanding or as an example, other mines might be referenced. The Troy Mine is cited because it is a similar mine in a similar geologic setting.

34. Can the location of the off-site smelter(s) referred to on page 2-19 likely to receive and process the metal bearing sulfide concentrate from the Rock Creek Mine be identified or at least estimated so that environmental impacts of the smelting operation can be analyzed or estimated? (1214)

Response: The evaluation of impacts from smeltering the concentrate are beyond the scope of this EIS. The smelter to be used will be the one which offers the best price per ton of concentrate. Over the life of the project Sterling may switch smelters a couple times or they may stick with their original choice. The majority of the Troy concentrate went to an ASARCO smelter at El Paso and some went overseas and to Canada. It is unknown where the Rock Creek ore concentrate would be sent to. Assuming an existing U.S. smelter is used, that site has already been required to comply with air, water, and waste laws and thus is not subject to further review.

35. Page 1-1 The Purpose and Need Section should include more of a discussion of the need for copper and silver. What is the supply and demand for copper and silver in the US? Will any of it be exported? (1912)

Response: Copper and silver are priced and exchanged within international markets. While the supply and demand for copper and silver in the U.S. can be estimated, such estimates are fleeting and subject to the ongoing changes in international markets, technological changes and shifts in supply/demand relationships. From a long-term perspective, the relative price of copper has been declining for over 150 years (see Freudenberg 1992) and there is no reason to expect this trend to change. Similarly, the relative long-term prices of most minerals has been declining (Freudenburg 1992). The amount of industrial raw materials need for one unit of industrial production is now no more than 40 percent of what it was in 1900, and the rate of decline is accelerating (Drucker 1986).

Whether or not any of the minerals produced from the proposed project would be exported, the minerals would be traded and priced within international markets, where ongoing changes in new supplies would be expected to shift relative balances, prices and delivery locations. Thus, even if this project's production were to be sold within the U.S., the projects' new supplies would merely redistribute some patterns of international trade, but may not be directly tied to specific changes in the quantities of U.S. mineral exporting or importing.

36. I want the law, rules, regulations of all Federal, State, County and local agencies to be met totally and that to be the deciding factor, not cost-effectiveness for ASARCO. (1527)

Response: The Agencies' determinations whether or not to permit this proposal will be based on the legal requirements set out in the various statutes summarized in Chapter 1.

37. It would appear to me that the entire project needs to be reexamined, both from a cost benefit and environmental standpoint! (1444)

Response: As part of the process in going from the draft and supplemental EISs to the final EIS, the interdisciplinary team reviews what they had written and based on the public comments received on the draft and supplemental EISs changes or modifies the document accordingly. The Agencies are not required to do a cost-benefit analysis of the project unless it is relevant to the decision to be made between environmentally different alternatives (40 CFR 1502.23). It is up to the company to decide if they can afford to mine with the requirements the Agencies place upon them. The permit requirements for the most part are developed from the EIS process and will be specified in a record of decision.

38. Potential socio-economic impacts to the Noxon - Trout Creek area from a new mine are not sufficiently contemplated in the DEIS. A cost benefit analysis of the mine proposal (including years of monitoring and treatment) compared to no action should be included in the EIS analysis. Potential worst case scenarios should also be considered…The analysis must assess values of the proposed mine against all environmental and economic costs. The value of and need for the minerals should also be discussed and compared against values of the Cabinet Mountain Wilderness and area waters. The social costs of the mine have not been adequately addressed. Support of the mine will require substantial public investment in additional services, including police, fire and schools. Workers for the mine will largely be drawn from outside the area in all probability and require local housing and services. Traffic will increase as well requiring new or renovated roads outside the mine project. These costs must be included in any cost benefit analysis. Indeed, cost benefit analysis will probably not be adequate to address quality of life concerns of local residents. The eventual cost of all the reclamation monitoring, mitigation and preventative measures, taking place over "several decades," makes the true costs of such a project impossible to project and likely far over any guesses given in the DEIS. We believe that if the EIS would take an honest look at all of the costs to society-long term and short term-that would be caused by the project, they would far outweigh the benefits of the mine. (1196)(1638)(1670)(1695)(1732)(1737)(1738)(1741 - 1744)(1746)(1747)(1913)

Response: A full cost-benefit analysis and the relative economics of a wide variety of best and worst case scenarios could be conducted. This analysis could provide a wide range of estimates of the relative benefits and disbenefits of alternative courses of action. This information would supply additional analyses to be considered by the public and by permitting authorities. However, permitting authorities must base their decisions on the more limited spectrum of "reasonable"permitting alternatives developed through the environmental analysis process, and their decisions are bound by specific permitting standards, thus benefit cost analyses that are unrelated to "reasonable" specific actions (water quality, wilderness, etc) could be of little use. The agencies have chosen to use more general economic analyses of alternative combinations of actions (see Chapter 4) and have tried to adopt mitigating measures that would ensure that worst case (catastrophic action) scenarios would be extremely unlikely.

The applicant's Hard Rock Impact Plan provides the means for mitigating some of the social costs--those that would impact local government agencies (only within the state of Montana) and their services such as police, fire, schools, and public water and sewer systems. See Alternative V description in Chapter 2 for more details. This plan, however, would not mitigate impacts to private services and facilities nor ensure that there was sufficient housing for in-migrating employees. The Department of Transportation has indicated that they might install a turn lane at the intersection of Montana Highway 200 and the relocated FDR No. 150, but did not foresee any other major changes other than already scheduled road repairs and maintenance. State highway funds cover these expenses and those funds are generated primarily by gasoline taxes. Additional purchases of gasoline and new taxes paid by in-migrating people would help to provide additional funds to those sources. There are too many variables to put an actual dollar amount to the social costs, but a

qualitative discussion of impacts can be found in Chapter 4, Socioeconomics and Transportation as well as Recreation and Wilderness.

39. A finalized tailing impoundment design must exist BEFORE a water permit is granted ASARCO. (1529)

It is increasingly apparent that not only is consideration of this waste water permit premature but that the DEIS also was issued prematurely. Specific plans for the tailings facility were deferred in the DEIS. "The tailings impoundment design is preliminary and would be modified as additional information is obtained." (1196)

The proposal calls for an unlined tailings impoundment of untested design, Analysis for this is shockingly insufficient, as summed up by a statement for alternative 2, which says: "The tailings impoundment design is preliminary and would be modified as additional information was obtained." This negligence is just as obvious under alternative 3, which states: "The tailings impoundment design would be finalized as additional site information was obtained from the final design investigation process." The intent of NEPA is to have all information available for a full review by all concerned parties as part of the EIS process; not to approve now and figure out what to do later. The tailings facility must be designed prior to NEPA analyses. (1638)

Why is ASARCO not required to complete the design of the tailings impoundment and the treatment and collection systems before they can apply for all these permits? Will all the designs be finished before or after the final permits are issued? (1248)

Response: It is not necessary for the applicant to provide a final design for the tailings impoundment or other facilities in order for the Agencies to analyze the impacts of the tailings impoundment. Final designs would be prepared after the permit is issued, and would be subject to review and approval by the Agencies.

40. The designs I have seen do not show capture trench locations, capture will locations, or pumping volumes necessary. These should be determined prior to permitting. (2082)

Response: Final design would be approved by the Agencies before construction. Alternative V eliminates the need for a capture well system except on a contingency basis although there would be an underdrain system to capture seepage. Should a pump back system be necessary, it would be reviewed and approved by the agencies prior to implementation.

41. RWMP (ASARCO 1995) Apndx. B. DSL COMMENTS # 3 : If there are additional data collection needs, how did state determine sufficiency requirements for EIS project beginnings? (1780)

Response: Water resources baseline data were deemed acceptable for the purposes of describing existing conditions during the agency completeness review process.

42. We must have adequate baseline measures of all wtr. quality standards for Montana & Idaho in order to even know if there's been an increase. But what if there is? Can they do anything besides buy bottled water for everyone on that aquifer? (1637)

There is not enough baseline data In this EIS. (1248)

The agencies need to do the baseline so that we can have a comparable study. (1438)

Baseline data needs to be gathered at the Rock Creek site for all parameters and for a sufficient period of time to be comparable. (1438)

Response: Baseline conditions are well defined and are presented in Chapter 3. The data is adequate to describe potential impacts, to determine the potential need to additional mitigation, and to

determine whether a decision to permit could be made. Please see Chapter 4 - Hydrology and Chapter 2 which includes descriptions of monitoring and contingency plans.

43. Pages S-1 and 1-1 These pages need to discuss the purpose and need from the applicant's perspective and from a public interest perspective in order to meet COE 404 EIS requirements. Request the following be added to the discussion of purpose and need on these pages: "In the Clean Water Act, Section 404 permit application, it is stated that the purpose of the ASARCO proposed activities is to economically recover copper and silver from the ore body associated with the project. Therefore, the basic project purpose is to mine copper and silver. In accordance with the Clean Water Act, the Corps of Engineers is required to consider and express in it's NEPA document the activity's underlying purpose and need from a public interest perspective. Thus, the underlying project purpose from a public interest perspective is to supply the public with needed copper and silver by mining in an environmentally sound manner." (1912)

Response: Thank you for your comment. The basic project purpose was stated in the EIS is to economically mine minerals from the Rock Creek deposit and to develop these interests. Society needs and demands these metals. Taken in context, the purpose and need from both the applicant's and the public's perspectives have been stated.

44. Impact mitigation is supposed to replace values for impacts that cannot be avoided after thorough consideration of complete avoidance and, secondly, reduce the impacts as far as feasible. The purpose of mitigation is not simply to allow loss of resources for project costs. Mitigation proposed for Rock Creek does not appear to be well thought out regarding just what is being lost (the entire aquatic system of the stream), just what is being replaced, and appropriate guarantees of success of replacement. This organization firmly believes the proposed mitigation to be inadequate. (1595)

The DEIS fails in only providing mitigations. Mitigating impacts, or fining violations, does nothing to bring back resources that get damaged. (1916)

Measures should be taken to assure minimal environmental impact (i.e. replace tailings, ensure no contamination of ground water, etc.). (1931)

Response: Under MEPA and NEPA, alternatives are developed to avoid, prevent, minimize, or mitigate impacts, especially those relative to the significant issues identified during scoping. The mine plan, particularly under Alternative V, was designed to prevent many impacts up front and to include monitoring for numerous resources so that impacts can be detected or trends identified so that contingency plans can be implemented. Several contingency plans have been included in Alternative V and Appendix K for the more likely scenarios but there are too many variables to determine every possibility.

45. What scientists have you consulted to determine potential damage to the ecosystem and to evaluate the program proposed by ASARCO? What are their qualifications? (1729)

Response: The list of people involved in the research, writing and internal review of the EIS is presented in Chapter 6. Agencies, companies, and organizations consulted are listed in Chapter 5.

46. Because the issue of water quality is or should be a critical component of this draft EIS and because this analysis is not yet available, we ask that the comment period on the draft EIS be kept open for 60 days following the release of the water permit application. Such a delay would allow us a chance to fully analyze the potential impact of this project on the water of Lake Pend Oreille. How can we comment on something we haven't yet seen? How could environmental impacts be analyzed and disclosed as required under NEPA without this information? (1245)(1280)(1292)(1351)(1373)(1457)(1651)(1735)(1778)(1780)(1925)(1946)(1957)

The Water Management Plan should be included as an integral part of the NEPA process. (1779)

The DEIS is filled with too much conjecture. The DEIS does not contain detailed information of analysis of water treatment methods for the mine's discharge to the Clark Fork River. This is contained in a separate Water Management Plan that is part of the separate MPDES Discharge Permit Application which won't be released until after the public comment period closes Dec. 6. How can environmental impacts be analyzed and disclosed as required under NEPA without this information? (1373)

Much of the discussion in the waste water permit application should have been an integral part of the DEIS. Instead it was deferred in an incomplete DEIS document to the MPDES permit application, making the public and agency review process fragmented and confusing. Detailed water treatment consideration must be part of the DEIS review. (1196)

Response: The comment period on the original draft MPDES permit and water quality related portions of the draft EIS was for 60 days even though the water quality information used to prepare both documents was the same. There is no requirement under MEPA/NEPA, MMRA, or the Water Quality Act to present analysis of both documents at the same time. However, the agencies did merge them in the supplemental and final EISs. Pertinent information from the water management plan for Alternative V has been summarized and described in the EIS (see Chapter 2, Alternative V, description). See Chapter 4, Hydrology and the proposed MPDES permit in Appendix D.

47. We're greatly disappointed that this discharge permit, and the water issues and water management plan it purports to analyze, were not included in the original DEIS for the mine. Packaging the water management and water quality effects analysis with the information that disclosed the mine plan and fishery and socioeconomic issues would have facilitated public understanding of the venture's impacts. The public also would have a better idea of the potential impacts had it had more access to the permit documents. Having copies at only a few public locations and charging $36 dollars for individual documents does not make it easily accessible. (2058)

Response: The permit application is available for review at the Montana DEQ offices in Helena, at the Kootenai National Forest Supervisor's Office in Libby, and the Cabinet Ranger District Office in Trout Creek, Montana. The permit application is also available in the Noxon public library.

48. Besides being prematurely considered, the Rock Creek wastewater discharge application is being tied to a DEIS that Mineral Policy Center and many other reviewers found extraordinarily biased and lacking in basic information. Indeed the EPA gave the document its very low "Insufficient Information" rating. The State of Montana and the U.S. Forest Service need to revisit the DEIS and address its numerous flaws and inconsistencies. Consideration should not be being given to an MPDES permit ? especially one based inpart on so faulty a NEPA/MEPA document ? at this time. (1638)

Response: The EPA rating on the draft EIS was similar to that provided to numerous other draft EISs across the nation. The purpose of a draft EIS is to find out how complete the document is and then to add additional information to resolve those deficiencies. The final EIS has been updated to respond to public issues and comments. It should be noted that EPA's rating on the supplemental EIS was one level higher than that for the draft EIS.

49. We understand that ASARCO might again be modifying the water management plan and treatment proposals. If this is true, how will the public be informed and what mechanism will be used to solicit comments? (2058)

Response: The potential impact of a proposed alternative water treatment scheme for Alternative V is discussed in Chapter 4, Hydrology of the final and supplemental EISs. Comments were solicited on the Supplemental EIS.

50. This office is particularly concerned with the economic, recreational, and fish and wildlife resources that depend on these water resources. We believe that cost figures should be provided for the reclamation as required by the National Environmental Policy Act in order that the decision makers and the public be adequately informed. (1427)

Response: NEPA/MEPA requires disclosure of the environmental effects of various alternatives and those impacts are described in Chapter 4. There is no requirement to provide information on the cost of reclamation. However, there is an estimated reclamation bond presented in Chapter 1. Detailed costs of this bond would be calculated once an alternative had been selected for Record of Decision (ROD). Bonding costs would be incorporated into the ROD and distributed to the public.

51. We could not find any mention about the operation and maintenance costs for the biological treatment and ion exchange system. We would assume ASARCO would take care of O&M during the life of the mine, but what about that time after closure? How does monitoring occur, and at what frequency? (1991)

What are the figures for the cost of restoring water quality, for the cost of maintaining and operating water treatment systems for years after the mine closes, for the cost of maintaining and operating the pumpback system for the tailings impoundment during mine life and after closure for at least 50 years and beyond if necessary, provide the cost to restore the water if the impoundment fails? (1616)(1635)(1453)(1356)(1918)(2006)(2049)

The DEIS document should include the figures of the true cost of restoring water quality when any experimental or other water treatment methods fail which all will certainly do to some degree. (1918)

Fiscal impacts have not been adequately disclosed. The cost of maintaining and operating the water treatment systems long after the mine closes should be disclosed. The same is needed for the cost of operating the pumpback system at the tailings impoundment. This long term maintenance may be necessary (in fact seems to be necessary elsewhere) and citizens need to know these costs. (2066)

Response: There is no requirement under MEPA/NEPA to require disclosure of the cost of implementing a proposed project unless cost was a factor used in making a decision between two alternatives. Cost will not be a deciding factor in this project. However, under MEPA, there is a state requirement to disclose the impacts that imposing discretionary regulatory restrictions would have on the applicant; if there was a less expensive way to achieve the same result, then the document must describe that method and the rationale behind selecting the more expensive requirement. This section has been added to Chapter 4 and discloses the costs of alternatives and mitigations that are neither specified by law or regulation nor are included in one or more of the applicant's permit applications. This does not imply that if the project were approved the mitigations would be optional; discretionary simply refers to whether or not the agencies have discretion to require the mitigations or if they are required by law. The costs of some of the mitigations mentioned in these comments would be disclosed in this new section. The costs of a few of the more major non-discretionary mitigations such as the alternate impoundment design under Alternative II, mitigations included in the MPDES and air quality permit, the threatened and endangered species mitigations, and most additional monitoring requirements are disclosed as well. Alternative III would result in approximately $14.7 million in discretionary mitigation costs, Alternative IV $14.5 million, and Alternative V $25.8 million.

The applicant has proposed an alternate system of waste water containment and treatment the agencies believe to be capable of protecting the quality of the area's ground and surface waters. The applicant has proposed pilot plant testing of both proposed water treatment processes (reverse osmosis and anoxic biotreatment cells) during evaluation adit construction to further define operating parameters including annual operation and maintenance costs. While wastewater treatment may be

required for a period after the mine closure, there is no evidence that the water treatment facilities will be required for at least 50 years after mine closure.

The cost of constructing and maintaining the mine wastewater treatment facilities would be determined during bond calculation but a bond estimate of 14-44 million dollars for water treatment is included in Chapter 1.

The pumpback wells would not be required under Alternative V except as a contingency measure should monitoring data indicate a trend toward non-compliance with MPDES permit limits for the tailings seepage discharge.

The cost of restoring water quality if the tailings storage facility (impoundment under Alternatives II-IV, paste facility under Alternative V) failed cannot be estimated at this time as there are too many variables to be considered. When, where, how the failure occurred, the volume of material reaching the river, and the duration of the event causing the failure and how long the material was being released into the river are only a few of the variables. The mining company would be required to cover the cost of any cleanup associated with the failure of the tailings storage facility.

52. The amount of baseline data ASARCO has submitted to the public is inadequate. (1359)

Require ASARCO to fund independent, intensive studies of all existing conditions at the Rock Creek site which bear on water quality, e.g. hydrological characteristics, analysis of what's in the water, and aquatic ecosystems influenced by the site. (1740)

ASARCO should be required to fund independent studies to predict all effects to all waters and water-based resources, including but not limited to Rock Creek, the Clark Fork River, and Lake Pend Oreille, in a worst-case failure of all the project's water-protection measures. (1740)

Response: For most resource areas, the amount of baseline data submitted by the applicant is adequate to analyze impacts. However, the applicant will collect additional baseline data for aquatics, hydrogeology, and rock mechanics during evaluation adit construction as required in the Evaluation Adit Data Evaluation Plan (see Appendix K).

53. We have not found the necessary details on the critical mine closure plan regarding these ground and surface waters water management issues. We believe that these specifics and related contingencies must be addressed in the FEIS. As noted previously we believe that application of paste backfill technology would reduce these concerns. (1214)

Response: The mine closure plan has been included in the EIS. Components of the closure plan can be found throughout the alternatives descriptions in Chapter 2, primarily under Adit Closure and various subsections under Reclamation. The paste backfill option was evaluated and dismissed as a viable option. See Chapter 2, Alternatives Considered but Dismissed for discussion of this option.

54. There is inadequate information on water quality, monitoring, seepage, treatment plant, and the mine in the draft EIS. (1364)

Response: Water resources monitoring, seepage impacts, water treatment, and the underground mine are discussed in additional detail in the EIS.

NEPA-801 Alternatives

1. Agencies should have analyzed a 5 day/week, 8 hr/day mining proposal - fewer workers, longer mine life, fewer environmental impacts than round-the-clock operation, slower "growth" of tailings so problems may appear before its to big to deal with. (1307)

Response: The company manages its own operation including the setting of the work schedule. If the changing of shift length would eliminate or minimize environmental impacts, the Agencies could require the change, but that is not the case here. The Agencies also need to take into consideration the economics involved, and running 8-hour shifts would not be economically feasible.

2. Propose a fifth alternative, a plan for a mine which sets the standards for: healthful work place - lack of wildlife impact - lack of noise, air, ground and water pollution - respect for the beauty of the areas potentially affected by the mine - respect for health and environment of their miners and we citizens potentially affected by the mine. (1240)

Response: Alternative V analyzed in the final EIS has made substantial improvements in minimizing impacts as compared to the original proposed action. Alternative V was developed to respond to public and agency comments and concerns. It is not likely nor common for an extractive operation to operate without and impacts. However, the role of the Agencies is to minimize and mitigate impacts to a level that protects the overall environment.

3. The DEIS offers a limited range of alternatives and neglects to propose any avoidance alternatives. This project appears to be incompatible within the proposed project area since there are no alternatives, that provide adequate mitigation to conform to regulatory framework. (1355)

With the overall detrimental impact to the area surrounding the proposed ASARCO Rock Creek Project, as well as the site itself, I fail to understand how the KNF and MDEQ can recommend any alternative other than Alternative I (no action). (1348)

The agencies should develop a more environmentally sensitive alternative: that would do a better job of protecting Rock Creek, the Clark Fork River, Lake Pend Oreille, the Cabinet Mountains Wilderness Area (CMW), the people and wildlife of Sanders and Bonner counties. Some of the topics that should be included and analyzed are waste utilization and value added tailings usage/reduction such as block manufacturing project which was looked at by Libby EDC. (1196)(1213)(1525)

Response: Since the draft EIS was released, new alternatives were developed and analyzed. Alternative V as displayed in the final EIS meets the requirements of law and regulations. The Agencies are required to have a reasonable range of alternatives. The Alternatives Considered But Dismissed section does display other alternatives considered and why they were dismissed. The analysis displayed shows that Alternative V could be implemented while meeting laws and regulations.

Sterling has looked at using the tailings to make cement blocks, but it is not economical nor does it negate the development of a tailings storage facility though it would be somewhat smaller in size.

4. Have the federal government buy out ASARCO's claims. (1196)(1207)(1220)(1304)(1309)(1330)(1334)(1360)(1421)(1532)(1719)(1724)(1929)

Response: The analysis of this alternative is displayed in the Alternatives Considered But Dismissed section of Chapter 2. As stated, the Forest Service does not have the authority to acquire (buyout) the Rock Creek Mine area. The Administration would need to decide that this was the course of

action as happened with the New World Mine Project and Congress would need to follow up by enacting and approving enabling legislation.

5. A combined operation would extend the economic life of these two Cabinet mining projects, delaying (but not preventing) the inevitable bust of the mining-related economic boom. (P1)(1207)(1213)(1220)(1270)(1304)(1309)(1330)(1360)(1381)(1384)(1397)(1401)(1418)(1429)(1492-1498)(1506)(1517)(1637)(1718)(1732)(1737)(1738)(1741-1744)(1746)(1747)(1780)(1916)

Response: The Alternatives Considered But Dismissed section of Chapter 2 has a fairly detailed analysis of a joint operation alternative. Although the alternative is feasible, the Agencies do not have the authority to require the companies to work together.

6. We strongly suggest that an alternative to deny a permit for this mine, considered to be one of the North America's largest copper/silver mines, be considered.(1427)

Response: A No Action alternative (Alternative I) was considered and analyzed in all three EISs released (draft, supplemental and final). The Agencies need to evaluate the company proposals and develop mitigations/modifications should they be needed to address anticipated environmental impacts. If impacts can be reduced to what is allowed by law/regulations, then the company has a right to receive a permit. If the agencies cannot mitigate the impacts to keep laws from being broken, then the company would need to modify or withdraw their proposal although DEQ could deny an application.

7. It is stated that alternatives were evaluated for several issues, and that some of these were dismissed because they were either technically or economically infeasible. Why weren't the specific alternatives which were considered listed along with the reasons they were dismissed? (1384)

Response: The Alternatives Considered but Dismissed Section in Chapter 2 of the final EIS does look at alternatives not carried forward and discusses why they were dropped from further consideration.

8. We recommend an alternative or alternatives be developed which rely on proven technologies, will require no maintenance following mine shutdown, and which will not result in significant impacts to fishery resources and the aquatic biota which support them. We further recommend different scenarios for system failures or other problems be developed and the response to these problems by the aquatic ecosystem be modeled. At the very least, worst case scenarios should be thoroughly analyzed and programs developed to deal with these situations. Given the potential for serious impacts to aquatic resources, we believe it is inappropriate to move ahead with the project and develop mitigation and maintenance strategies later on. Every effort should be made to anticipate problems and develop strategies for dealing with them prior to a decision being made to select an action alternative. (1445)

Response: In response to public and agency comments, Alternative V was developed and analyzed. Alternative V would use proven technologies, be it water treatment or tailings handling and management. The Agencies have looked at potential failure modes and would require design parameters take these into account. In most cases preliminary design information was used in alternative design. Should the applicant receive a permit, their final design information would be reviewed by the Agencies to see that it conforms to preliminary design information and assumptions used in the NEPA/MEPA analysis. The analysis also identifies many mitigations and monitoring requirements. The company would be responsible for maintaining all reclamation and monitoring processes until sampling and inspection shows the various standards can be met without treatment and the Agencies agree that reclamation has been achieved, and monitoring had been sufficient.

9. If there must be a mine: Present details of all operational and associated plans to the public for public review before permitting. The mill site should be as far up the W Fk Rock Ck as possible, the fish in the W Fk Rock Ck

removed, and a series of sediment traps built in the W Fk Rock Ck in an attempt to contain the mess. Require two separate water treatment systems and discharge permits. One up the W Fk Rock Ck, one at the tailings impoundment. Allow no pipelines other than the ones for transport of tailings to the tailings impoundment. Do not line the tailings impoundment. This will decrease its stability. Require a two-person continuous surveillance program, paid for by the company, conducted by private consultants, to insure that the permitted plan is adhered to and to conduct all monitoring. Consultants should be from OEA Research. (1504)

Response: The public had and continues to be an integral part of the environmental impact analysis process which analyzes and discloses impacts of the proposal and alternatives. Should a decision to grant a permit be made there would be an agency review of design parameters. The Agencies would be responsible for ensuring the designs fall within the impacts and assumptions/standards described in the final EIS and ROD. The Agencies would rely on its specialists and third-party contractors hired to help facilitate plan review. The design of the alternatives is laid out in Chapter 2 of the final EIS. The method and frequency of monitoring would be laid out in the monitoring plans as described in Appendix K of the final EIS.

10. Consider reduced scale of operation. (1719)

Response: The scale of the operation is up to the proponent, in this case Sterling, unless environmental impact analysis shows that an alternative needs to be developed by the Agencies to answer a significant adverse environmental impact. Based on the analysis, there has not been a need to reduce the scale of the operation.

11. Page 2-1. We have requested by letter dated November 17, 1995, that the U.S. Forest Service (the lead Federal agency for preparation of the EIS) request that the applicant provide us with a report which outlines the process and alternatives that were considered and evaluated prior to applying for a Clean Water Act, Section 404 permit. If there are alternative deposits examined by the applicant which are beyond the exploration stage and could be mined as an alternative to mining at the Rock Creek site, the EIS may have to evaluate them as viable alternatives. If the proposed site was the only reasonable alternative examined, then the array of alternatives (alternative designs at the project site) presented in the EIS appears adequate. However, the EIS must explain why other alternatives examined by the applicant were not reasonable. (1912)

Response: The Agencies are reviewing a proposal to mine the Rock Creek deposit. It is outside the scope of this analysis to look at the potential of the applicant to mine some other deposit in some other location. Please see the Alternative Considered but Dismissed from Further Study section in Chapter 2 that discusses the concern raised.

12. How about an alternative that is a mine with little or no environmental impacts? How about a mill site outside the Rock Creek drainage? (1916)

Response: Chapter 2, Alternatives Considered but Dismissed describes the range of mill site locations analyzed as part of the alternative development process. The Agencies, through alternative designs, modifications, and mitigations, have tried to limit the potential impacts.

13. Why has Alternative 1 not been given a more thorough analysis? On page 2-16 it is stated that "ASARCO has not yet replied" to the proposal of willingly selling its property to the United States. This lack of response, and hence lack of analysis of this exceptionally critical bit of information, makes the analysis of Alt 1 incomplete. Will you have a response from ASARCO in the Final EIS, along with an expanded analysis if the response is favorable? (1196)(1288)

Response: When the draft EIS was released to the public in July of 1995, ASARCO had not officially responded on the option of the government buying out their interests. Since the release of the draft EIS, Sterling has responded that they are a mining company and are not interested in selling

their mineral interests, they want to develop these resources. The analysis of Alternative I in Chapter 4 has been expanded for many resources to more fully show the range of impacts.

14. The language in some of these paragraphs is disturbingly slanted toward ASARCO's interests and thus inappropriate for a document whose purpose under NEPA is to provide the U.S. public with a clear review of potential environmental effects of proposed projects. Some of the scenarios described tend to lead the reader to accept the idea that Alternative I--No Action--is untenable. For example, the last sentence in par 1: "If the courts agreed with ASARCO, then the agencies could be required to approve the plan of operations with whatever court stipulations were mandated and the impacts would be similar to those described in C4 for the action alternatives." The last phrase makes it sound as though any court stipulations would yield the same impacts as described in the DEIS. How can the agencies project what the courts might decide? Why is this implied? (1214)(1288)

Response: This paragraph has been revised as follows to reflect that the court would have a range of options available. If the court determined the project could not comply with the laws, then the applicant would be prohibited from developing the mine as proposed, but it would not preclude the applicant or a new applicant from submitting a new plan of operations/permit application. Any new application would then be required to undergo a new environmental impact evaluation. If the courts determined the project could comply with the laws, then the Montana DEQ could be required to approve the plan of operations with whatever court stipulations were mandated and the impacts would be similar to those described in Chapter 4 for the action alternative(s) that most closely resembled the court ordered alternative. The U.S. Forest Service can "not approve" and the Montana DEQ can deny permits that do not meet all applicable laws and regulations, so the No Action alternative is indeed a viable option, even though it has not often been selected in the past.

15. Having found in Table 2-8, page 2-83 regarding comparison of the mill site alternatives. Given the adit elevations, grades and lengths, it appears to us that the mine adits for Alternative II and Alternative IV will enter the ore body at different elevations (i.e., Alternative II = 5234 feet; Alternative IV = 4885 feet). It appears that the adits with Alternative IV will access the ore body approximately 350 feet lower than the Alternative II adits. Is this correct? Are adit grades, lengths, elevations in Table 2-8 correct? Will accessing the ore body at different elevations result in significant mine design differences between Alternatives II and IV? (1214)

Response: The adits would access the primary crusher at different elevations. The mine design would not be much different except for access to primary crusher & additional adit length to reach the ore body under Alternatives IV and V.

16. Potential expansions of the Rock Creek Mine, including the possibility of a decision to initiate open pit mining in the future, should be part of the analysis. (1638)

Response: There is no proposal to initiate open pit mining and it is not a reasonable alternative mining method for this ore body because of the depth of most of the ore body. Thus there is no mention or analysis of this option.

17. Create an alternative which will keep impacts to wildlife resources to an absolute minimum, and which will fully mitigate the impacts to our water resources, thus preserving the very important clean water which we and the local wildlife depend upon. (1946)

Response: The supplemental EIS was prepared in response to public and agency comments and included the analysis of a new alternative (Alternative V) which used a different water treatment method and utilized a paste tailings, both of which were developed to minimize impacts on the water resource. The impacts to several wildlife species were great enough that design features of the new alternative were specifically created to minimize effects disclosed in the draft EIS under Alternatives II to IV. For more discussion on each topic, please see Chapter 4, Hydrology and Biodiversity in the final EIS.

18. Examine an alternative that minimizes the impact to the Cabinet Mountains Wilderness. (1896)

Response: The only direct impact to the wilderness would be the possible placement of an air intake ventilation adit should it be needed. At times, sounds from the project will be heard from places within the wilderness, but currently sounds of human activities may be heard. There were no alternatives considered which had no impacts on the wilderness. The project, should it be implemented, would have a very minor impact to the wilderness and then from only a few places within the wilderness.

19. Very little is mentioned in the DEIS about waste rock dumps. How large would they be? At what slopes? Where would they be located? Have alternative sites been considered? What precautions would be taken to address potential AMD problems? All this must be discussed detail. (1638)

Response: All alternatives would have a waste rock dump at the evaluation adit. Alternatives II and III would have one or two mine waste dumps (respectively) near the mine portal. Alternatives IV and V would have no separate mine waste dump. Instead, the waste rock from mine adit construction would be used to construct the mill pad, for road aggregate, to construct the starter dams or tailings toe buttresses, and for finger drain construction. For information on acid mine drainage please see Section GEO-104. See alternative descriptions in Chapter 2 for some details about these facilities.

20. Consider alternately powered vehicles for the mine area (propane or electrically powered) rather than traditional diesel machines. (1223)

Response: Electric underground haul trucks would be used in Alternative V instead of diesel ones as proposed in the other alternatives. Under this alternative other heavy equipment would utilize the low emission diesel engines which have lower emissions then the engines which might normally be used or required in this area.

21. An alternative location for the ventilation adit that would be constructed in the Cabinet Mountain Wilderness should be considered as part of the EIS review. (1638)

Response: The Agencies have proposed an alternative site which impacts less area then the one proposed by the applicant. The proposed location of the adit is such that few would ever encounter it in their use of the wilderness.

22. Page 2-4: states that in an EIS, the Agencies are required to evaluate the environmental effects of the proposed action and reasonable alternatives to it. The DEIS has failed to do so. The incomplete description of the proposed action precludes meaningful evaluation of the environmental impacts. Also, the DEIS failed to consider reasonable alternatives, ie lining the tailings impoundment and using conventional water treatment system. (1223)

Response: The Agencies believed the alternative descriptions as displayed in the draft EIS and supplemental EIS were in enough detail to allow the average reader to get a good understanding of what was being proposed. If a reader wanted or needed more detail, Sterling's Plan of Operation/Permit Application is available at agency offices and certain public libraries in the area. The discussions in many sections of the final EIS have been expanded. Lining the impoundment is discussed in Chapter 2, Alternatives Considered But Dismissed.

23. Page 2-83: states alternate mill site would be located above the 10 foot flood stage (about the 100 year flood event). The mill site in the 100 year floodplain or not? If it is not, what frequency flood, ie 101,150,500 year event, would damage the proposed mill site? (1223)

Response: The Alternative IV and V mill site would be way above the 100 year flood plain since it is scheduled to be built on up to 50 feet of waste rock. The lowest toe of the constructed mill pad would be outside the 100 year flood plain .

24. Page 2-30: shows concentrate stored in piles to be moved by front end loaders. Page 2-31 shows 51,000 tons per year of concentrate shipped out. How will concentrate be stored at the mill site after it has been processed and how will spills and leaks of concentrate be prevented? The concentrate is a significant source of copper, silver, and residual chemical reagents to surface water and ground water. (1223)

Response: Concentrate would not be stored for any long duration at the mill site. Under Alternatives II to IV the concentrate would be loaded into trucks and taken to a rail loadout facility. All runoff from within the mill site would be recycled into the mill processing circuit and would not enter Rock Creek. Under Alternative V the concentrate will no longer be temporarily stored at the mill, but instead sent as a slurry in a pipeline to the rail loadout facility to be dewatered and placed in covered rail cars. This whole facility will be enclosed which will eliminate any possibility of having the concentrate escape to surrounding areas.

25. Page 2-97 "...and is not likely to be economically viable. Again under unsegregated tailings last sentence, "...and this technology is not proven as an economic tailings disposal method." It appears that the agencies, in particular the state, in the context of their authority as a permitting agency have assumed that their primary responsibility is guaranteeing the economic viability of any mining project that is proposed. When in fact the Montana Metal Mine and Reclamation Act (Title 82, Chapt. 4, Part 3, MCA) provides that the purpose of this law is to prevent land and surface water degradation by requiring lands disturbed by mining, whether they be federal, state or private, to be stabilized and reclaimed. Page 2-14 Part II: Alternatives Description, 2nd para. "KNF and DSL currently do not have the authority to deny the project if the applicant demonstrates compliance with all applicable laws and regulations". The key words are "if the applicant demonstrates compliance..." On pg. 2-98, 3rd item, the case is made about the surface disposal if tailings costing $.80 -$2.50 per ton, versus $3 - $12 per ton for cemented backfilling and the metal values of the ore $25 per ton, that ASARCO was proposing to mine. The law says: do it right and prevent degradation; not, do it and provide ASARCO a profit. (1780)

Response: The alternatives which were mentioned were not arbitrarily discarded. Backfilling alternatives were analyzed in the Alternatives Considered but Dismissed section of Chapter 2 and were dismissed for a variety of reasons of which cost was only one factor. Other factors included operational concerns, technical problems, and in some cases equal or greater impacts on the surface. In general, if Sterling could comply with federal and state laws and regulations with a less costly method of accomplishing a particular action, then the agencies have no authority to require them to use a more costly process unless Sterling proposed to use the more costly process in one or more of their permit applications. MEPA and NEPA require alternatives to be reasonable and feasible.

26. I want you to see that the tailings pond option is not the final solution to the tailings. I want them temporarily held near the mine site for eventual refilling of the mine; or I want them hauled away to a suitable toxic waste holding site. (1527)

Response: The backfilling of tailings was analyzed in Chapter 2. It is important to note that the tailings are not toxic by definition. Hauling them away is thus not necessary nor would it be practical. Holding the tailings temporarily would not be practical and, in fact, would impact as many acres as is proposed in the action alternative. The Alternatives Considered but Dismissed section in Chapter 2 does analyze backfilling of tailings.

27. ASARCO should be required to place tailings back into the mine, lessening impacts to mountain lakes above the project, lessening visual impacts, reduce the size of the proposed tailings impoundment, reducing impacts to waters, and reduce the long-term risks from this mine once it is closed..... and provide maximum return of tailings to the "hole." (P1)(1213)(1220)(1241)(1288)(1293)(1304)(1308)(1309)(1335)(1349)(1353)(1418)(1426)(1434)(1443)(1454)(1506)(1525)(1595)(1679)(1718)(1719)(1732)(1737)(1738)(1741-1744)(1746)(1747)(1913)(1916)(1928)(1929)

Response: The final EIS displays in Chapter 2, Alternatives Considered But Dismissed a description of the backfill alternative and a discussion of its feasibility and rationale for its dismissal. NEPA/MEPA require the analysis of a reasonable array of alternatives which address the issues. Though backfilling does address the issues, it is not reasonable and a surface impoundment would still be required.

28. EPA's mining engineering staff in Denver believes that paste backfill technology should be evaluated at Rock Creek. They note that this emerging backfill technology is now being successfully practiced in underground mines in Alaska, Canada, Germany, and South Africa. This contradicts the statement in the DEIS (page 2-98) that backfilling with whole tailings is not a proven technology at the scale of the Rock Creek project. For example, it was reported in the Canadian Mining Journal (October 1992) "Inco's Backfill Experience" by rock mechanics specialist Mr. David Landriault, P.E., that Inco Limited of Canada (Inco) was so impressed with the results of surface pumping trials, pilot plant tests and production-scale pours using paste backfill technology that this Canadian Mining company has designed paste fill plants for three of their Ontario mines. Mr. Landriault explains that the paste backfill technology, which utilizes both the sand and the slime tailing particulate sizes after dewatering, offers specific advantages over other types of backfilling techniques. Mr. Landriault states, "paste can give a stiffer fill and at the same time give high strength with small quantities of costly binder than slurry fill". Conversely, Mr. Landriault advises economic limitations on paste fill horizontal pump line runs over 1,200 meters in length unless intermediate positive displacement (PD) pumping stations are used. Positive displacement pumps would probably be required at Rock Creek unless the system were redesigned. (1214)

Response: Following release of the draft EIS and review of public comments, the applicant contracted with Golder Associates where Mr. David Landriault is employed. Mr. Landriault and a Golder engineering team analyzed the capabilities of the Rock Creek Project in light of the recently developed paste backfill technologies that EPA notes. Golder's report (1996) concluded that the geometry of the Rock Creek deposit and surrounding topography, considering the economics of the low grade copper and silver deposit, precluded development of a reasonable and/or practical paste backfill operation. Golder instead suggested that the Agencies could develop a surface tailings handling and placement alternative that took advantage of underground paste backfill technologies. Golder's preliminary tailings paste handling techniques and conceptual placement designs were the basis of follow up work by Knight Piesold LLC (1997). Following additional concept development and third party review, including a Failures Modes Effects Analysis, the Agencies created a new alternative (Alternative V). This alternative was then displayed to the public in the supplemental EIS. More information and detail is contained in the backfill section of Chapter 2, Alternatives Considered But Dismissed, and Chapter 2, Alternative V description.

29. Proponents of paste backfill claim that as much as 70% of the total tailing tonnage can be backfilled in a stand alone cemented dense mass that is characterized by low porosity and permeability. In comparison, the Rock Creek DEIS evaluation of other types of backfill technology suggests a maximum of 40% of the tailings can be used in backfill.

These relatively recent developments and applications of full scale paste backfill technology cause EPA to believe that it may be possible for 60% to 70% of the Rock Creek total tailings to be returned to the underground mine using past backfill technology. This would potentially reduce the need for surface disposal of tailings to 30% to 40% of the total tailings. Although a surface impoundment for the tailing slimes fraction would still be required, the new paste backfill technology may offer the opportunity to significantly reduce the volume, height and footprint of the surface tailings impoundment.

Another advantage of paste backfill would be the reduction of potential mine origin acid and heavy metal-bearing and blasting compound residue (nitrate) drainage. Paste backfill placement in the mine as the mining front advances, following any mine fracture grouting, could seal mine fractures and mine openings. This would reduce

mine inflow, and reduce concerns about the quantity, quality, and fate of water in the underground storage reservoir.

A simultaneous reduction in the mine water discharge quantity and improvement in the discharge water quality could reduce capital and operating costs for the proposed high volume nitrate and heavy metal treatment system, reduce associated concerns about the effectiveness and reliability of the proposed treatment system, and could result in fewer concerns about the design of future mine closure and ASARCO's post-closure liability as well.

Paste backfill would also offer potential for reduced risk of subsidence and address the underground stability concerns in the high column area below Copper Lake, and may allow removal of additional ore, that would no longer be needed for ground/roof support, from the underground mine. Paste backfill may also allow reduction in the surface impoundment footprint. This may make lining the impoundment more economically viable to ASARCO. (1214)(1679)

Response: The Agencies discussion of the advantages/disadvantages for the utilization of paste backfill is included in Chapter 2, Alternatives Considered But Dismissed. The potential applications of tailings paste as a backfill, and potential benefits were analyzed in a 1996 report by Golder Associates. See response to the preceding comment. In its' analysis, Golder looked at paste backfill generally, its' ability to reduce ground water flow into mined out portions of the ore body, its' ability to reduce risk of mass subsidence, its' potential of increasing ore recovery, and its' potential to reduce the volume of material needing surface disposal. Golder found that paste backfill was neither reasonable nor practical as a Rock Creek Project tailings disposal method. It also found that the paste backfill potential to reduce impacts were not cost effective in comparison with other known and reliable methods. It also found that placing more than 50 percent of tailings paste underground was not possible, and that in reality, because of operational difficulties, no more than 40 percent would be likely, and that this would not make a significant change in the tailings impoundment foot print.

30. Mine paste backfill may offer some potential for reevaluation of Combined Operations of Rock Creek and the Montanore Projects (Pages 2-100 to 2-103). Paste backfill technology, which results in a stand alone cemented mass, may allow the final mine paste backfill design, compared to conventional backfill technology (the premise discussed in the DEIS), (1) may not require adit sealing (water content of the paste is quite low), (2) may not be limited to down grade location backfilling (potentially place the paste anywhere), (3) may not require construction of an additional adit, (4) may allow a higher percentage of mine workings acceptable for backfilled tailings, (5) potentially could work in flat-lying room and pillar mined out areas, and (6) could result in a much smaller tailings impoundment-now estimated at 64.4 million yards as discussed in the 3rd-5th paragraphs on page 2-102. Also it is stated on page 2-103 that it is questionable if a combined Rock Creek-Montanore mill could successfully process 30,000 tons per day. Please be advised that in mill design it is proven practice (the Henderson Mine in Colorado for example) to parallel three 10,000 tons/day grinding and flotation circuits with a common concentrate dewatering/drying circuit. The original Henderson mill was designed for two 10,000 tons/day grinding and flotation circuits which were later expanded to the above mentioned system. For examples of successful large milling operations with parallel trains of mineral processing equipment, we can look to the U. S. southwestern copper operations where upwards to +/- 100,000 tons/day of ore is milled daily. The mill designer must always consider expansion of mill capacity, addressing those specific flowsheet limitations to increasing mill capacity (the bottlenecks). There isn't a mill built that is processing only that capacity for which it was designed because the mine is under constant administrative and economics pressure to produce more ore. Some mills are capable to produce 110-120 % of design capacity by correcting the bottlenecks.

In regard to mill economics, higher throughputs always translate to lower mill capital and operating costs per ton treated. A 30,000 tpd mill will always be the choice over a 20,000 tpd or a 20,000 tpd + a 10,000 tpd mill combination if a mining venture or partnership has the ore reserve and if sufficient headings can be developed to

eliminate mining machinery travel interference. We recommend, therefore, that the Agencies consider removal of the statement "...it is questionable if the mill could successfully process 30,000 tons per day". This statement is true if a mill designed and built for 20,000 tons/day was later fed 30,000 tons/day without expansion redesign, but the statement is not true if the mill was originally built for the higher throughput. (1214)

Response: The statement regarding the ability of a combined Rock Creek and Montanore project being capable of processing 30,000 tons per day has been revised. Additionally, the Agencies' combined projects alternative has been revised to include tailings paste disposal concepts. Please refer to the Alternatives Considered But Dismissed section of Chapter 2 for more detail.

31. Where would clay be stored for later use to reclaim waste rock piles and tailings impoundment surface (page 2-70) be kept? Should the clay storage area location be identified on Figure 2-23? (1214)

Response: Clay would be used to seal more permeable portions of the tailings storage footprint under Alternatives III through V and would most likely be stored within the footprint until needed. If not needed, it would be buried by tailings. On the other hand, the soil salvaged from the footprint under the tailings disposal facility would be stored in the soil stockpile locations shown on the map of each alternative.

32. Page 2-83: par 2: This is an inadequate accounting of how one million tons of waste rock will be disposed of. How will raising the mill site by as much as 50' limit the site's visibility from roads and wilderness? How exactly will the described uses of waste rock account for the 1m tons? (1288)

Response: The statement in the draft EIS (page 2-83, par 2) that the 50-foot maximum height for the confluence mill pad "would limit the mill site's visibility from Forest Service roads and wilderness viewpoints" is ambiguous and not clearly written. The text has been corrected to say "This elevated pad would increase mill site visibility from surrounding Forest Service roads and wilderness viewpoints that are located above the mill site. A maximum pad height of 50 feet and retention of a minimum 100-foot vegetative buffer around the pad would help limit mill site visibility from the portion of FDR No. 150 that surrounds the site." The balance of the waste rock would be used for development of road aggregate, tailing paste facility key buttresses and finger drains.

33. This mine must be redesigned to be fail-safe before it even becomes a possibility. (3752)

Response: Unfortunately, to have a "fail-safe" operation is not practical. However, the agencies have based the design of the tailings facility on the best science and engineering to minimize the potential for a failure of any magnitude.

34. We are very concerned that the three action alternatives do not require ASARCO to line the tailings impoundment. Placing an unlined impoundment on top of unconsolidated alluvial, lacustrine and glacial deposits poses an unacceptable risk. We are concerned that ASARCO's unwillingness to pay for a liner has inappropriately biased the creation of the selected alternative. Given the broken topography and unconsolidated substrate of the proposed impoundment area, the potential for seepage into Miller Gulch and Rock Creek seems considerable. To comply with MEPA/NEPA, the agencies must design and fully analyze an alternative for a lined impoundment. An unbiased and credible technical review panel should have final determination about whether the impoundment should be lined. Especially considering MDEQ's failure to adequately monitor and report the discharge of wastewater from ASARCO Troy into Lake Creek and Stanley Creek, an independent, public-interest evaluation of risk is essential. The acceptable level of risk of seepage of pollutants should be minuscule (less than small fraction of one percent). Cost should not be a factor in the technical review panel's recommendation. (1220)

Response: The agencies had a report prepared which looked at lined impoundment options. A summary of the analysis may be found in Chapter 2, Alternatives Considered But Dismissed. Because of the "tight" nature of the native material found in the impoundment area, the reduction in seepage under Alternative V, and the fact that ground water quality could be met, the agencies

determined that there would not be an appreciable gain in benefit from lining the impoundment. If the same results can be obtained with a less expensive system, there is no authority for Agencies to require a more costly one. Expense was not a primary reason for dismissing a liner or paste backfill.

35. Utilize a tailing impoundment which is not located near either Rock Creek or the Clark Fork of the Columbia River. Additional sites should be investigated as more suitable. Modular, lined, smaller repositories further from the Clark Fork and its permeable aquifer should be required. (1248)(1327)(1350)(1353)(1412 (1426)(1427)(1429) (1444)(1491)(1593) (1606)(1639)(1679 (1720)(1727)(1732)(1737)(1738)(1741-1744)(1746)(1747)(1913)(1925) (1941)(1946)(1948)(2082)(4476)

Response: Additional tailings impoundment sites were investigated. The Forest Service conducted a detailed tailings impoundment analysis in 1986, *Cabinet Mountains Mineral Activity Coordination Report*. This report looked at 21 potential tailings impoundment sites. Based on the report the number of possible sites was narrowed down based on the evaluation criteria used. The EIS further discusses the siting alternatives in Chapter 2, Alternatives Considered But Dismissed. The whole surrounding area drains toward the Clark Fork River, so locating the site on the downside of the river is not practical or possible. Smaller impoundment sites would necessitate utilizing substantially more acres and thus would have more impacts. The McKay Creek site was the most out of sight, but it had technical and more specifically resource drawbacks which make it unacceptable.

36. It is feasible and much preferable to keep the access road and the treatment plant on the west side of Rock Creek. (the treatment plant is shown on Fig. 2-13 of the EIS) The road can be routed around the toe of the impoundment making easy access to most of the monitoring and recapture wells and then directly to the rail siding, avoiding highway 200 altogether. (1270)

Response: The intersection of Rock Creek Road (FDR No. 150) with Hwy 200 does not meet state highway standards thus it is proposed to be relocated as shown on Alternatives III-V. There would be a road around the base of the impoundment for monitoring purposes and to access the paste plant. Under Alternative V, the concentrate would be transported to the rail loadout via a pipeline instead of by trucks.

37. The water that will be used in the milling process will be contaminated both by the crushed ore and by the chemicals used in the concentrating process. This then will apparently just be dumped in with the tailings in the tailing impoundment. There are metallic tailing piles all over Idaho and Montana leaching metals into our surface water all ready. We have no effective way to seal them and we definitely do not need another. Particularly disturbing is that this impoundment would be so close to the river. When the leachate comes out the only plan is apparently to pump it back into the already leaking impoundment. I am sure you will agree that this makes no sense. (1242)

Response: The final EIS discloses the results of extensive analysis conducted regarding seepage and water quality. Under Alternatives II-IV, it is estimated that 241 gpm of seepage would enter the ground from the impoundment. Should the level of constituents leaving the ground water mixing zone be above that allowed in the MPDES permit, the pumpback wells would be operated. Under Alternative V, which was discussed in the supplemental EIS, only 20-30 gpm is anticipated to seep into the ground. The bottom line is Sterling would be required to meet the water quality standards set by the State of Montana and its MPDES permit limits.

38. Rd 150 should be established as being outside of the permit boundary and not under ASARCO's control. (1504)

Response: FDR No. 150 would not be under the applicant's control. Sterling would be responsible for improving the road to meet their anticipated traffic needs as determined by the Forest Service. Once the road was reconstructed, Sterling would be responsible for doing most of the maintenance, but it would still be a Forest Service road and open to use and enjoyment by the public.

39. Require only the most stable tailings impoundment design. The Tailings Impoundment must be moved from its proposed location which is much to close to the Clark Fork River and Rock Creek. (P1)(P2)(1269)(1293)(1298)(1301)(1304)(1307)(1308)(1309)(1322)(1326)(1330)(1331)(1342)(1365)(1384)(1385)(1387)(1401)(1405)(1429)(1433)(1434)(1439)(1440)(1443)(1453)(1517)(1520)(1530)(1590)(1603)(1616)(1638)(1721)(1724)(1730)(1733)(1735)(1736)(1739)(1755)(1776)(1914)(1918)(1929)(2042)

Response: The tailings impoundment design for Alternatives III and IV and the paste facility design for Alternative V were determined to be sufficiently stable as to have a very low risk of failure compared to that for Alternative II. The technical panel review of final plans would ensure that the risk remained as described for these alternatives. The paste facility is inherently more stable because of the lesser amount of retained water and as such there would be fewer impacts associated with a failure of the facility because the tailings would not flow as far and would not be as likely to reach the Clark Fork River or Rock Creek as might tailings from a breach in the impoundment. The agencies did investigate relocating the impoundment or the paste facility and determined that there were more problems with the alternate sites than with the proposed location. See the Alternatives Considered but Dismissed section in Chapter 2 for more details as well as Appendix G.

40. The tailings in the mine should be stabilized by specifying the use of a binder, in order to minimize leaching from ground water flowing through the mine. (1501)

Response: No tailings would be disposed of in the mine. A discussion of mine backfill is in Chapter 2, Alternatives Considered but Dismissed and Appendix G.

41. It would be much safer to transport the tailings dry, and thus avoid all treatment of effluent associated with the slurried water. (1486)(2103)(2107)

Response: The Agencies considered the use of dry tailings as an alternative, but the alternative was dismissed. The discussion of dry tailings is in Chapter 2 of the EIS. A new alternative proposed by the applicant includes the placement of tailings as a paste rather than using a traditional tailings impoundment. This alternative is discussed in Chapters 2 and 4 as Alternative V.

42. We do know the difference between what is expensive and what is possible. The fact that a liner for tailings' storage and a pump-conveyor system to bring tailings back into the mine is expensive, should not be a valid reason for not discussing or considering it. These are seriously intended options presented by the people of this area and should not be arbitrarily discarded by ASARCO, KNF or MDEQ. (1296)

The DEIS must examine more alternatives that will reduce or eliminate water quality impacts, including other locations for the seepage pond and lining the seepage pond. (1936)

In addition, they failed to evaluate alternatives that can minimize the adverse environmental effects of the project. Specifically, the Agencies have failed to adequately review and consider alternatives that call for 1) a synthetic liner system to minimize seepage from the tailings impoundment and 2) the use of the more geotechnically stable downstream design for the Rock Creek tailings impoundment. (1223)

The tailings impoundment must be moved away from the Clark Fork River and Rock Creek. ASARCO must pay a reclamation bond adequate to cover a worst-case scenario at the site. The tailings impoundment must be lined prevent contamination of other surface waters and ground water. (1220)

Have the agencies thoroughly considered moving the tailings impoundment away from the Clark Fork River and Rock Creek? Where is the data on which the agencies have based their decision for the currently proposed site vs. the other possible site alternatives? (1438)

Response: The location of the tailings facility and numerous alternatives were evaluated. Many comments received related to the proposed tailings impoundment and potential environmental impacts. To address these issues, the Agencies developed alternative V. For this Alternative, tailings are deposited as a paste. Therefore, the potential for seepage is minimized. Please see Chapter 4, Hydrology and Geotechnical Engineering for more detail. Please see response to comments in GEO102 which address design details.

Additional information regarding liners has been added to the Alternatives Considered but Dismissed section in Chapter 2. It was not believed that any additional protection would be provided over what the use of paste technology could provide as a reduction in seepage compared to an unlined impoundment. There were also concerns about stability of the impoundment and operational constraints under a paste facility.

43. Issues relating to the design and operation of the tailings impoundment are among the most critical components of ASARCO's proposed Rock Creek project. We have reviewed the Draft Environmental Impact Statement (DEIS), it's Appendices, and the volumes of background reports related to the tailings impoundment design and operation (Dames & Moore Revised Tailings Impoundment Design, 1994; Klohn & Leonoff Comments on Revised Tailing Impoundment Design, 1993; Dames & Moore Foundation Clay, 1992, Klohn & Leonoff Tailings Impoundment Review Update, 1992; and Dames & Moore, 1989). Based on our review of these documents, we have concluded that the DEIS fails to disclose the magnitude, duration, and significance of environmental degradation that will be caused by seepage from the impoundment, and more importantly, that it fails to evaluate reasonable alternatives to minimize and/or prevent those impacts. (1223).

Response: Additional information has been provided in the final EIS to address the potential impact of the seepage from the tailing impoundment under Alternatives II-IV. A new alternative using paste technology was developed and incorporated into the supplemental and final EISs that further minimizes seepage through the tailings. Under Alternative V seepage would be reduced to 20-30 gpm compared with 300 gpm through the tailings impoundment under Alternatives II-IV. Liners were also considered but dismissed (see Chapter 2 for more information). In addition, a new alternative, Alternative V, has been developed which will rely upon paste technology for tailing disposal. This method of tailing disposal will significantly reduce the quantity of seepage from the tailing disposal area.

44. How do you plan to answer concerns listed on Page 2 of the EPA's comments in the MPDES/ permit application dealing with risk of seismic liquification, tailings impoundment seepage to ground water; subsidence of wilderness lakes; adequacy of monitoring and rock analyses; degraded mine drainage water and uncontrolled seepage from the underground storage reservoir, and the greater risk of the unproven water treatment? (1248)

Response: The Agencies developed Alternative V to address significant public issues and comments. Numerous additional mitigations and monitoring requirements were added to address EPA's concerns. Additional information regarding ground water flows beneath the mine have been added to Chapter 3, Hydrology, and analyzed in Chapter 4, Hydrology. The alternate wastewater treatment systems incorporated into Alternative V have been used to treat mine drainage and are proven technologies. See Alternative V description in Chapter 2 and impact analysis is Chapter 4 for more detail about the alternative and the effects of implementing it.

45. Page 2-17 says that "The Clark Fork River is much less susceptible to water quality impacts during high flow events, since there is a much greater dilution factor." Rather then being "reassured" by such statements, we would prefer to see an impoundment design capable, beyond any doubts, of being able to contain waters of "extreme precipitation events". The dilution impacts to the upper Clark Fork from industrial operations seeking discharge approvals such as this one. (1638)

According to the permit application, "The proposed receiving stream for treated mine discharge is the Clark Fork River" and "An additional discharge has been identified as seepage from the impoundment to the underlying ground water." For both this permit application, and the DEIS on which it is based, benefits of a lined tailings impoundment attempting to prevent this seepage into ground water must be considered. In addition, specifications for the tailings impoundment must also be provided. To simply accept the DEIS statement that "The tailings impoundment design is preliminary and would be modified as additional information is obtained" is unacceptable. The tailings impoundment is one of the most important features of the entire operation! The tailings impoundment must be designed prior to NEPA review and any contemplation of associated water treatment. Geologic stability and environmental/aesthetic factors must be addressed. Alternative sites further removed from the Clark Fork River must also be considered. (1638)

Response: To reduce the possibility of leaching, and to address public concerns, the agencies have developed a tailings disposal alternative (Alternative V) that relies on the surface deposition of a paste-like material. See Chapter 2, Alternatives Description, for more details.

46. Mine construction and operation will require the use of heavy machinery, and under the current proposal, ASARCO will be utilizing diesel equipment. Therefore, the possibility exists for diesel spills, which could contaminate surface waters and ground water in Rock Creek and Miller Gulch. Often when transmission or hydraulic fluids are changed or oil is changed, these wastes are improperly disposed of. This type of pollution could become significant if it occurs over the entire life of the mine. Machine oil has been shown to have a toxic effect on marine zooplankton at concentrations of 10ppm (Mironov 1969), and has been demonstrated to be toxic to zooplankton and fish eggs at 10ppb to 10ppm (NRC 1985). Phytoplankton photosythesis appears to be affected at concentrations as low as .1 ppm (NRC 1985). It appears that juvenile fish are more susceptible and sensitive to oil effects than adults (Moore and Dwyer 1974). The soluble aromatic portion of the oil apparently is the primary toxin to fish (Moore and Dwyer 1974). It is critical to realize that even if concentrations of hydrocarbons in the water do not reach levels that are directly toxic to aquatic life, other serious chronic effects could occur. For example, delicate chemical communication is critical for many species of aquatic organisms (Corner and Harris 1974). Aquatic creatures are often sensitive to very low chemical concentrations (Laws 1993). The effects of hydrocarbons on these sensitive chemo receptors are not well documented, but could seriously impact the organism's ability to feed, navigate, or breed (Corner and Harris 1974).

ASARCO must show that the alternative of propane or electric fueled vehicles has been adequately evaluated. This alternative must be seriously explored, as the best way to avoid environmental problems is to prevent them. If ASARCO chooses not to use alternatively fueled vehicles, they should justify this choice at the possible expense of the environment. If traditional diesel machinery is used, the garage planned for the mine site must adhere to all standard state regulations, and dispose of shop wastes in an environmentally safe manner. The machine shop should be a dry shop, with all fluids collected and picked up by a solvent recycler. A strategy for environmentally safe disposal and storage of mechanical wastes should be carefully outlined. A plan clearly delineating appropriate response to a diesel spill should also be developed. (1223)

Response: Alternatively fueled vehicles and generators have been evaluated and are included under Alternative V (see Chapter 4, Air Quality). A final spill contingency plan would be in place before start up of mine operations. The mill site would provide localized water treatment and approved material handling procedures. All outfalls would be required to meet effluent limitations as set forth in the MPDES discharge permit.

NEPA-802 Cumulative Impacts

1. The fragile ecosystem downstream from the proposed mine site has suffered enough impacts to date and can not withstand added impacts. The cumulative effects of the mine coupled with on-location and upstream and downstream impoundments on the Clark Fork have not been given adequate attention. (1276)

Response: Cumulative impacts are defined in the introduction of Chapter 4 as collective impacts for the implementation of this project when considered in conjunction with other past, present, and reasonable foreseeable activities. The analysis for much of the project has been expanded from that of the draft EIS. Each resource (i.e. Biodiversity, Hydrology, etc.) in Chapter 4, has a discussion on cumulative impacts from all activities which have an effect on that resource. Please see the cumulative impacts subsections at end of the analysis section for each resource in Chapter 4 of the final EIS.

2. This mine poses significant risks to the wildlife, water quality, and scenic beauty of these rivers and forest, and our members recreational opportunities, and will increase our member's health risks. We expect the risks to wildlife, threatened and endangered species, water quality, scenic values, recreational opportunities, public access to public lands, long term economic impact on employment, tourism, other economic factors, the local community tax structure, cumulative impacts with other past and planned human and agency activity to be fully disclosed. Where is the analysis and disclosure for the cumulative impacts on all aspects for this mine? These must include ASARCO's Troy mine, Noranda, other mining activity in the area, logging on public and private lands, the upcoming relicensing of the Noxon and Cabinet Gorge Dams, and the work of the Tri-State Council to implement a nutrient reduction plan in the Clark Fork River basin. (1223)(1438)(1526)(1633)(1638)(1780)

Part of the evaluation should include the cumulative impacts including but not limited to the relicensing of the Noxon Dam and Cabinet Gorge Dams, the downstream potential degradation to the Columbia River drainage system which ultimately could be effected from this mine, as well as the cumulative effects based upon the "boom and bust" effect of the mines of this type. (1427)

Response: Cumulative impacts are discussed at the end of each resource section in Chapter 4. Additional activities have been included in the reasonably foreseeable section in Chapter 2 and the cumulative impacts analysis sections in Chapter 4 have been expanded to address these activities where applicable. These activities include: relicensing of Noxon and Cabinet Gorge dams, the Tri-State Implementation Council's proposed management plans, total maximum daily load allocations for the Clark Fork River and Rock Creek, potential Forest Service salvage timber sales, potential restart up of the Troy Mine, and reopening road access to three private mineral properties on the east side of the Cabinet Mountain Wilderness.

3. Cumulative impacts should assess all project-related effects on water quality, wetlands, and aquatic life and dependent riparian and wildlife resources. It should consider important locations and time periods within the continuum of construction through post operation. Cumulative impacts should include a base condition that considers past impacts on aquatic resources and the existing status of recovery as well as predicted effects of project construction, operation and post operation. The assessment should have included approaches that emphasize stream basins affected by several factors, including forestry, grazing and oil and gas development, and the development of information to calculate loading of potential contaminants as a basis for determining acceptable levels from each contributing activity. Included in cumulative effects should be assessments of probable accident/spill conditions, their predicted frequency and severity of effects on water quality and aquatic life, and the combined effects of probable and environmentally conservative predicted effects from all other sources. While the particular locations and times of accident events cannot be anticipated, past experience suggests they will occur. These potential impacts are as much a part of the environmental impact of the project as are other predicted impacts, and should be addressed on a much more serious level. Impacts should be estimated using reasonable and environmentally conservative assumptions. The probability of significant accident event categories throughout the

life of the project should be assessed and the resultant severity, duration, and recurrence time on waters and aquatic life be predicted. Cumulative impact assessment in the Rock Creek DEIS is inadequate and as such, the entire DEIS is flawed and should be rejected. (1595)

Response: The analysis for each resource considers construction of the evaluation adit, development and operation of the mine, and mine closure and reclamation. Analyses include existing trends for each resource and how the project would affect those trends and what outside forces might increase the impacts, such as an earthquake, probable maximum flood, or a rain on snow event. The potential impacts from spills and pipeline ruptures are discussed under Hydrology and Aquatics/Fisheries sections in Chapter 4. Impacts are predicted using accepted methods; technical staff (Forest Service, Montana DEQ and third-party consultants) use their experience, knowledge, and best professional judgement to interpret the models and all other data available for consideration.

Cumulative impacts analysis evaluates the compounding of impacts relative to the affected resource and the proposed action along with past, present, and reasonable foreseeable activities. Additional activities have been added to the reasonable foreseeable section in Chapter 2 and the Chapter 4 cumulative impacts sections have been expanded accordingly. There are no grazing allotments within the Rock Creek drainage nor are there any proposed plans for oil and gas exploration and development and so these are not considered in the cumulative impacts analysis. To be reasonably foreseeable there must be some sort of plan, design, permit application, project scoping, or environmental analysis documentation available for review and analysis.

4. Page 2-109: par 2: Although the Noranda project already has been permitted, because some of the ore bodies are less than 1 mile apart and the mill facilities only 7 mi apart, why are the combined impacts of these two projects (e.g., all wilderness impacts, endangered species, air pollution in CMW, socioeconomic effects on Sanders and Lincoln counties) not assessed in the Rock Creek DEIS? (1223)(1288)(1592)

The DEIS does not adequately address the cumulative effects of the two mines. (1592)

Response: The Montanore Mine is considered a reasonably foreseeable activity and is summarized in Chapter 2. As such, the combined effects of the two projects has been addressed in the cumulative impacts subsections following each resource section in Chapter 4.

5. Page 4-100 and 101, Cumulative Impacts: The potential cumulative impacts between the Montanore Project and the Rock Creek Project are significantly overstated. The distance between the mines is of importance, but more importantly, the topography of the land between the two projects should be more closely considered. The steep mountainous terrain effectively adds a much greater distance than a straight line measurement. The possibility of the Montanore Project not being developed in the near-term should be considered by the EIS when evaluating and determining potential cumulative impacts for the Rock Creek Project. (1589)

Response: Because Montanore Mine is a permitted mine not yet developed, it must be included in the cumulative impacts analysis. It is likely that if copper and silver prices become high enough such that the applicant decides to develop the Rock Creek Mine should it have been permitted, then Noranda would probably also resume development of the Montanore Mine. For the most part, if Montanore is never developed, resources that would be cumulatively affected by its operation and the Rock Creek Project would only be affected as described for each alternative.

6. No mention of WWP's current relicensing activities is included in the discussions of reasonable foreseeable activities or potentially cumulative impacts in the DEIS. (1779)

Response: In response to public and agency comments, the cumulative impacts and reasonable foreseeable sections of the final EIS in Chapter 4 have been updated to include this information.

7. This location is inappropriate for the sake of the wilderness and its inhabitants. When this mine is added to the area's ecoregion, along with the Noranda Mine, just miles away across the wilderness, a fragmentation/cumulative effect will occur that is simply not healthy for the Cabinet Mountain Wilderness. Where is the discussion of the cumulative effects of this project and Noranda's on the CMW? (1196)(1438)(1481)(1639)

Response: Cumulative effects are addressed in Chapter 4 of the EIS. Impacts to the wilderness and its ecosystem are covered under several sections: Hydrology, Biodiversity, Threatened and Endangered Species, Recreation, Wilderness, Sound, and Scenic Resources.

8. The cumulative environmental, visual and other affects of the mine and associated development, could preclude timber harvesting on nearby public forest lands, or could prevent the designation of a special recreation corridor along Rock Creek or the Clark Fork River, or additional wilderness designation in the Cabinets.(1376)

Response: The implementation of this project could preclude some uses for the area. However, all future proposed projects would be analyzed and decided upon pursuant to NEPA. Activities can proceed if they can meet the Forest Standards with the Rock Creek Project included.

9. Cumulative impacts to the big game resource and hunting were not discussed, nor were the impacts to families that rely on the resource as food on the table .(1780)

Response: These cumulative impacts are discussed in Chapter 4 in the recreation and wildlife sections. Impacts to families that rely on big game for food are thought to be minimal. Areas affected by the proposed mine are relatively small when looking at the hunting opportunities that are available in western Montana. Increased human populations in the area probably have minor effects on big game populations even if all new residents hunt or harvest animals. The effects analysis (Chapter 4, Biodiversity) discussed the effects on elk and white-tailed deer from increased hunting and poaching pressure.

10. Please address the cumulative effects to forest health, and to socio economics of a logging community if the Forest Service is unable to log in the area of Rock Creek or grizzly displacement BMU's due to protecting grizzly habitat security as agreed to with the F&WS. (1637)

The DEIS does not detail adequately what the cumulative impact will be when added to those impacts generated by activities contemplated by the Kootenai National Forest, especially its timber sale program. (1526)

Response: The cumulative impacts of the mine proposal and other interrelated local activities are described in Chapter 4 of the EIS. The Kootenai National Forest timber sale program would be expected to have ongoing revisions in response to social, ecological and economic changes in the area even without the Rock Creek project. However, the loss of 194 to 240 logable acres in the Rock Creek drainage from the Kootenai National Forest timber base of 1,263,000 acres would be insignificant (0.02 percent) to the region. Please see Chapter 4, Socioeconomic section which has been completely rewritten.

11. The Agencies are required to disclose the cumulative effects of the proposed project, in conjunction with past and reasonably foreseeable activities. The DEIS has failed to consider metals enrichment in sediments behind the Noxon and Cabinet Gorge Dams, and the Clark Fork River delta at the inlet to Pend Oreille Lake.

A review of Trace Metal in Reservoir Sediments of the Lower Clark Fork River by Johns and Moore, 1987 clearly indicates that the lower Clark Fork River Reservoirs (Noxon and Cabinet Gorge) have accumulated metal-enriched sediments from upstream sources. In addition, studies completed by the USGS have found metal-enriched sediments in the Clark Fork River delta.

The DEIS offers no discussion of these studies, or how the Rock Creek project will exacerbate the volume and toxicity of these metal-enriched sediments present in the reservoirs. The cumulative effects discussion in the revised DEIS must address these issues. In addition, the Agencies must address ongoing Superfund activities in the upper Clark Fork, and the likelihood for the additional releases of metal-rich sediments from upstream sources to the lower Clark Fork reservoirs. (1223)

Response: The concern regarding metals enrichment in sediments behind the Noxon and Cabinet Gorge Dams is not relevant to the proposed Rock Creek Mine project. The Rock Creek Mine water would be filtered and treated prior to discharge. Metal-enriched sediments would not be added to the Clark Fork system by the proposed project except the extremely remote case of tailings facility failure. Therefore, cumulative effects with existing sources would not occur and an analysis of the impacts of Superfund sites in the Upper Clark Fork River is beyond the scope of this EIS. Please refer to Chapter 2, Mine Operation Requirements, in the descriptions of Alternatives II and V for a discussion of the proposed water treatment systems.

12. Existing mining-related degradation of the Clark Fork ecosystem and the Clark Fork Superfund process should be addressed in the EIS. Cleanup of heavy metal contamination at Clark Fork Superfund sight is still many years and dollars from completion. The impacts of additional mining within the Clark Fork Basin in relation to current conditions should be assessed, including the Lincoln and Noranda mines. (1591)

The upper Clark Fork's Superfund sites and transport of metals downstream should be addressed. (2002)

Response: The existing Butte mining-related contamination of the Clark Fork River basin is outside the scope of this EIS. Similarly, other mines proposed more than 150 miles away, even in the same river basin, are out of scope of this EIS. Cumulative impacts would not occur because operations would not be allowed without Water Quality Act compliance. The proposed Montanore Mine is not in the Clark Fork River basin and thus would not result in cumulative hydrologic impacts. Cumulative impacts of the Rock Creek project and the Montanore Mine are evaluated for commonly impacted resources such as some wildlife.

13. Cumulative impacts of water discharges into the Clark Fork River watershed must be part of both the DEIS and the MPDES permit application. (1196)

Cumulative impacts of mine and storm water discharge into the Clark Fork River watershed must be part of both the EIS and MPDES permit application. The Clark Fork has already suffered vast detrimental impacts from mining activities, and cleanup costs will be enormous. How will the Rock Creek proposal further affect the Clark Fork watershed relative to current pollution problems and cleanup efforts? (1638)

Response: Please see the end of the Hydrology section in Chapter 4 of the EIS for cumulative impacts relative to water quality including nutrient and metals loading.

14. The DEIS completely ignores any reasonable analysis of how impacts from this project - especially related to water - dovetail with other current and foreseeable activities in the area to produce a net reduction in environmental quality. For example, the DEIS ignores addressing how this mine, which will increase nutrient levels in receiving waters, fits in with the EPA and states efforts to reduce nitrogen and phosphorus pollution via a TMDL process in the Clark Fork ? Pend Oreille watershed. (1526)

Response: Please refer to the EIS and the MPDES discharge permit. The proposed MPDES permit would be modified as a result of the total maximum daily load (TMDL) water body evaluation process when the TMDL process is complete. Cumulative impacts are disclosed at the end of each resource section in Chapter 4 and the reasonably foreseeable activities section in Chapter 2 have been expanded. Additional analysis of nutrient and metals loading has been added to Chapter 4, Hydrology.

15. Part of the evaluation should include the cumulative impacts including but not limited to the relicensing of the Noxon Dam and Cabinet Gorge Dams, the downstream potential degradation to the Columbia River drainage system which ultimately could be effected from this mine, as well as the cumulative effects based upon the "boom and bust" effect of mines of this type. (1427)

I also ask why there has been no analysis of the Noxon and Cabinet Gorge Dams, and nutrient reduction plan for the Clark Fork River Basin. (1941)

Response: The relicensing of the dams has been included as a reasonably foreseeable activity in Chapter 2 and in the cumulative impact analysis in Chapter 4.

However, the effects of the dams on existing resources are implicit in the existing conditions described in Chapter 3. The relicensing of the dams would not result in a lower level of environmental mitigation. Thus, the impacts displayed in Chapter 4 reflect a worst-case scenario. If, as a result of relicensing, additional mitigations are required, impacts would be less than described.

16. Please address the following concerns: Agreement of proposed mine w/ Clark Fork Coalition, 3 State Council on Pend Orielle? Columbia River Basin, EPA; Wilderness Act, & Forest Service Plan for Kootenai Nat'l Forest. (1301)

Response: Standards in the permit have been set to address these relationships under the Water Quality Act.

Cumulative impacts with the proposed plans of the Tri-State Implementation Council are discussed at the end of the Chapter 4, Hydrology section. EPA has been a reviewing and advisory member of the interdisciplinary team preparing the EIS on the Rock Creek Project and has provided input on hydrology, geochemistry, and geotechnical engineering. EPA's formal role relative to various permits is described in Chapter 2. There are no formal agreements between the agencies and the Clark Fork Coalition, a private environmental organization. However, the agencies review comments from all members of the public including this organization and try to address any issues raised. Impacts relative to the Wilderness Act and the Forest Plan are disclosed in the Wilderness and the Forest Plan Direction sections (respectively) in Chapter 4.

17. Page C-14, Section 2.2.7 This section needs to summarize the EIS cumulative impacts text for hydrology, waters of the US and wetlands, and aquatics/fisheries. The section should not repeat any of the discussion of impacts for the Rock Creek mine project, but should focus only on cumulative impacts on the aquatic ecosystem. (1912)

Response: This section of the 404 (b)(1) permit summarizes cumulative impacts on the aquatic ecosystem.

DRAFT EIS
RESPONSES TO COMMENTS

TRANSPORTATION

Roads ROAD-900
Railroads and Rail Loadout Facility ROAD-901

ROAD-900 Roads

1. The increased traffic on Highway 200 from 350 additional new families, ore trucks, and mine traffic will raise the chances of accidents to unacceptable levels. Safety factors on the inadequate highway system existing in Sanders county, Montana and Bonner county, Idaho are a concern. (1246)(1740)(1914)(1915)

The stretch of Hwy. 200 between Clark Fork and the Montana line already produces more than its share of accidents resulting in death or devastating injuries. The draft EIS makes no provision for improving this treacherous road or emergency medical coverage for it. (1740)

Response: The majority of traffic increase along Highway 200 would be passenger vehicles and pickups according to the Montana Department of Transportation. The highway is adequate to handle this increase without reconstruction. A pavement overlay project is scheduled for the section from Trout Creek west for seven miles in 1999 (pers. comm. Jim Weaver, MDT, with Tom Grabinski, USFS, October 30, 1998). The Idaho Highway System was not addressed as the major traffic increases would occur in Sanders County. All surrounding counties would be affected to a lesser extent.

2. I seriously question the safety of traveling on the road in our main recreational area, the Chicago Peak/Rock Creek drainage, when there will be huge haul trucks traveling back and forth between the mine plant and the railroad loading area. The road is narrow and winding and even with road improvement, the potential for accidents will be increased with transporting ore. Safety for our citizens must be a top priority. (1371)

Response: The Rock Creek road would have minor realignment and would be widened to a double lane standard to accommodate the increased traffic. Under Alternative V, the concentrate would be shipped to the rail load-out in a pipe, thus doing away with the utilization of ore haul trucks although ore trucks are still proposed for Alternative II through IV. The Agencies have further proposed under Alternative V to have the applicant bus mine workers up Rock Creek road thus reducing substantially the number of vehicles which would utilize the road. These proposed changes would go a long way toward providing a safe travel corridor for the driving public.

3. Page 4-137 Miller Gulch rail siding and Page 4-138, Road Construction: Seven families live on and use Government Mountain road plus a lumber mill with incoming logging trucks and outgoing semi-trucks hauling lumber, chips and hog fuel. Government Mountain road should be widened to two lane width and graveled to the rail siding access road. (1455)(1589)

Response: The Sanders County Government Mountain Road would receive approximately from 3 to 5 additional vehicle trips per day due to the rail loadout facility on Miller Creek. Although Sanders County has no actual traffic counts for this road, it is estimated to have a 25 average daily traffic (ADT) count. These two figures added together do not justify a double lane road nor paving the road. The ore concentrate would be transported to the rail loadout in a pipeline, thus further reducing the amount of traffic on the road. Paving this road would have to be by agreement between the applicant and Sanders County. Under Alternative V, this road would be gravelled.

4. How much traffic will the mine cause? (1510)

Response: Please see Chapter 4, Transportation Section, Traffic Volumes for Alternatives II - V.

5. How will road crossings of streams and riparian areas be handled? Who will design them, what is the designs, and who will maintain them? What is the long-term plan for maintenance or dismantlement of the road systems after the mine has ran its course? Who will pay? (1751)

Response: Crossing of streams and road construction or reconstruction near riparian areas would be designed to meet all water quality laws and guidelines. The applicant would be responsible for preparing all road and bridge designs using Forest Service standards. The Forest Service would review and approve all road and bridge designs on National Forest System lands or rights-of-way prior to any construction. For information on Maintenance and dismantling, please see Chapter 4, Transportation Section, Traffic Management for each alternative.

6. Page 2-44. Transportation. Where are maps showing more detail of the exploration adit road plan? Why does ASARCO need a fancy 14 foot minimum road? Make them get by with the absolute minimally engineered road, making it easier to reclaim at the end of the project. (1196)

Response: There are no maps showing the exploration adit road plan in greater detail. The Forest Service minimum required road width is 14 feet. This width is needed to accommodate the construction heavy equipment, mixed public/mine and Forest Service administrative traffic. The current Chicago Peak road in many areas is already 14 feet wide.

7. Several years ago the Forest Service noted an avalanche chute above the proposed waste rock dump site. Is this proposed access road (Road Alt. II) going right through this chute? If so, why? And what contingency plans are proposed to deal with avalanches? (1196)

Response: Alternative II is not the preferred alternative for this project. Under Alternative V, the mill and adits are at the confluence of the west and east forks of Rock Creek, well away from any avalanche chute.

8. 2-47. First paragraph. Make roads even narrower to reduce impacts - single lane with pull outs. Have the inspectors use little RV's etc. to keep the maintenance roads to a minimal impact as this would reduce some of the negative effects on wildlife. (1196)

Response: The roads are designed based on the expected traffic volume and type, length of need and resource protection. Designing for some lesser standard of road would not necessarily reduce the impacts to wildlife and it would most likely increase the risks to the road users. The mitigation plan for wildlife includes several measures designed to reduce effects from roads on wildlife.

9. Page 2-47, first paragraph, last sentence, and page 2-56, second paragraph, first sentence: How and by whom will it be determined (a) which roads will be needed for public use upon completion of mining activities and (b) who will be responsible for maintaining them? (1992)

Response: Please see Chapter 4, Transportation section, Alternative II, Traffic Management. Near the end of the project life, the Forest Service would determine which roads would remain open based on the need at that time. The road maintenance responsibilities would based on who needs the road(s).

ROAD-901 Railroads and Rail Loadout Facility

1. Why couldn't the ore be hauled by rail to the existing smelter at Helena? (1523)

Response: The smelter in Helena is for lead while the Rock Creek Mine would have a copper/silver concentrate. The applicant would haul the concentrate via rail to a smelter of their choice. See Chapter 2, Alternative V, Ore Processing and Shipment for the details. The Troy concentrate was sent to El Paso, Texas and Hayden, Arizona.

2. Page 2-10: Rail Sidings: The effects on fish and wildlife habitat and current and proposed threatened and endangered species from the rail siding needs to be considered. (1288)

Response: The area of disturbance was used in calculating the impact on threatened and endangered species. Please refer to the table titled "Surface Disturbance Acreage" (Chapter 2) which lists the acres of disturbance by type and the Table 4-38 titled "Acreage of Habitat Components Physically Altered by the Rock Creek Project" (Chapter 4) which lists the same total acres for grizzly bear analysis.

3. Appendix F: Use of Orzana A at the railroad siding as a glue to control dust losses of concentrate during transit: "Spills would be swept with other contaminated material and shoveled into waste cans to await permanent disposal." --What permanent disposal? Where? (1288)

Response: Based on comments and experience with the Troy rail loadout, Alternative V would have an enclosed rail loadout facility and utilize covered railcars. The rail loadout facility will be designed to facilitate the containment of any spilled concentrate. If there were a spill, permanent disposal would entail placing the material in the railroad car with the rest of the concentrate for shipment to a smelter.

4. The DEIS does not adequately address the increased rail activity in the lower Clark Fork valley and the environmental and demographic effects of increased rail traffic. (1288)

Response: This proposed project does not increase the rail traffic significantly in the lower Clark Fork Valley. Railroads are regulated by Interstate Commerce regulations and not within the jurisdiction of the state of Montana or the Forest Service. There would be 51,000 tons of concentrate produced per year (please see Chapter 2, Alternative II, Ore Processing and Shipment). An average ore rail car holds about 100 tons. This equates to 510 rail cars per year or about 10 cars per week. Montana Rail Link(MTRL) currently has about 30 trains of up to 100 rail cars per train daily over this line. In addition, there is a daily Monday-Friday, work train that moves loaded and unloaded rail cars between Paradise and Sandpoint (pers. comm. Jay Lentzner, MTRL, with Tom Grabinski, USFS, May 10, 1996). The 510 rail ore cars per year would represent only a 0.05% increase in cars being transported (30 trains per day X 100 cars per train X 365 days per year = 1,095,000 cars per year)

5. Page 2-69, Ore Shipping: With the placement of the rail loadout facility at the Miller Gulch facility, the haul distance will be significantly shortened. It is anticipated that all of the concentrate handling could be accomplished in a 12-hour period daily. This would significantly reduce the noise levels during the night hours. (1589)

Response: The method of transporting the ore from the mill to the rail loadout has changed under Alternative V. The ore would be shipped in a 3-inch pipeline, thus doing away with the use of ore haul trucks, which would reduce the noise levels from this source. The rail loadout would also be enclosed, thus further reducing noise levels.

DRAFT EIS
RESPONSES TO COMMENTS

RECREATION AND WILDERNESS

Recreation REC-1000
Wilderness REC-1001

REC-1000 Recreation

1. Can the Forest Service legally deny the public access by the closure of Rock Creek and Chicago Peak? (1245)

Response: Road closures are proposed on the Orr Gulch and Chicago Peak roads under action Alternatives II through IV. Under Alternative V, portions of Orr Gulch and the Government Mountain Road No. 150 would be closed. The Forest Service has regulatory authority to restrict motorized access on roads under 36 Code of Federal Regulations (CFR) 261.54. The Forest Service does have authority under 36 CFR 261.53 to close areas to any type of access, but only restrictions under 261.54 (motorized use of roads) are proposed.

2. Increased competition for hunting, fishing & other outdoor recreational activities. Is the Forest Service willing to shut down some of the outfitters to help mitigate this? (1246)

Response: The Forest Service has no plans at this time to shut down any existing outfitters. If unanticipated problems would occur between commercial use and the general public in the Rock Creek drainage, outfitter permit modifications could be considered.

3. FDR #2741 (Chicago Peak Rd) should be kept open! It would already be a disturbed area, so it makes no sense to close it to foot traffic. Closing this access to the wilderness could result in a backlash against grizzly bears that would more than offset the supposed benefit of the closure. A better alternative would be to close more of the Orr Creek road, an area where the bears might move into. Also, use road alternative II (pg 2-45) to allow freedom of public use of #2741. (1270)

Response: There is no proposal under Alternatives II through IV to close the Chicago Peak road to foot traffic. Proposed mitigation under Alternatives II through IV would restrict motorized access on the upper 1.88 miles portion of the road while allowing foot traffic. It is unknown whether public backlash to this road closure would have a greater impact on grizzly bears than impacts from continued motorized use of the road. Closing more of the Orr Creek road instead of closing any of the Chicago Peak road was considered, but because of habitat and other wildlife species such as goats, the Chicago Peak road closure was developed. Impacts of closing the roads are addressed in Chapter 4-Recreation, Biodiversity, and Threatened and Endangered Species of the final EIS. Alternative V does leave FDR No. 2741 open to motorized use and alternate road closures on FDR No. 150, Government Mountain Road are included.

4. Recreational activities such as hiking, swimming, fishing, hunting, and picking huckleberries would be directly affected by the mine. (1351)(1528)

Response: There would be effects to various recreational pursuits. These are addressed in Chapter 4, Recreation.

5. The proposed project will be destroying the whole custom and culture of the area. The wilderness character and the recreation will be diminished greatly. (1616)

Response: Effects to wilderness and recreation opportunities are shown in Chapter 4. The proposed project would indeed change but not destroy some aspects of these resources.

6. The DEIS fails to take into account the value of all roadless lands, corresponding to both wilderness values and the values of providing core habitat for the several rare wildlife species utilizing the area whose reductions in historical habitat range make their long-term viability in doubt. These are priceless, irreplaceable values that should not be compromised for greed or unsustainable consumption. (1670)

Response: Analyzing the value of all roadless areas is beyond the scope of the EIS. The final EIS does look at the impact of the project on wildlife some of which are wide ranging in their habitat use. See Chapter 4, Biodiversity and Threatened and Endangered Species sections for effects to wildlife species. The EIS in Chapter 4, Wilderness, analyzes the impacts of the proposal on wilderness, specifically the Cabinet Mountains Wilderness, and users of the wilderness.

REC-1001 Wilderness

1. The Cabinet Mountain Wilderness (CMW) Area was designated such as that, a wilderness area. How can a mining company propose to take material from a wilderness area? The Kootenai Tribe of Idaho's understanding of this designation was that when a parcel of land is set aside from public use as a special designation of wilderness, it is to retain its properties as that of a wilderness area. The Tribe is also of the understanding that designated corridor is be protected above and below the surface. If that is the case, an adit should not be allowed to built into the CMW area nor there be any extraction of any ore from underneath the wilderness area. The danger of change to the pristine mountain lakes of the area are far to great. (2026)

Response: The Wilderness Act under Section 4(3) allows for mining to occur within wilderness, provided that mineral claims were made prior to December 31, 1983. ASARCO filed claims on these lands prior to that date, and therefore have rights under the mining laws. While the Forest Service manages the surface, provisions allow for underground mining and essential surface disturbance, with restoration of the surface to occur as soon as it has served its purpose. Risks to mountain lakes are considered remote, and are discussed in Chapter 4-Geology.

2. The Cabinet Mountains Wilderness will be affected by this action. Mining should not be allowed under a wilderness area to begin with. The fact that the land is set aside to protect wilderness habitat seems to be a great contradiction with mining in itself assuming all the disturbance that will be caused to the land and flowing waters. (1268)(1276)(1290)(1295)(1297)(1305)(1307)(1313)(1320)(1329)(1346)(1353)(1376)(1422)(1501)(1515)(1522)(1525)(1631)(1640)(1641)(1644)(1664)(1667)(1668)(1670)(1707)(1712)(1735)(1916) (1948)(2026)

Response: The Wilderness Act specifically states that holders of unpatented mining claims validly established as of midnight December 31, 1983, shall be accorded rights under the 1872 Mining Act on those National Forest Service lands designated by the Act as wilderness areas. The ASARCO claims fit into this category. ASARCO received patents to 99 claims (1686 acres within the wilderness and 123 acres adjacent to it). On the claims within the wilderness, they received rights to the minerals only. On those claims outside the wilderness, they received surface as well as subsurface ownership. The United States reserves title to the surface resources of the claims in the wilderness. Sterling acquired the Rock Creek claims in October 1999. Reasonable stipulations may be prescribed for the protection of the wilderness character of the land consistent with the use of the land for the purposes for which they are leased, permitted, or licensed. See Chapter 4-Wilderness of the EIS for additional details.

Wilderness areas are primarily devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use. However, the Wilderness Act also provided for other activities including mining, grazing, and even some motorized use if such use occurred prior to establishment of the wilderness area.

3. Visual and noise related impacts (blasting, equipment, mill sounds etc.) in and around the wilderness area would also affect the many people who use the Rock Creek drainage and the Cliff Lake area extensively for recreation. These impacts are in direct conflict with the values of beauty, solitude, and quiet for which wilderness is important. (1384)(1363)(1481)(1675)

Response: Visual and noise related impacts to the wilderness and surrounding areas are addressed in Chapter 4-Wilderness, Recreation, Sound, and Scenic Resources.

The Agencies' analysis presented in the EIS recognizes the substantial alteration of existing views during project construction and operation for those recreationists who use FDR Nos. 150 and 2741 and adjacent National Forest Service lands in the Rock Creek drainage. Visitors to the Cliff Lake

area who access the wilderness via the Rock Creek drainage, and who value the existing natural-appearing landscape in the drainage, would be affected by project-generated visual changes, although project facilities would not be visible from viewpoints immediately surrounding this lake basin. Blasting sounds would be audible during early phases of adit construction, but once underground, blasting sounds would be minimal away from the adit portals. Other visual mitigations are included and are described in Chapter 2, Alternative Descriptions and evaluated in Chapter 4, Scenic Resources.

4. I am most concerned over the abuse of land in the Cabinet Mountains Wilderness. Unless special precautions are taken the destroyed eco-systems will never come back. (1711)

Response: Except for a possible air intake ventilation adit within the wilderness, all project facilities would be located outside the wilderness. While certain resources within the Rock Creek drainage would be affected by the proposal, analysis does not indicate that the ecosystem would be destroyed and would never come back. Chapter 4 details effects to the various resources for each alternative, and also describes irreversible and irretrievable commitments of resources. The primary irretrievable resource would be the ore body that is mined out.

5. The proximity of the project to the Cabinet Wilderness Area. I feel that the amount of public lands set aside for wilderness areas in this country is currently inadequate and much less than adequate for the future. To consider allowing a large scale development, such as the ASARCO project, with its potentially harmful effects on the wildlife and recreational opportunities in an area such as this is extremely short sighted. (1640)

Response: Analyzing the amount of public lands set aside for wilderness in this country is beyond the scope of this EIS. The comment about allowing a large scale project like the Rock Creek Mine project being short sighted is noted. The current mining laws allow mining to occur on federal lands as long as other resources can be reasonably protected.

6. Because the project will be underneath and adjacent to a wilderness area does the DEIS adequately address the impact of the mine on the Kootenai Forest? (1356)

Response: Chapter 4 addresses impacts to other resources on the Kootenai National Forest. The interdisciplinary team has tried to cover all potential impacts in the analysis.

7. Of major concern is the construction of a ventilation adit within the Cabinet Mountains Wilderness. Construction of the Mine with the ventilation adit significantly compromises the very purpose for wilderness designation by introducing unnatural noise, fumes, and visually degrading the area. (1245)(1288)(1301)(1351)(1440)(1447)(1532)(1624)(1664)(1727)(1735)(1736)(1923)

Response: Effects of the potential ventilation adit in the wilderness are addressed in Chapter 4-Wilderness, Sound, and Scenic Resources.

The Agencies' analysis of visual impacts of the ventilation adit located within the Cabinet Mountain Wilderness indicates that its degree of contrast and impact could vary slightly depending on final location of the adit, but would likely be low. Agency-proposed mitigation under Alternatives III through V (see Chapter 2 of the EIS) would help ensure selection of a minimum-impact location for the adit and reclaiming the wilderness adit as close to premining conditions as possible following mine closure.

8. The mining activity under the Cabinet Wilderness Area is unacceptable. That area is as beautiful as the wilderness of Alaska, and must not be affected in anyway. I do not feel the Draft EIS has properly addressed the impact on wildlife and the numerous lakes above this mining action, or the noise of the surface activity close to the wilderness boundary. (1917)

Response: Thank you for your comment. The Rock Creek EIS interdisciplinary team has reviewed and in some cases modified the analysis of impacts in Chapter 4. The final EIS provides enough information and analysis for the decision makers to reach a reasoned decision on this project.

9. The whole spirit of protecting wild places is negated by practicing bad stewardship on land adjacent to such areas, or anywhere actually, but its lack of integrity is particularly troublesome in wild areas that don't have legislative protection. (1645)

Response: When Congress passed the Wilderness Act in 1964, they did not intend to provide a buffer around designated wildernesses. The lands were to remain under Multiple Use Management.

10. Does wilderness only exist on the surface and not in the ground below and the air above? (1726)

Response: The Wilderness Act does not specifically identify all that is included in designated wilderness, however, there is wording that states that a wilderness is "an area where the earth and its community of life are untrammeled by man." The Act also recognizes that mining laws pertain to the wilderness under certain situations.

11. Approval of "siting and construction methods" should be established during the EIS process, not after. The different options and locations should be part of a detailed analysis. Given this adit is an actual surface disturbance in the Wilderness Area, and hence of serious concern under terms of the Wilderness Act, the analysis needs to be much better. Why has this not been done? On project maps, no lines exist to show linkage of the ventilation adit to the main adits. (1196)

Response: Until the underground geology and the rock mechanics are completely understood, it is difficult to be precise about locations of facilities that are dependent on geologic features. The air intake adit location proposed by the applicant was used to analyze impacts in Alternative II. This adit would only be constructed if additional ventilation was required to meet mine air quality standards as defined by the Mine Safety and Health Administration. The agencies modified the location and size of the adit in Alternatives III through V, in an attempt to minimize the potential surface and noise disturbance within the wilderness. Additional mitigation to look at other possible alternative measures for the adit were added to the final EIS. The agencies feel that the analysis adequately portrays the impacts under each alternative in Chapter 4. No lines are drawn on the alternative maps from the air intake ventilation adit to the main adits because the air intake adit would in all likelihood come from the main body of the mine instead of from the main adits. The figure titled "Landownership and Permit Boundary" (Chapter 2) shows the general ore body location. If the air intake ventilation adit were necessary, the actual adit location would be located within the claim boundary.

12. Numerous inconsistencies exist: will this adit be used for an escape route or not? The State says yes; ASARCO said no. The agencies suggest a steeper slope for adit location. A steep slope will preclude emergency escape. A "tamper-resistant grate" may be a bit difficult to open in an emergency. How can the public be assured that ASARCO will not be tempted to surreptitiously rewire the fans to exhaust contaminated air into the CMW in the dark of night? Why have these issues not been addressed in the DEIS? (1196)

Response: The applicant has stated in their application that the adit, if needed, would provide a secondary escape way from the mine. Under Alternatives III through V, the adit could be used as an emergency escape way as well. Slope of the adit would be designed to primarily meet the criteria of

providing clean air intake, but it is assumed that slopes would be gradual enough to provide for emergency foot travel if necessary. Grates would be tamper resistant from the outside to preclude unauthorized entry into the mine. It is assumed that exit from the inside would be relatively easy to meet any Mine Safety and Health Administration criteria. As far as assurances that the applicant would not use the intake adit to exhaust air into the Cabinet Mountain Wilderness, the only assurance agencies can give the public is that the Plan of Operations (PO) and State permit would specify the adit is for air-intake only. If the adit were used for exhaust, the applicant would be in violation of the terms of the permit and PO, and the matter would be dealt with under the terms of the permits.

13. 2-54…Last paragraph. Face the ventilation adit with natural rock on the outside so it will look as natural as possible. Remember, this is a wilderness area. (1196)

Response: In Chapter 2, Alternatives III through V, under reclamation, the Agencies have included facing the adit at conclusion of mining to replicate natural conditions. Naturally appearing rock would be used to the extent feasible.

14. We contend that the proposed ventilation adit within the wilderness is only acceptable if the following conditions are met: This adit is required by Mine Safety and Health Administration regulations. The adit is driven to the surface from underground. The use of motorized equipment on the surface to create an opening is prohibited. Reclamation must be performed without use of motorized equipment on the surface. (1653)

Response: The conditions you state conform with the agencies' preferred alternative. It is difficult at this time to state with absolute certainty whether all reclamation could be accomplished from inside the tunnel. Any needs for motorized equipment from the outside during reclamation would be analyzed at the time reclamation is needed (if needed).

15. I want the plan to be modified to tell us how they intend to mitigate loss of wilderness. (1527)

Response: There would be no loss of wilderness per se. Chapter 4-Wilderness addresses the attributes of wilderness which would be affected under the various alternatives. Alternatives III, IV, and V propose measures such as modifying sound outputs which would reduce impacts to wilderness and wilderness visitors.

16. In addition to impacts to air quality and visual quality, the proposed project would create noise pollution, degrade wilderness qualities of naturalness and solitude, and severely impact ecological values, including wildlife, especially associated cumulatively with the Montanore Project. The Cabinet Mountain Wilderness should be expanded to protect its integrity and ecological values, not degraded from its current condition. In addition, wilderness access, particularly to Chicago Peak, would be reduced. Although we oppose this reduction in access, we are not suggesting a reduction in mitigation measures for wildlife. (1220)

Response: Effects to wilderness are addressed in Chapter 4-Wilderness. Some expansion of the Cabinet Mountains Wilderness has been proposed in the Kootenai Forest Plan, but only the Congress can designate wilderness. Your concern about reduced access if the Chicago Peak Road is closed is noted. Alternative V would leave the Chicago Peak Road open although the last 1.8 miles would be closed to motorized traffic under Alternative II through IV.

The cumulative effects to wildlife from the Montanore project combined with the Rock Creek Mine project are disclosed in the cumulative effects analysis. The effects of the mitigation measure of closing the Chicago Peak Road on recreational use were considered.

17. Page 2-28: par3: Ventilation opening: "...very little (no specific quantity provided by ASARCO) waste rock will be deposited on the surface at the opening; the disturbed area would be limited to the opening itself." What does this mean? The disturbed area will be "less than 3,000 square feet of surface." Is the opening therefore approx. 55' x 55'? Why has ASARCO not been required to say how much waste rock will be deposited on the Wilderness surface? (1288)

Response: Under Alternatives III through V, the agencies intent would be to work with the applicant to minimize all possible impacts to the wilderness. If the air intake adit were needed, almost all rock would be back hauled down the adit to the mine itself. Only the final couple of feet of rock before exiting at the outside face would have the potential to end up in the wilderness. Until an exact location is identified on the ground, it is difficult to estimate the amount of rock that could potentially end up in the wilderness. Under Alternatives III through V, if 20% of the last foot of the exiting face were unable to be pulled back into the adit, approximately 6 cubic yards of material would end up in the wilderness. Under the applicant's proposal (Alternative II), the agencies had asked for more specific detail, but such detail was not provided. Because adit location and size would be dependent on safety needs that can only be identified at a point in time after mining would start, any response from the applicant would be extremely speculative. The agencies' assumption of 800 square feet of potential surface disturbance was used to portray an alternative to the 3000 square feet that the applicant provided. Each of the twin adits proposed for the main mine portal would be 20 feet by 25 feet (500 square feet). The agencies feel that the air intake ventilation adit, if needed, would not need to be larger than the 500 square foot opening for one of the twin adits. It is also possible that there would be some additional surface disturbance depending on the slope at the opening, therefore the 800 square foot figure was used.

18. The CMW ventilation adit would be required to ventilate the mine to meet MSHA standards. So, it is misleading to say that it might not be part of the plan. This appears to be a verbal ploy to downplay the inevitable CMW surface disturbance from the mine. And the ensuing sentences describing the already-agreed upon plan for placing the vent in the CMW makes this very clear. How is any surface disturbance acceptable in the CMW? (1288)

Response: Until actual air flow is determined, there is no certainty that an adit in the wilderness would be needed. The agencies feel that there is a good chance that air flow into and out of the proposed mine could be adequately provided for with the evaluation adit and the twin adits proposed for actual mining. Mitigation to explore other alternative ventilation methods that had become technologically available since the EIS was finalized has been added to Alternatives III through V. The applicant's proposal to switch from diesel haul trucks to electric ones and use low-emission diesel engines on remaining underground heavy equipment under Alternative V would reduce the pollutants in the adit air which need to be ventilated. Whether surface disturbance in the wilderness is inevitable is unknown. See Chapter 4-Wilderness for additional discussion about how the law provides for some surface disturbance.

19. The first sentence on 2-69 is gobbledegook; makes little sense. What other choices are there? None in the DEIS. Surface Disturbance and Ore Shipping: The same questions apply for the disturbed area and Miller Gulch Rail loading site as discussed above for Alternative II. (1288)

Response: The agencies' preference would be to avoid, if possible, placing a ventilation adit which daylights in the wilderness. The applicant has proposed switching from diesel haul trucks to electric ones underground. Other options that might be looked at could include increasing existing fan capacity in the evaluation or mine adits, other intake adits outside of the wilderness, or possibly a different location or size of adit within the wilderness. Without knowing specific air needs in the mine for any given period of time, it is difficult to analyze all possibilities. If ventilation options and

impacts were different from those analyzed in this analysis, additional MEPA/NEPA review would need to occur.

It is not clear what the comment about surface disturbance and ore shipping is referring to. If you are referring to the question of other choices for the amount of surface disturbance and the rail loading site proposed under Alternative II, please refer to Alternatives III, IV and V, and other alternatives considered in Chapter 2.

20. Issue 1 item 3: Add wilderness wetlands to statement. Issue 8: item 3: Applies to all action alternatives; vent. adit and noise levels will impact wilderness solitude in all cases! (1288)

Response: These changes are incorporated into the EIS.

21. Can you assure me that Clark Fork River and the surrounding wilderness areas will not be affected in any way? (1761)

Response: Chapter 4 identifies effects to various resources. There can be no assurance that the wilderness or the Clark Fork River would not be affected.

22. The aesthetic quality of the area is of one that is shared by no other area. These impacts would greatly affect the area. Noise would definitely destroy surrounding areas, especially in the CMW area near the adit. Explosions from the mine, rock processing, increased traffic, all would greatly diminish the areas value. The Tribe does not understand how the Forest Service could even allow a ventilation duct be placed into the CMW? No impacts from man are supposed to be allowed in, on, above, or below a wilderness area. Those areas are designed to keep present and future desired conditions as is, not to be marred by mining activities. The visual quality is expected to extremely impaired by destruction of land. The mine site could be seen from Highway 200 plus also the tailings impoundment would be readily visible. Many impacts would also be felt into the CMW area as to visibility including air quality, mine adit ventilation ducts, possible reduction in wilderness lake levels. (2026)

Response: Expected effects of the various alternatives are identified in Chapter 4, Scenic Resources, Noise, Air Quality, and Wilderness. See REC 1101-1 and 2 for responses to activities allowed with the wilderness.

The Agencies recognize that the Cabinet Mountain Wilderness (CMW) has outstanding and unique wilderness attributes. These attributes would be impacted as described in the EIS. The EIS also describes the major and significant visual impacts for the Rock Creek drainage and Clark Fork Valley from the action alternatives (see Chapter 4 of the EIS). While the tailings disposal facility would be visible in foreground views from Highway 200, the confluence mill site located approximately 5 miles up the Rock Creek drainage would not be. Project facilities that would be visible from wilderness peaks are shown in the EIS in the table titled "Project Facilities That Would Be Visible From Wilderness Peaks by Alternative" (Chapter 4). Effects on CMW visitors resulting from visibility of these project facilities could vary from minimal to significant, depending on personal expectations and values. See also the response to comment REC-1101-7 for the visual impact of the ventilation adit in the CMW.

23. How can the USFS justify its seeming promotion of the Rock Creek Mining project, which will dramatically impact prime wilderness areas in W. Sanders Co, while at the same time locking the general public out of certain areas of that same wilderness? (1395)

Response: The U.S. Forest Service is mandated to manage for multiple uses, including minerals, wilderness, wildlife habitat, recreation, timber, etc. Impacts to wilderness are addressed in Chapter 4-Wilderness. There are no plans to lock anyone out of areas of the wilderness; rather, types of

access (motorized use) adjacent to the wilderness may be restricted in some areas under certain alternatives.

24. Limiting access to the wilderness through road closures is undesirable. The Cliff and Copper Lake area now provides easy access to alpine wilderness for many people. Closing the road to this trail head would considerably reduce the use of the wilderness by local citizens especially seniors and children. Similarly, closing the Orr Creek Road would limit access to the Engle Peak and Engle Lake area. (1245)(1270)(1293)(1301)(1308)(1309)(1341)(1371)(1384)(1389)(1421)(1515)(1516)(1523)(1530)(1539)(1542)(1543)(1545)(1607)(1613)(1637)(1639)(1678)(1719)(1721)(1724)(1727)(1732)(1737)(1738)(1741-1744)(1746)(1747)(1913)(1916)(1923)(1929)

Response: Road closures on these routes under Alternatives II through IV would likely reduce some wilderness use. This is one of the trade-offs that decision makers will look at when making a decision on the proposal or alternatives to the proposal. Alternative V provides for leaving the Chicago Peak Road open as it is currently managed while closing portions of FDR No. 150, Government Mountain Road.

25. What would the aesthetic value of such an experience be with the constant noise pollution from the mine (24 hours a day, 7 days a week for 30 years) and the disappearance of the now often seen mountain goat and other sensitive animals that live in this pristine wilderness? (1371)

Response: Apparent Naturalness (aesthetics) of the wilderness is addressed in Chapter 4-Wilderness, Sound, and Biodiversity - Mountain Goats.

The applicant provided an analysis of noise levels from the road to several places on Rock Creek after the draft EIS. This analysis provided an indication of the noise animals, including the harlequin duck, would hear from the road. The effects of noise to some wildlife can be better analyzed with the results of this data collection. The effects to mountain goats would not directly be addressed from the data collection. Some mountain goat herds are known to habituate to noise, however, habituation may occur after a herd suffers losses during the adjustment. This effect is discussed in Chapter 4, Biodiversity, of the EIS.

26. This pristine and accessible wilderness area affords many wonderful outdoor experiences, and should be protected. (1931)

Response: The wilderness would be protected under existing laws and regulations. The Wilderness Act allows for some mineral activity to occur, but wilderness surface resources would be protected to the extent possible. Section 4(d)(3) of the Wilderness Act states that reasonable stipulations may be prescribed "... for the protection of the wilderness character of the land consistent with the use of the land for the purposes for which they are leased, permitted, or licensed."

27. Closure of the Chicago Peak road has not been analyzed under the American's w/Disabilities Act, as it provides wilderness access like none other does. (1780)

Response: Closure of the Chicago Peak road under Alternatives II, III, and IV would make access to the wilderness more difficult for some individuals, including those with disabilities. The American's With Disabilities Act (ADA) specifies that "...consistent with the Wilderness Act no agency is required to provide any form of special treatment or accommodation, or to construct any facilities or modify any conditions of lands within a wilderness area in order to facilitate such use" (Sec. 507 (c) of ADA). The Act does not specifically address access outside of wilderness. However, under Alternative V the Chicago Peak Road would remain open.

28. There are many places that provide opportunity for solitude and primitive recreation within the Cabinets, and these will adequately provide for wilderness use during the life of the project. The towns of Libby, Troy, Noxon, and Trout Creek, the ASARCO Troy mine and farm and ranch lands are all visible from various points in the Cabinets. We cannot change that within the scope of this project. In many ways this already compromises the natural integrity and apparent naturalness of this area. The existing wilderness within the Cabinet Mountains is known to be a narrow corridor. There are limited opportunities to get the same experience in the Cabinets as you can by escaping into the vastness of the Bob Marshall Wilderness. At just about any point along the Cabinets you can hike up and down from one side to the other in the same day. Let's be realistic when we evaluate these things. You can already see and/or hear the train, traffic on the highways, cows and dogs and even people talking or hammering from many vantage points in the Cabinets. Are we going to make these sources all reduce their noise levels, or can we simply choose to avoid those peaks if that sort of thing is bothersome? (1239)

Response: The Agencies agree that many existing activities located outside the Cabinet Mountain Wilderness (CMW) can be seen or heard from some locations within the wilderness, and these factors will not likely change. Chapter 4, Wilderness, Scenic Resources, and Sound, address additional impacts for each alternative. Lake basins within the CMW which receive the most visitation would be largely unaffected by sights and sounds of the potential project. In response to the comment that there are many places that will adequately provide for wilderness use during the life of the project: adequacy is often in the eye of the beholder. In general, other than a potential increase in wilderness visitation and values around the potential air intake ventilation adit, there would be limited impacts to the wilderness.

DRAFT EIS
RESPONSES TO COMMENTS

SCENIC RESOURCES

Scenic Resources SCR-1100

SCR-1100 Scenic Resources

1. Such an operation located so near a scenic wilderness would certainly have a negative visual impact. (1425)(1306)(1290)

Response: Potential effects on Cabinet Mountain Wilderness visitors resulting from views of project facilities in the Rock Creek drainage and Clark Fork Valley would likely vary from minimal to significant depending on personal expectations for wilderness visits. The visibility of project facilities from various wilderness locations such as trails, peaks, and lake basins, is discussed in the EIS in Chapter 4.

2. Effects on aesthetic quality due to the project are significant and are similar to many of man's activities such as Highway 200 and the town sites of Noxon or Trout Creek. That is the price of our existence, also known as civilization. If you dwell in modern housing, use appliances, grow crops, produce a product or drive a vehicle you are part of civilization and require metals directly or indirectly to sustain your existence. And in the case of this mine the effect on aesthetic quality will be temporary with very little evidence remaining after reclamation. (1502)

Response: Mining does provide metals that benefit civilization, but can also result in significant impacts to the environment. The Agencies' analysis of visual impacts for the action alternatives indicates impacts would be long term potentially significant rather than temporary. While manmade changes to the Clark Fork Valley such as Highway 200, scattered town sites, and hydro power development are noticeable, they lack the highly industrial character of the proposed mine. It is the introduction of mining facilities to the present natural-appearing forest landscape and their large-size scale and contrasting appearance that contributes to their potentially significant effect on aesthetic quality. Visual impacts would continue for the approximately 30-year mine life and a natural-appearing landscape would not be restored to the project area until the successful completion of reclamation measures and growth and establishment of vegetation several decades after mine closure.

3. The DEIS fails to adequately discuss the impacts of unacceptable light pollution; we want it to be dark at night. A minor area of concern would be lighting at both the impoundment and Miller Gulch rail siding. What about adit light visibility and other lights visible from the CMW? How are visible, artificial lights compatible with wilderness? (1288)(1455)(1737)(1923)

Response: Under certain weather and ground cover conditions such as open, snowy hillsides adjacent to lighted facilities and low cloud cover with high light reflectance from clouds and snow, indirect lighting of the night sky could be a noticeable effect of project operations from some viewpoints. This effect would likely be most noticeable for the mill site where lights for security and safety during night operation would be more numerous than for other facilities. The other facilities that would require limited night-time lighting would be buildings near the tailings impoundment, the rail load-out facility, water treatment facility, the office/shop area along FDR No. 150, pump buildings, and transformer substations. The evaluation adit also would require night-time lighting for one year during adit development. The applicant proposes to use shielding and strategic placement of lights, as well as new bulb colors. These measures should minimize light pollution from project facilities for nearby viewpoints as well as for more distant viewpoints such as lake basins within the Cabinet Mountain Wilderness (CMW). Lights for nighttime operation of some project facilities would still be visible from some viewpoints on the perimeter of the CMW (see the table titled "Project Facilities that would be Visible from Wilderness Peaks by Alternative" [Chapter 4] of the EIS).

Wilderness designation does not preclude the presence of man's activities outside of the wilderness boundary. Congress did not authorize any buffer zones to preclude the sights and sounds of man.

4. The mine tailings pond will have a major visual image from Highway 200. This negative image is not in the interest of a National Forest. Major and significant visual impacts for the Rock Creek drainage and the Clark Fork River Valley would occur because the form, color & texture of the mill site and tailings impoundment would contrast dramatically with the surrounding landscape. (1290)(1341)(1351)(1641)(1735)(1736)(1777)(1914)(1917)

Response: The Agencies' analysis of visual impacts in the draft EIS did disclose major and significant effects in the Rock Creek drainage and Clark Fork Valley, including the high contrast of project facilities with the surrounding landscape, and alteration of existing views for recreationists and other forest users. Agency-proposed mitigation measures discussed in Chapter 2 of the EIS for Alternatives III, IV, and V would help reduce these effects and restore a natural-appearing landscape to the permit area several decades following mine closure.

5. The mill, the tailing impoundment, and portions of the transportation and utility corridors will be visible from some locations within the Cabinet Mountains Wilderness (CMW), and will intrude on the wilderness experience of visitors. As indicated by a statement on page 4-157 of the DEIS it would not be possible to realize any of the Forest Plan visual quality objectives during the life of the mine. All reasonable and practical measures should be taken to minimize this intrusion. Vegetation planting to screen the above mine activities should begin at the earliest possible time. However, since such plantings will require a substantial amount of time to provide effective visual screening, there will inevitably be adverse visual impacts on the CMW for a significant portion of the construction and mining operation period. (1351)(1653)

Response: Agency-proposed mitigation would begin tree planting sooner than mitigation proposed by the applicant, and would help restore a natural-appearing landscape to the project area over the long-term but would be largely ineffective at screening mine facilities from Cabinet Mountain Wilderness (CMW) viewpoints during the short term. Under Agency-proposed mitigation for Alternatives III and IV, final reclamation and revegetation on impoundment faces would be phased during mine operation, with tree planting starting after year 7 when up slope construction began and occurring about every 2 to 4 years after that. Tree planting on the top surface of the impoundment would not begin until after mine closure, and visibility of the impoundment surface from the CMW would remain high for many years. Under Alternative V with bottom-up construction, tree planting on the top surface of the tailings paste facility would be phased over years 21 through 33 of mine operation. See also the response to earlier comment regarding effects of light pollution from mine facilities.

6. What will be done to achieve the VMS and VQO during the mine's 30-year life? (1207)(1737)(1923)

Response: Agency-proposed mitigation measures that would be implemented to reduce visual impacts and help achieve visual quality objectives under Alternatives III, IV, and V are discussed in Chapter 2 of the EIS. The Agencies' believe these are reasonable and practical measures that would reduce visual impacts during mine operation and help achieve long-term visual quality objectives (VQO) after mine closure. VQOs prescribed under the policy guidelines of the Visual Management System would not be met during mine life. With Forest Plan revision and creation of Management Areas 31 and 23, mine facilities on National Forest Service (NFS) lands would have no life-of-mine VQOs. Following completion of reclamation on NFS lands, a long-term VQO of Partial Retention would be applied.

7. How will treating or painting mine structures blend them with their surroundings? (1288)

Response: High color contrast between an object (such as mine facilities) and the surrounding landscape tends to make the object more noticeable. In forested landscapes such as the project area, mine facilities with dark, dull colors would tend to blend into their surroundings, whereas facilities with light, bright colors would be highlighted and more noticeable. Under Agency-proposed mitigation, dark colors would be selected for permanent (life-of-mine) structures within the project area to help visually blend them with the surrounding forest landscape.

8. Page 2-93: par. 2, last sentence: "Visual impacts..." Why is this statement any less pertinent to the Rock Creek site than to the McKay site? Why is this not discussed relevant to the proposed sites? (1288)

Response: The statement regarding the magnitude and significance of visual impacts that would have resulted from the McKay Creek impoundment, i.e. "visual impacts (of the McKay Creek impoundment) would have been adverse, long term, and significant to those recreationists and visitors who valued the existing, natural-appearing landscape in this drainage" also applies to similar impacts that would result from action alternatives in the Rock Creek drainage. The EIS states that all action alternatives would result in significant visual impacts for the Rock Creek drainage and Clark Fork Valley. The EIS also states that impacts for either the impoundment or tailings paste facility and mill site for Alternatives III, IV, and V would be significant even with Agency-proposed mitigation, and that mill facilities in the Rock Creek drainage would be a visual intrusion to those recreationists and forest users who value the existing, more natural setting.

9. The visual simulations of the proposed impoundment are a joke, and are not adequate to show what visual effects it will have. All they show is how the trees will grow and do not give a feeling at all of the loss of view of the Cabinets or how the impoundment will loom hundreds of feet overhead. (1196)

Response: Computer-generated visual simulations of the tailings facility (see Figures 4-14, 4-16, 4-18, and 4-19) were based on conceptual design information supplied by the applicant. Aerial perspectives (Figures 4-20 and 21) were developed for Alternative V to show the progression of development using paste technology. Although the tailings facility would be approximately 325 feet in height, it would be located against the southern flank of Government Mountain and its crest would be approximately 0.4 mile from the viewer. For Highway 200 viewpoints (such as the ones in the above-referenced figures), the tailings disposal facility would not loom directly overhead nor result in a significant loss of view of the Cabinet Mountains. Near-foreground trees adjacent to the highway would effectively screen views of the tailings disposal facility as they grew during mine operation (see Figures 4-18 and 4-19 for a comparison of Alternative V).

10. The numerous mitigation efforts aimed at visual "impacts" are offered without justification and with no analysis of their effectiveness (page 2-68 bullets 2 & 3 and page 2-73 line 1). The use of oxidating compounds is dictated with no analysis of their effects. My memory of the lower Revett is that it is a light color rock; why try to change that? If this is a problem I hope the USFS does not plan on oxidizing the many hundreds of acres of Revett talus slopes in the Cabinets. (4502)

Response: Proposed mitigation measures such as vegetative buffers for screening and painting or treatment of life-of-mine facilities are based on professional judgment and experience with other mining and energy-related projects and other projects in forest landscapes. The desired results of these measures are described, with likely effectiveness evaluated based on past experience with similar projects. To help achieve a post-mine visual quality objective of Partial Retention for the evaluation adit, oxidating compounds would be used on the freshly cut face of the rock surface at the adit following closure, only if necessary, to decrease its contrast with surrounding rock.

11. The many pages of visual simulations (figure 4-9 to 4-15) are a waste of space and money because they are offered with no explanation. The DEIS apparently concludes that a proposed visual mitigation has merit based on the simulations, however, comparing scene B from figures 4-10 and 4-13 the only difference I can see is the use of an unrealistic bright yellow color in the Alternative II scene This is not a good use of a DEIS document. If people want to see the simulations they should be offered at the hearings or in the project files where someone could help interpret them. It would be much clearer and more truthful to say that large mines and tailings facilities are visible and some people may not like that. (4502)

Response: Explanatory text for the visual simulations can be found on accompanying pages of the EIS (Chapter 4). Simulations were produced to help communicate visual effects of the proposed project to EIS readers, rather than to judge the relative merit of mitigation efforts. The middleground view (approximately 2 miles distant) of the tailings disposal facility shown in Figures 4-10 and 4-13 in the draft EIS only, captures its large scale, form and shape, but differences in the initiation of final reclamation on the tailings disposal facility faces between Alternatives II, III and IV cannot be clearly discerned from this viewpoint. These differences in the timing of reclamation activity between alternatives can be seen more clearly in year 7 of mine operations shown in Figures 4-14 (Alternative II) and 4-16 (Alternatives III and IV) in Chapter 4 of the final EIS. Large copies of the visual simulations in the EIS were available for public review at hearings held on the draft EIS and supplemental draft EIS and are on file at DEQ offices in Helena. Chapter 4 of the EIS describes the visibility of the proposed tailings disposal facility and its intrusion for viewers who value the existing landscape of the Clark Fork Valley.

12. The tailings impoundment, as proposed in the DEIS, is unacceptable. How can the USFS justify leaving a 340-acre waste pile on and adjoining public lands, threatening pollution? In addition, this pile clearly does not meet VQO's of the Forest Plan and we found your rendering of the impoundment to be very misleading. Where are renderings of the impoundment for views from Highway 200? How can trees block the view when the impoundment will soar hundreds of feet above them? How will ASARCO get those trees to grow so fast on the sides? Go look at the Troy impoundment and the size of the trees on the impoundment and then tell us again in the DEIS just how this is all supposed to work! We can see the Troy tailings impoundment from the trails into the foothills at the end of our road in Idaho! You need to reveal in the DEIS just how much of an intrusion yet another tailings impoundment will be to the vistas from peaks throughout N. Idaho, NW Montana, and specifically the Cabinet Mountains Wilderness! (1916)

Response: The EIS describes long-term and significant visual impacts of the proposed tailings impoundment or paste facility in the Clark Fork Valley (Chapter 4), and recognizes that none of the prescribed Visual Management System visual quality objectives (VQO) or time frames would be met under any of the action alternatives during mine operation. Under all action alternatives, revisions to the Forest Plan would apply no VQOs to life-of-mine facilities on National Forest Service (NFS) lands. The long-term VQO of Partial Retention would be met on NFS lands following successful completion of reclamation several decades after mine closure.

Simulations of the proposed tailings facility from a viewpoint along Highway 200 are shown in Figure 4-14 (Alternative II), Figure 4-16 (Alternatives III and IV), and Figure 4-18 (Alternative V, bottom-up construction) of Chapter 4. This viewpoint provided an existing view of the proposed tailings facility area that is relatively open and free of trees at the time the photo was taken. See also the response to comment SCR-1200-9 regarding the effectiveness of tree screening adjacent to Highway 200. The visibility of the tailings facility from viewpoints on surrounding peaks of the Cabinet Mountain Wilderness and trails is discussed in Chapter 4 and is expected to last for several decades.

The Troy mine contains tailings research plots on one cell of the impoundment surface. On the rest of the impoundment, tree growth is at least 6-12 inches per year. Dam engineers required the Troy mine personnel to pull trees on the embankment slopes in the early years of mine life to avoid stability concerns. This is why the trees on the impoundment slopes today are so small. In addition, the trees on the impoundment slopes today had to volunteer from the surrounding forest; in other words they were not planted. They would be much taller if they had been planted early in mine life. They would also be much denser if they had been planted at the proposed planting rate. Trees would be planted early and at denser spacings at Rock Creek. They would grow at least 6-12 inches per year. The simulations in the above-referenced figures reasonably portray this growth of 6-12 inches per year.

DRAFT EIS
RESPONSES TO COMMENTS

CULTURAL RESOURCES

Cultural Resources CUL-1200
Native American Rights CUL-1201

CUL-1200 Cultural Resources

1. This project will violate the National Historic Preservation Act: "cultural resources would continue to be impacted by neglect and the indirect impacts associated with increased human activity and growth in the area": (DEIS: 4-178). The National Historic Preservation Act was passed because Americans desire to preserve knowledge about cultural history. (1670)

Response: The project area was intensively surveyed by professional cultural resource specialists in an effort to identify any existing cultural resource properties within the project area. The adequacy of this survey was approved by the Kootenai National Forest (KNF) cultural resource staff as well as by the Montana State Historic Preservation Officer, as required by the National Historic Preservation Act (NHPA). Although several cultural resource sites were identified within the project area, all were found ineligible to the National Register of Historic Places. NHPA requires that agencies mitigate any adverse effects to eligible properties. Since no eligible properties exist within the project area, no mitigation is necessary. This project has been found in compliance with NHPA as required by the Act.

The specific citation discussed in the EIS refers to cultural resource properties located outside of the project area that will continue to deteriorate through natural processes without direct stabilization by humans, or to those properties that might be indirectly affected by increased human activity and growth in surrounding areas. Both of these situations have always affected cultural resource sites across the globe, as cultural resource sites are bound in time and space. Throughout history cultural resource sites have come and gone as sites decayed, or were subjected to natural or human related disturbances. As population continues to grow and people expand into formerly undeveloped landscapes, these forces will continue to affect cultural resource properties in the Clark Fork area as well as throughout Northwest Montana. NHPA applies only to properties located on federal lands or lands where federal monies are being expended, and thus is limited in scope. Any future KNF associated projects outside the project area, will be subject to the NHPA process.

As additional clarification, federal funding to meet NHPA is primarily linked to the assessment of the direct effects an undertaking will have on cultural resource properties. Very little funding exists outside of this realm for the identification and preservation of cultural resource sites not in imminent danger of being directly affected by agency actions. What funding is available, is allocated on a priority basis to significant cultural resource properties or activities deemed important by agency cultural resource specialists. While the potential for indirect effects and natural deterioration processes on cultural resources outside the project area should be acknowledged, it is not fiscally feasible to identify all surrounding properties which might be indirectly affected by population growth or to stabilize all eligible properties. The NHPA has not traditionally applied to such a broad level.

CUL-1201 Native American Rights

1. This project may result in possible violations of AIRFA. (1489)

Response: The American Indian Religious Freedom Act (AIRFA) requires that American Indians be afforded the opportunity to engage in traditional religious practices on public lands. AIRFA does not define mandatory causes for action, enforceable criteria or rules, similar to those outlined in other related legislation such as the National Historic Preservation Act (NHPA). The intent of AIRFA was met through the consultation process. All Tribes who expressed an interest in the project were consulted about any concerns they might have with the project through their designated Tribal representatives. While a number of resource-related concerns were relayed, no Tribe to date has indicated that the project will affect their rights under AIRFA.

2. The existence of Native American sites in the project area needs to be disclosed in the DEIS, along with the consequences of breaking the Hellgate Treaty. These issues have cultural and historical importance to us as residents and stewards of this river valley in support of Native Americans! (1916)

Response: As discussed in the final EIS, a professional cultural resource survey was conducted within the project area. No American Indian sites were located. The adequacy of this inventory was approved by Kootenai National Forest archaeologists and the Montana State Historic Preservation Officer as required by law. When present, the specific location of cultural resource sites is exempt from public disclosure under Public Law 94-456 {16 U.S.C. 470 Sec 9(a)(1)(2)}. Any American Indian sites that are disclosed by Tribal entities must be defined in narrow and specific terms by the Tribal government as per Executive Order 13007 (See #2). Culturally important sites can be protected from most land disturbance. However, it is up to the Tribe to define the type, location and use of each site claimed; it is not up to public involvement. To date, no such sites have been identified.

A determination that the terms of the Hellgate Treaty will be violated by this project and the consequences of any violation are both legal issues that must be decided upon by the federal court system and are beyond the scope of the EIS.

3. This proposal affects the Kootenai Tribe of Idaho significantly. Unlined ponds have great potential for polluting Rock Creek and Clark Fork water bodies. Water quality will be significantly affected. This in essence will break our 1855 Hellgate Treaty which is our living document. (1966)

Response: Please refer to the water quality analysis in Chapter 4 of the EIS as well as other comments and responses pertaining to water quality in WTR-300 et. seq. The agency analysis concludes that under the preferred alternative (Alternative V) there would be no significant effects to water quality in Rock Creek or the Clark Fork River or Lake Pend Oreille.

4. You have successfully condensed all of the treaty rights for the tribes into two pages...You cannot address any tribal issue in two pages. (1966)

Response: The Treaty Rights discussion in Chapter 3 has been expanded in the final EIS. However, the EIS provides only a summary. For a full description, the reader is referred to the text of the treaty. A copy is on file at the agency's offices and may be reviewed during business hours.

5. This project will violate treaties with Native Americans because it will inevitably harm fisheries, wildlife, vegetation, wilderness, and would "limit tribal members from fulfilling their treaty rights during mine life" (DEIS: 4-178). These treaties were passed because some Americans (obviously not those who refuse to reform the Mining Act of 1872) respect other people and respect people's rights to both live in an environment that is pleasing and

maintain their quality of life excluding life-threatening pollutants. (1670)(1489)

Response: The Kootenai National Forest recognizes that there will be some adverse effects to resources discussed under the Hellgate Treaty, as well as to resources important to downstream Tribes. The determination that treaty rights will be violated by this project and the consequences of that violation are legal issues that must be decided upon by the federal court system and are beyond the scope of the EIS.

6. The Hellgate Treaty of 1855, a copy of which has been previously submitted, established fundamental relationships between the United States and the Flathead Nation, 12 Stat. 975 (1855).Article 1 of the Hellgate Treaty provided that the Confederated Salish and Kootenai Tribes "ceded, relinquished, and conveyed" to the United States their "right, title, and interest" in much of western Montana, reserving the present Flathead Indian Reservation to the exclusive use and occupancy of the Tribes. Pursuant to the Treaty of Hellgate, the Confederated Salish and Kootenai Tribes did however retain certain specific proprietary and usufructuary rights to the use of their off-Reservation aboriginal homelands. The Tribes reserved to themselves hunting, fishing, gathering and grazing rights in their aboriginal territory, as well as the right of passage through such aboriginal territory, in perpetuity, and other rights. The Tribes reserved as their "permanent homeland" an area of land known today as the Flathead Indian Reservation. The Treaty was ratified by the United States Senate on March 8, 1859, 12 Stat. 975. Under it, the Confederated Salish and Kootenai tribes agreed to convey, but retained certain rights to, vast portions of their aboriginal homelands to the United States. The portion of the Tribes' aboriginal homelands which were ceded is described under Article I of the Hellgate Treaty as follows: Commencing on the main ridge of the Rocky Mountains at the forty-ninth (49th) parallel of latitude, thence westwardly on that parallel to the divide between the Flat-bow or Kootenai River and Clarke's Fork' thence southerly and southeasterly along said divide to [the one hundred and fifteenth degree of longitude, (115 degrees), thence in a southwesterly direction to the divide between the sources of the St. Regis Borgia and the Coeur d'Alene Rivers, thence southeasterly and southerly along the main ridge of the Bitter Root Mountains to the divide between the head waters of the Koos-koos-kee River and of the southwestern fork of the Bitter Root River from the waters flowing into the Salmon and Snake Rivers to the main ridge of the Rocky Mountains, and thence northerly along said main ridge to the place of beginning. Thus, the Tribes' aboriginal territory includes, at a minimum, all the land under consideration for mining development by ASARCO. State v. Stasso, 172 Mont. 242, 536 P.2d 562 1977); State v. McClure, 127 Mont. 534, 268 P.2d 629 (1954); Confederated Salish and Kootenai Tribes V. United States, 16 Ind. Cl. Com. 1 (September 29, 1964).

Article III of the Hellgate Treaty separately reserved to the Tribes the right to erect temporary buildings for curing, and the right to hunt, gather roots and berries, and pasture horses and cattle upon "open and unclaimed" lands located in these lands. That Article further reserved to the tribes the right to hunt and take fish at all "usual and accustomed places" throughout the tribes' aboriginal homeland, in common with the citizens of the Territory. This treaty language is particularly specific with regard to the United States' government's obligation, in 1855, today and in the future, to take all steps necessary to assure the condition of the fishery, in particular, along with other treaty-protected resources. The Tribes and Tribal members thus possess, inperpetuity, rights to fish, hunt, gather roots and berries, and pasture horses and cattle. In addition, the Tribes and its members possess a proprietary interest in lands - private or public - necessary for ingress or egress to and from "usual and accustomed" place or other areas subject to Treaty rights. United States v. Winans, 198 U.S. 371 (1905). Under the express language of Article III of the Hellgate Treaty and the "Reserved Rights" doctrine, the Tribes reserved to themselves all of their aboriginal rights to use the land, water, and wildlife that they did not affirmatively and expressly cede by Treaty. These rights have been expressly recognized by, among other courts, the Montana Supreme Court. State v. McClure, 268 P.2d 629 (Mont. 1954).

The canons of treaty construction must be applied when interpreting the Hellgate Treaty in order to render it the meaning that such language had to the Tribes at the date of the treaty. Choctaw Nation v. United States, 318 U.S. 423, 431-432 (1943). To determine the full meaning of Indian treaties, the federal courts have continuously applied and expanded these rules of construction. See, for example, Washington v. Washington State Commercial Passenger Fishing Vessel Association, 443 U.S. 658, 675-76 (1979); United States v. Adair, 723 F.2d 1394, 1412-13 (9th Cir.

1983), cert denied, sub. nom., Oregon v. United States, 467 U.S. 1252. (1984).

A tribal right to protect the environment upon which its treaty-reserved fishery resources depends was confirmed in a line of cases now "Boldt decisions," United States v. Washington, 384 F. Supp. 312 (W.D. Wash. 1974), affirmed, 520 F.2d 676 (9th Cir. 1975) cert. denied 423 U.S. 1086 (1976), and its numerous progeny. The District Court properly found that, when the Tribe in that case reserved a fishery resource, for example, they also retained the right to take steps reasonable and necessary to perpetuate the species. The "Boldt" decisions do not categorically define the nature of that line of cases is that a Tribe's conservation or "environmental right" must be determined on a case-by-case basis. 759 F. 2d 1353 (9th Cir. 1985).

The Ninth Circuit has, therefore, provided clear guidance on the nature of the Confederated Salish and Kootenai Tribes' Treaty-based environmental right within the context of fishery issues. There is no legal reason to conclude that this analysis does not also extend to other treaty-protected resources, including those threatened here by ASARCO's development. These interests include, at a minimum, the medicinal and sacred herbs known to exist in the proposed development area, the grizzly bear (a species of great cultural significance to the Tribes and to the Kootenai religion, in particular), huckleberries and other traditional foods which still form a part of Tribal members' subsistence, and occupational sites handed down for many generations among Kootenai people. (1591)

Response: The agencies acknowledge that any of the action alternatives would have effects on resources discussed under the Hellgate Treaty. However, all agency alternatives would lessen or mitigate resource impacts. The preferred alternative (Alternative V) would have the least overall impact to resources and would not violate Federal, state or local laws or regulations.

A cultural resource inventory was conducted within the project area. Material evidence of Native American use was not located. The Confederated Salish and Kootenai Tribes (CSKT) and the Kootenai Tribe of Idaho were consulted to ascertain the location of traditional occupation sites and the identity of traditional plants (in addition to huckleberry plants) which were of interest. CSKT has had representatives at numerous Interdisciplinary Team Meetings for the Rock Creek project. We have had other meetings with the Coeur d' Alene Tribe and the Kootenai Tribe of Idaho. However, no specific locations or further information was provided by the Tribes. Without this information, it is not possible to assess the effects of the project on traditional occupation sites or plants of concern.

The agencies feel that the total number of acres disturbed at Rock Creek do not significantly limit the Indian Nations' ability to collect roots, herbs, berries or to graze cattle or horses on their aboriginal lands. The habitat types to be disturbed are common in the Kootenai National Forest. If any individuals or family groups used the area specifically for collecting or grazing they would be directly affected.

7. The Tribes are concerned about Tribal Plants of Special Concern in the Project Site and found the DEIS to inadequately address and summarize the inventory and survey work conducted by ASARCO. We request that details of that inventory be provided to the Tribes (Joanne Bigcrane, Herbarium curator) to address possible deficiencies. (1591)

Response: Baseline data collected by the applicant for vegetation can be obtained from the agencies. The Tribes may wish to consider listing the Tribal Plant Species of Special Concern with the MTHNP.

8. The DEIS doesn't even attempt to address cultural impact to both Indian and non-Indian people who consider the Cabinet mountains a sacred part of the earth. (1737)(1587)

Response: All Tribes who expressed an interest in the project have been consulted about their concerns. These concerns have been disclosed in the EIS and are predominately resource related.

The sacredness of landscapes is both culturally defined as well as individually defined, and varies among and between each. It is not feasible to assess potential cultural impacts of this project on all peoples.

9. What is the standing of each Tribe which claims ceded rights to the area in question, or the downstream resources which may be destroyed due to improper mitigation activities? (1991)

Response: See the Treaty Rights discussion in Chapter 3.

10. It is the responsibility of the U.S. Forest Service, under its Trust Responsibility as a Federal agency, to insure the protection of all the resources of the downstream tribes who ceded their lands to the government. (1991)

Response: The EIS discloses impacts to area resources and proposes mitigation and modifications to limit project impacts to resources. There may be some impacts which cannot be fully mitigated. This is provided for in NEPA; however, these impacts would not exceed any limits allowable by law.

11. Native American Treaty Rights, as assigned by this DEIS, are deplorable. The DEIS has not made one attempt to recognize the Kootenai Tribe of Idaho in any way, shape, or form. The DEIS make rough mention to the 1855 Hellgate Treaty. The DEIS makes no claim of contacting the ``Kootenai's" but it was of that the Confederated Salish and Kootenai Tribes. They are not the Kootenai Tribe of Idaho. No contact was made with the Tribe as it pertains to the cultural and religious aspects of the DEIS. The north shore rights are held by Kootenai Tribe of Idaho. This corridor extends far east along the Clark Fork River. The proposed project falls well within the proposed project. The area for proposal is part of Kootenai Tribe of Idaho aboriginal territory. The DEIS alludes to this, but does not come out and identify these rights in writing. The Treaty Rights section and Cultural Resource Section of the DEIS might as well not even have been written. It was very inadequate and did not even begin to identify what and who's rights are held in this area. The DEIS makes no mention of the historic use by the Bonners Ferry Band of Kootenai Tribe. This is highly inexcusable. This area is used traditionally and currently by the Kootenai people. The destruction of this land would eliminate the traditional usage of wildlife, fish, and gathering of traditional plants. Disturbance in the area could lead to the elimination of berries, roots, grasses, shrubs, and trees utilized by the Kootenai people. In the environmental consequence section, the DEIS alludes to the fact that these actions might and could affect the Tribes by loss of territory and fish, wildlife, and native plants. The construction and operation of this mine could and will directly affect the Tribe and its culture if the proposal goes forth as written. (2026)

Response: The Treaty Rights and Cultural Resource sections in Chapter 3 have been expanded in the final EIS to include a discussion of the Kootenai Tribe of Idaho.

The Kootenai Tribe of Idaho was provided with project information prior to publication of the draft EIS. In addition, a meeting with the Kootenai Tribe of Idaho and Kootenai National Forest representatives took place on May 28, 1996. Treaty rights as well as cultural and religious concerns were discussed at this meeting. The Tribe stated that they are in opposition of the project as it will adversely effect many resources important to their culture. They would not disclose any information on specific species of concern or locations of religious/cultural sites, making it difficult to quantify effects and propose mitigation options. If sites exist, they must be defined in narrow and specified terms by the Tribal governments as required by Executive Order 13007.

12. Desecration of sacred sites of local tribes of Native Americans must be considered. (1915)(1587)

Response: The Kootenai National Forest (KNF) has consulted with the tribal governments of the Tribes who have an interest in the project area (Confederated Salish and Kootenai Tribes, Kootenai Tribe of Idaho, Coeur 'd Alene Tribe, and Kalispell Tribe of Washington) requesting input on any concerns with the project. The KNF has also participated in public scoping efforts to identify any

concerns of individuals. No locations of sacred sites have been identified within the project area by either Tribal representatives or tribal members. If a site exists, it must be defined in narrow and specific terms as per Executive Order 13007. Tribes are frequently reluctant to reveal the location of sacred sites to outsiders. Representatives of the Confederated Salish and Kootenai Tribal of Montana and the Kootenai Tribe of Idaho government have both said they will not reveal the location of sacred sites. The KNF will continue to accept any information concerning sacred sites. However, details of this information will remain confidential between the Tribes and the KNF and will not be available to the public at large.

13. Native American cultural and historic connections with the Cabinet Mountain area must also be discussed. (1638)

Response: The final EIS, Chapter 3, contains a more extensive discussion of Native American culture and history as it relates to the project area than was contained in the draft EIS.

14. The Salish and Kootenai Tribes have used the Clark Fork River corridor for thousands of years to visit relatives in Idaho and Washington. Ancient trails and cultural sites exist along both sides of the river. Clean water is absolutely necessary to the use of these cultural sites. The Salish people hold all animal and plant life as cultural necessities and wish them to exist in their purest form. (1591)

Response: The KNF has been in continual consultation with the Confederated Salish and Kootenai Tribes environmental department and culture committee concerning the Rock Creek project. Tribal representatives have been invited to attend planning meetings and their input has been solicited and received. They will continue to be included in project discussions. The project has also been subject to the public scoping process. A cultural resource inventory was conducted within areas that will be directly impacted by the project. No prehistoric cultural material was located. The Tribe was apprised of the results of that inventory. Lands adjacent to the Clark Fork River were not surveyed since no direct impacts were proposed in these locations. Please refer to water quality comments in WTR-300 et.seq. and Chapter 4, Hydrology regarding impacts to water quality as well as the proposed MPDES permit in Appendix D.

15. Sacred sites and traditional cultural properties, as those terms are construed under the National Historic Preservation Act must be accorded special consideration by federal agencies in carrying out their responsibilities. In this case, the U.S. Army corps of Engineers must issue a CWA 404 permit to enable the project and, of course, the U.S. Forest Service must take action as well to facilitate the construction and operation of this mine. Both actions are "undertakings" within the meaning of the Act, and although some preliminary consultation has occurred at least with respect to the Kootenai Culture Committee, more detailed and more formal investigation of risks to, and mitigation for, cultural properties should take place now that ASARCO's plans have achieved greater specificity. We refer you to 36 CFR 800.1(c) (2) (iii) and 800.5(e) (1) (ii) for further clarification as to the Agency's obligations in this regard. When any activities within the Project area encounter cultural properties of significance, the Tribes must be contacted. (1591)

Response: The project has met the requirements of 36 CFR 800. A cultural resource inventory was conducted by professional cultural resource specialists. The Kootenai National Forest and the Montana State Historic Preservation Office reviewed and approved the adequacy of the inventory. No eligible properties were located and therefore no mitigation is required. Interested Tribes have been provided with the results of this work as discussed in the draft EIS. Additional input on the potential for sacred sites and traditional cultural properties has also been solicited from the Tribes on a one on one basis. If a site exists, it must be defined in narrow and specific terms by the Tribal government as per Executive Order 13007. Thus far, no site specific information has been forthcoming.

DRAFT EIS
RESPONSES TO COMMENTS

AIR QUALITY

Air Quality AIR-1300

AIR-1300 Air Quality

1. With a tailings impoundment over 300 feet high, sitting on 340 acres, and eventually containing 100 million tons of extremely fine dust-like particles of toxic heavy metals, processing chemicals, and residual blasting agents, there is little doubt that these particles will be blown around at times, even reaching the community of Noxon--the community where our school is centrally located. Will the blowing dust have an effect on peoples' health, especially those with allergies or asthma? Even with the sprinkler system at the Troy mine impoundment, residents complain of blowing dust particles from the impoundment. A more detailed analysis of potential air quality effects and appropriate control measures would be helpful. (1196)(1224)(1325)(1337)(1347)(1390)(1438)(1455)(1510)(1540)(1610)(1674)(1779)

The particulate matter created by the tailings pile will be of such a small size capable of entering human lungs, causing respiratory illness, and premature death.

Better disclosure of impacts to air quality - The DEIS claims that wind erosion at the tailings impoundment "should not cause a nuisance from blowing dust." Given the logistics and likelihood of keeping the tailings wet for decades and given the strong winds often experienced in the Clark Fork Valley, this statement is unsubstantiated and likely untrue. (1220)

Response: Alternative V would utilize the new Paste Technology Tailings Management. The tailings paste is a wet material and would generate minimal wind blown dust. The use of the paste technology would allow concurrent reclamation and reduced exposed tailings areas, which also reduces the potential for wind erosion. All emissions from the site must comply with the ambient air quality standards that have been established to protect human health and the environment.

2. How about odors? The possibility of a foul smell in the Noxon area, if accurate, is completely unacceptable. If there is an odor to the tailing pond, would the chemical or mineral causing the odor affect people's lungs? (1325)(1347)(1390)(1610)(1735)(1736)

Response: Based on similar operations and the types of reagents used in the milling process, there should be little or no odor from the tailings and no identified air quality related public health issues.

3. Can ASARCO guarantee that the air quality will not be degraded due to dust from the tailings pond, vehicle use and machinery? (1207)(1381)(1455)(1750)(1915)

Response: The predicted air quality impacts from the project, including vehicle use and machinery are described in Chapter 4. As noted, some degradation would be allowed.

4. Why didn't this document suggest the use of alternative fuels on electrically powered machinery whose toxic fumes would not require a ventilation adit within the wilderness boundary? (1196)(1345)

Response: Under Alternative V, the utilization of electric powered haul trucks underground and the diesel engines used on heavy equipment underground and on the surface would use the more efficient and less polluting California certified engines. Use of these technologies would reduce the emissions, but there would still be a need for underground ventilation at the evaluation adit. The need for the ventilation adit in the wilderness would be determined some years into mine operation based on Mining Safety and Health Administration inspections and requirements.

5. What is the specific plan to safely handle the tailings? How will all that dust be handled and contained before it gets to the impoundment pond? (1344)

Response: The tailings would be sent to the paste facility as a slurry and dewatered to the consistency of paste at the paste plant prior to being deposited in the paste facility. The transferring and movement of the tailings would not be dust generating since they will be in a wet state.

6. An Air Management Plan for this mine, similar to the Water Management Plan, showing proposed air circulation within the mine during which stages of the project; propane heating points; intake and exhaust points; adit relationships; cross sections; elevations; etc. should be in this DEIS. (1196)

Response: Some of this information is included but not to the extent suggested. Intake and exhaust points and exhaust emissions are described, but internal ventilation descriptions are not relevant to the assessment of ambient air impacts. Within the mine, ventilation is regulated under Mine Safety and Health Administration standards that have previously undergone public review.

7. Discussion of prevailing winds, potential smells, potential particulate and gaseous emission tonnage, composition, etc. is needed. Monitoring of pollutants other than particulates, e.g., gaseous exudates, etc. at the exploration, ventilation, and service adits must be required. (1196)

Response: Prevailing winds were considered when the modeling analysis was conducted. The potential odors are considered and have been determined to be minor based on similar operations and the types of reagents used. The monitoring requirements and the potential particulate and gaseous emissions were determined and can be found in Appendices C and K.

8. How much propane will be used for heating the air? Where will be stored and how will it be transported? (1196)

Response: The emission calculations were based on estimated propane usage of 800,000 gallons per year over a five-month winter period. Standard truck transportation and tank storage is assumed.

9. More information is needed, and a more thorough analysis of the impacts of the two upper adits is required. A unique situation exists here, with such a large project in such close proximity to public access to an established wilderness area. A careful and thorough analysis of air quality impacts is imperative. Add the "assumed" range of particulate in the CMW in Table 3-7. All baseline data, even if levels are assumed, should be included. (1196)

The DEIS fails to adequately discuss the impacts of the probable compromise of Class I Air (dust blowing outside wilderness and proposed ventilation adit inside wilderness). (1732)(1737)(1738)(1741-1744)(1746)(1747)(1770)(1913)

Response: The department has completed a thorough analysis of the impacts proposed by the development and operation of the mine through the air quality permitting process which are discussed in Chapter 4 and in the permit analysis in Appendix C.

10. Why does Class I air regulation not apply under the wilderness, as well as above? Where is the legal decision and analysis of this important issue? (1196)

Response: The federal and state Clean Air Acts specifically regulate "ambient" air with respect to air pollution impacts. Ambient air is defined as that portion of the atmosphere, external to buildings, to which the general public has access. While the correlation of the inside of a mine to a building may be questioned, it is clear that the general public does not have access inside the mine. Underground mine worker related air quality issues are regulated by the Mine Safety and Health Administration and the Montana Department of Labor and Industry.

11. How does ASARCO plan to monitor the air quality? Who will be monitoring the air quality? (I would be very skeptical of ASARCO monitoring the air quality in the area adjacent to the mine and in the surrounding areas.)

And what alternatives will be implemented when the air quality is degraded to such a level to potentially cause disease? (1674)

What is the minimum air quality required within the mine? Who will do the monitoring and how often? An outside contractor must be hired. (1438)

Response: The proposed air monitoring plan is described in Appendices C and K. The required ambient and emission monitoring would be the responsibility of the applicant. Quality assurance and data validation procedures would be used and reviewed by the agencies. Violations of standards would be addressed through compliance and enforcement procedures.

12. Page D-30 # 17. Why isn't a copy of the air quality permit and preliminary determination available in this document and where is it available for review? (1780)(1196)

Response: The original preliminary determination on the air quality permit application was issued March 5, 1996, and made available for public review at that time. The information contained is very similar to that provided in the final EIS. An updated preliminary determination was issued and included in the supplemental EIS. See Appendix C for the preconstruction permit.

13. Air quality monitoring must occur daily versus every three days. (1529)(1196)

Response: The every third day particulate sampling frequency is a standard procedure on a nation-wide basis. It is considered to be statistically representative of ambient conditions over time.

14. The air quality modeling results in Table 4-4, page 4-9, have a 1987 reference date. A new modeling analysis should be performed using the most current version of all the models used in the analysis. For example, it appears they used the ISC model in 1987. The current version of that model is ISC3. Also, any emission changes since 1987, should be identified in an up-to-date revised modeling analysis. There may have been changes in the emission factors for mine/mill and tailings, which would need to be addressed in the revised modeling analysis. (1214)

Response: The ISC model was used in the original application and was considered to be complete. The ISC3 model was used on any subsequent modeling that was required, for instance the modeling completed on the temporary generators. The department does not require a source to reproduce modeling results as they are working through the permitting process if during that time new models are available.

15. The DEIS completely falls short in its analysis of the impacts to the Class 1 airshed of the Cabinet Mountain Wilderness from the mining operations, increased road use, wind erosion at the tailings impoundment and from the proposed ventilation adit in the wilderness. The adverse effects on the Class 1 airshed of the Cabinet Mountain Wilderness will be exacerbated by the simultaneous distribution of windblown air particles from the Montanore Project. Incredibly, the DEIS claims that there would be "no measurable cumulative or additive impacts with respect to Noranda's Montanore Project." Tell this to the wilderness hiker looking east and west from atop Rock Peak, Elephant Peak or Ojibway Peak. A revised preferred alternative should include better measures to protect air quality, both in the Clark Fork Valley near the tailings impoundment and in the Cabinet Mountain Wilderness airshed and viewshed. (1220)

If Noranda's Montanore becomes operational there will be cumulative effects on air quality. Have your considered these? (1248)

Response: The cumulative impacts have been considered and it has been determined “no measurable impacts with respect to Noranda’s Montanore Project” would be seen because of the distance between the sources and topographic considerations. The topography is such that any weather pattern would most likely only cause one of the sources impact to Rock Peak, Elephant Peak, or

Ojibway Peak at any given time. Therefore, there would be no measurable cumulative impacts to the peaks. Also, the air quality impacts caused by the source have been analyzed and are discussed in both Chapter 4 and the air quality preconstruction permit in Appendix C.

16. What guarantees can be given that odors from the bioreactor will not be emitted into the surrounding air and wilderness. (1207)(1389)

I would also like to comment on the question of possible foul odors from the bioreactor cells. Bacteria that produce nitrogen gas are only a few of many that thrive in wet, anaerobic manure. Many others produce other nitrogen compounds that smell: e.g., compounds called volatile amines (scatole, cadaverine, spermine, and putricine) resulting from the anaerobic decomposition of manure. Unless the bioreactors, are covered, I see no reason to believe they will not smell. At least, I would want to visit the sites where ASARCO says these cells are operating to smell for myself. But even if covered, I believe the bioreactor cells will have to be uncovered periodically to add a carbon source (more manure and alfalfa). We do not know how much or how often because we do not know the carbon to nitrogen ratio. When opened, there is reason to expect they will emit odors. At the very least, these concerns should have been addressed in the DEIS under potential air pollution problems. (1288)

Response: The issue of potential odor from possible bioreactor systems is difficult to address because the impact can not be quantified. However, the preferred alternative (Alternative V) uses a gravel substrate and would greatly reduce the risk of odors.

17. This project will violate the Clean Air Act: "Even after compliance with applicable state and federal ambient air quality and emission standards, there would be some minimal air quality degradation associated with the project." (1670)

Response: As stated, there would be some minimal air quality degradation associated with the project; however, that would not be considered a violation of the federal or state Clean Air Acts as long as there is compliance with the applicable regulations. Some amount of degradation is allowed under the Acts.

18. Air Quality division: "The applicant must apply Best Available Control Technology to each emissions source, and must demonstrate that the project would not violate Montana or federal Ambient Air Quality Standards." (1288)

Response: The statement is correct and those determinations have been made. Best Available Control Technology was applied and is described in the permit analysis in Appendix C. Also, see Chapter 4 of the final EIS for more information on the modeling analysis that was conducted.

19. 2-1: Identification of Issues: The DEIS does not adequately address air quality issues and potential emissions; references to the CMW ventilation adit and particulate (dust) are vague and not adequately analyzed. Appropriate issues to address are the potential air-quality problems that would be created in the adjacent wilderness area and local communities. Potential emissions and their point sources not included in the DEIS include 1) Ammonia (NH3) from sewage treatment plant, aerators, and the water treatment system (Passive Bioremediation System, PBS), 2) exhaust gases from ventilation adit, 3) volatile amines and possibly H2S from PBS. How and when will these concerns be addressed? (1288)

Response: The potential emissions of the regulated pollutants have been calculated and addressed in the air quality preconstruction permit contained in Appendix C. Also Chapter 4 of the final EIS discusses the air quality impacts of these regulated pollutants.

20. Page 2-59: Air Quality Monitoring: What will be monitored, how, or specifically when, or what will be done if standards are not maintained. The DEIS should include a detailed plan for maintaining air quality. What "implemented air pollution technologies?" (1288)

Response: The proposed air monitoring plan is described in Appendices C and K. A range of possible enforcement procedures are available if standards are not maintained. The level of detail provided with respect to air pollution control measures is typical of that available at this point in the development of a project. Specific air pollution control measures are provided in Chapter 4, Table 4-3 of the final EIS.

21. Figure out how to prevent or at least minimize--not mitigate--effects of blowing toxic dust from the ventilation adits, tailings pile, loading sites and roads on wildlife and people. (1737)(1732)(1738)(1741-1744)(1746)(1747)(1913)

Response: Alternative V has several design features to minimize dust. Major ones are paving of FDR No. 150, implementation of the paste tailings, piping concentrate to the rail loadout, and a fully enclosed rail loadout facility. The ventilation adit is not expected to produce any toxic dust. The types of reagents used in the milling process have no air quality related public health issues, so it is unlikely that dust would be an issue for wildlife as well.

22. Potential effects addressed in DEIS are increased particulates in the air and drift into the Clark Fork from unloading trucks and loading rail cars are not addressed. (1288)

Response: Under Alternative V as discussed in the supplemental EIS and in the final EIS, the concentrate would be piped to the rail loadout instead of trucked. The rail loadout under this alternative would be completely enclosed, thus eliminating dust release. The rail cars would be covered eliminating the release of dust during transport from this potential source.

23. Where are the data addressing the quality and quantities of exhausts from the mine and project and their potential effects on air quality in the CMW. Diesel exhaust is unacceptable anywhere in the CMW. Who will monitor effluent from the vent adit? Who will execute remedial measures or shut down the project if effluents reach unacceptable levels? How can the public be assured that these concerns will be addressed? (1288)

Response: Appendix C and Chapter 4 of the final EIS discuss the potential emissions from the site and the air quality analysis that was completed based on these emissions. Monitoring would be conducted according to the proposed air monitoring plan is described in Appendices C and K. A range of possible enforcement procedures are available if standards are not maintained. Potential emissions from diesel exhaust were calculated and combine with all other emissions from the site.

24. Page 4-11, second paragraph, secondary or indirect air quality effects: Do the Thompson Falls, Trout Creek, Noxon areas experience the types of air inversions that contribute to the build-up of pollutants common to many river valley communities in Montana? If so, would this circumstance, combined with the additional traffic and population (fire-places, wood-burning stoves), have sufficient effect on air quality to potentially cause ambient air quality standards to be exceeded? (1992)

Response: Regardless of the region potential for inversions, no exceedance of the ambient air quality standards are expected.

25. What is to stop this dust from blowing down river to the town of Noxon where the school is located. (1666)

Response: The use of paste tailings in Alternative V would reduce the exposed tailings area thus reducing the potential for wind erosion. Several miles of roads would be paved, so the amount of dust generated by the roads would be less than is occurring currently. Also, the rail loadout under Alternative V would be completely enclosed reducing the potential for wind blown concentrates.

26. At every one of the 6 annual on-site state air quality inspections at the Troy mine, either the secondary crusher or the mill has been shut down. How has compliance to air quality standards been measured? What data are being used for projections at Rock Creek? (1248)

Response: Air quality inspections are typically done on an unannounced basis. A positive effect of this is that facilities are not able to alter conditions in anticipation of the inspection. A negative effect is that sometimes portions of facilities are not in operation. The primary means of measuring air quality compliance at Troy was visual observation. While that was not possible during some of the inspections at Troy, secondary crusher and milling operations were not reported to be an air quality problem at Troy by any of the other agency personnel that were on the site at various times over the years. Some additional monitoring measures which would be required at the Rock Creek Project are described in Appendices C and K. These include stack testing requirements and monitoring of scrubber operational parameters on an on-going basis.

27. ASARCO plans to use its exploration adit at the end of Chicago Peak road as an exhaust adit for the mine, i.e., a chimney stack. What are the particulate emission standards for this stack and are they subject to the Class 1 Air standards of the wilderness? (1248)

Diesel exhaust from the heavy equipment used in mining and dust will be vented only 2,000 feet from the wilderness boundary via the exploration adit. What affect will that have on the wilderness? How will they be contained? What about the wilderness ventilation adit? (1196)(1360)(1656)

Response: Alternative V includes the use of electric powered haul trucks underground and the diesel engines only on heavy equipment. The estimated emissions would be lower than those proposed with the use of all diesel equipment. The estimated emissions would cause only minor impacts and the modeled results show the operation would meet the ambient air quality standards.

The modeling analysis that was conducted was based on the worst-case scenario and the emissions complied with all applicable rules and regulations. The modeling results are described in Chapter 4 of the final EIS. The wilderness intake ventilation adit will intake air. Air will not be exhausted at this side, thus no adverse air impacts.

28. Why was the baseline air quality monitoring site located adjacent to highway 200, approximately 9 miles SE of 3000' lower in elevation than the location of the exhaust adit, and not near the mill site or exhaust adit? (1248)

Response: A number of factors are considered in the selection of baseline air monitoring sites. These include proximity to the public and the emission sources and that the site should be representative of conditions in the general area. By far the majority of people in the area live along the Clark Fork valley, but as the comment notes, the site was not near most of the emission sources. The Highway 200 site was considered more representative of general air quality conditions in the area. A limited amount of particulate monitoring (partial year) was also done at the proposed plant site.

29. Proposed mine would violate NAAQS for nitrogen dioxide: Montana SIP RULE 16.8.1109(2) prohibits the issuance of a permit to construct a new source "unless the applicant demonstrates … that it will not cause or contribute to a violation of any Montana or national ambient air quality standard."

The applicant has submitted a modeling demonstration which purports to demonstrate NAAQS compliance. However, in making its demonstration, the applicant attempts to avoid the NO2 concentrations that would form in the atmosphere from the emission of NO from the mine by using an outdated "ozone-limiting" method no longer accepted by EPA. ASARCO uses a 1979 conversion method that no longer reflects the best evidence of conversion rates. ASARCO offers no explanation in its application why it chose to use such an outdated method and why it neglected to apply EPA's most recent guidance.

EPA's current regulatory model for converting NO to NO2 requires that an appropriate Gaussian model be used to estimate the maximum annual average concentration and then multiply the modeled estimate by .75. See 60 Fed. Reg. 40469 (August 9, 1995). Application of the EPA model to the maximum concentrations estimated by the applicant in TABLE 3.6 shows NO2 concentrations will exceed the annual NAAQS and the Montana one-hour AAQS:

NAAQS (ann ave): 240.1 ug/m^3 x 0.75 = 180 ug/m^3
NAAQS (1-hour): 18,942 ug/m^3 x 0.75 = 14,206 ug/m^3

EPA's NO conversion guidance is effective as a requirement of 40 CFR 51.160, 51.166 and 52.21. Based on the use of EPA's current guidance for estimating NO2, the applicant has not satisfied the requirement to demonstrate that these standards will be met. Accordingly, the permit may not be issued under the Montana rule and a Plan of Operations required for mines on national forest lands may not be approved by U.S.F.S. pursuant to 36 CFR sections 228.4 and 228.8(a).

Even if the EPA NO conversion method had not been adopted as regulatory guidance, it should be applied to review of the project by federal and State agencies under NEPA because it reflects the current state of knowledge regarding the conversion of NO in the atmosphere. NEPA requires the use of good science in making environmental assessments.

In addition, we note that both the Montana AAQS for nitrogen dioxide (RULE 16.8.816) are expressed as parts per million (ppm). To compare ppm with ug/m3 for the purpose of determining compliance, an adjustment must be made to account for the changes in mass per volume of air resulting from temperature at the site and the elevation above MSL. Based on average monthly temperature data reported by the applicant and using the 6,000 feet elevation of the adit which will be used for the release of pollutants to the atmosphere from the mine, the NAAQS would prohibit annual concentrations above 84 ug/m^3, and the 1-hour AAQS limits concentrations to 475 ug/m^3. The procedure used for making this adjustment is derived from guidance issued by the New Mexico Environmental Improvement Division. (4479)

Response: Both the original modeling analysis and all additional submittals were reviewed and approved by the department. The modeling analysis demonstrated compliance with the Montana/National Ambient Air Quality Standards.

30. Proposed emissions would violate the maximum allowable increases for nox and particulate matter: Montana SIP rule 16.8.947 ambient air increments limits increases in pollutant concentrations over the baseline concentration in areas designated as Class I and Class II. The area outside the proposed permit boundary is a Class II area, and the nearby Cabinet Mountain Wilderness Area is a Class I area.

NO2 concentrations modeled by ASARCO using the inappropriate ozone limiting method, which severely understates expected NO2 concentrations compared to EPA's guideline method, show that increases in the class I and II areas downwind of the mine will far exceed the maximum allowable increases.

Maximum Allowable Increase		Estimated Increase
Class I	2.5 ug/m^3	24.26 ug/m^3
Class II	25ug/m^3	50.3 ug/m^3

If EPA's NO conversion method were applied, estimated NO2 increases would be nearly triple these values.

Similarly, the modeled particulate concentrations at the permit boundary, 73 ug/m^3, is 43 ug/m^3 higher than the maximum allowable increase for Class II areas.

Staff responsible for reviewing the permit for the Division have advised CRG that they do not believe the increments apply because a baseline has not been set for the area. Section 16.8.945(21)(b) of the Montana rule provides that the "minor source baseline date" is established for an area when the first complete major source permit application is received for an area. The area in which the minor source baseline date is set is "the area in which the proposed source or modification would construct is designated as attainment or unclassifiable in 40 CFR 81.327 for the pollutant...."

For nitrogen dioxide, there is only one area designated as attainment in 40 CFR 81.327, i.e., the entire state of Montana. Accordingly, under the provisions of the Montana rule the minor source baseline date was set when the first major stationary source permit application was received by the State in 1988 for the Stone Container facility. As a result, the projected increases modeled by ASARCO would exceed the maximum allowable increases for NO2 established by Montana rule and the federal Clean Air Act and may not be allowed.

For particulate matter, the state is divided into seven urbanized areas, the "Colestrip area" and the "remainder of State." The proposed ASARCO mine is not included in one of the eight designated areas and therefore must be treated as being in the "remainder of the State." CRG understands that a major stationary source has been permitted in this area since June 1, 1975 and therefore the minor source baseline date has been set for minor particulate sources in this area.

Montana SIP Rule 16.8.1109 prohibits the issuance of a permit "unless the applicant demonstrates that the source or stack can be expected to operate in compliance with the standards and rules adopted under the Montana Clean Air Act, the applicable regulations and requirements of the Federal Clean Air Act (as incorporated by reference in ARM 16.8.1120), and any applicable control strategies contained in the Montana State implementation plan (as incorporated by reference in ARM 16.8.1120)...." Montana Rule 16.8.947 is a standard or rule adopted under the Montana Clean Air Act. Because the proposed source would by itself, without considering the contribution of other sources in the area, cause the maximum allowable increases for NOx and PM to be exceeded, the source would not operate in compliance with the Rule and may not be permitted as proposed. (4479)

Response: The modeling analysis submitted by the applicant was approved by the department and the results of this modeling analysis is described in Chapter 4 of the final EIS. This modeling analysis demonstrated compliance with the Ambient Air Increments.

31. The DEIS fails to consider how emissions from the proposed source may cause adverse impacts on air quality related values in the Cabinet Mountains Wilderness. The DEIS currently includes no consideration of the impact emissions from the proposed project will have on natural resources downwind from the project, including air quality related values in the nearby Class I area.

Of particular concern to CRG is the vulnerability of high altitude watersheds in the Cabinet Mountain Wilderness Area to the effects of acid deposition from NOx and SOx and the effects of nitrogen saturation on water quality and the biological health of the watersheds. The potential adverse impacts of air pollution from the proposed project in conjunction with current background deposition and expected deposition from other permitted air emission sources have not been addressed in the DEIS and must be considered before the DEIS can be adequate to support final action on the air quality permit or the USFS Plan of Operations.

A number of factors give rise to CRG's concern regarding the potential seriousness of these effects on the natural environment downwind from the proposed project. These factors are summarized here to help focus the inquiry of the agencies for the environmental review.

Potential Adverse Impacts from Acid Deposition

First, water quality monitoring performed by USFS Region I in a few selected watersheds show Upper Libby and Lower Libby lakes to have the lowest acid neutralizing capacity (ANC) of all lakes monitored in the Cabinet

Mountain and Selway-Bitterroot Wilderness Areas. See Phase 3 Lake Water Chemistry Monitoring in the Cabinet Mountains and Selway-Bitterroot Wilderness Areas, USFS Region 1 (1995), Appendix 3.[Copy attached.] The ANC and other indicators of possible damage from increased rates of acid deposition measured in these watersheds is below the thresholds developed by a workgroup of scientists and federal land managers. Second, a trend analysis of nitrate ion concentration in precipitation measured at National Acid Deposition Program monitoring sites in Montana and Idaho show increasing nitrate deposition in the region of the Cabinet Mountain wilderness. See, Precipitation Chemistry Trends in the United States: 1980-1993, Summary Report, National Acid Deposition Program (1995), p. 17 and Figure 15 [attached].

Third, met data from the area included in the permit application indicate a high frequency of stable conditions E and F and wind direction is most frequent from the NW. Together, these factors suggest a significant portion of emissions from the mine site will be transported over the sensitive watersheds without a lot of vertical mixing.

Fourth, orographic conditions contribute to high precipitation rates over the Cabinet Mountains with local precipitation at the mine elevation averaging 20-40 inches/yr and increasing to 80 in/yr and more at the higher elevations where the poorly buffered high mountain lakes are located. See, Kettner, Michael T. Air Quality Related Values Management Plan for the Cabinet Mountains Wilderness Area, Montana, Montana College of Mineral Science and Technology, Butte (1993), pp. 67 and 69 [attached]. These high precipitation rates up gradient from, but only a few miles distant from the mine, suggest a relatively large portion of the mine emissions are likely to be washed out as wet deposition during frequent precipitation events in the Cabinet Mountain wilderness.

Considered together, these factors suggest a significant potential for adverse impacts on watersheds on the Cabinet Mountain Wilderness from the emissions of acid-forming pollutants from the proposed project and other regional upwind sources .(4479)

Response: The modeling that was done using the MAGIC-WAND model demonstrated no effects on the Libby Lakes. This modeling was completed and an analysis was reported in Chapter 4 of the supplemental and final EIS.

32. Another potential adverse impact of nitrogen oxide emissions is the increase in nitrogen loadings in downwind watersheds that can change the nitrogen balance from a nitrogen-limited environment to a nitrogen-saturated environment. Such a change can have a significant impact on the diversity and presence of aquatic organisms in the affected watersheds.

Recent water chemistry research conducted in high altitude lakes located along Colorado's Front Range show N deposition from local sources has caused these lakes to shift from N-limited aquatic environments to N-saturated environments. See, Williams, Mark W., et al, Nitrogen Saturation in the Rocky Mountains, Env. Sci and Tech. Vol. 30, No.2 (1996)[attached]. This shift is associated with significant changes in the ability of these environments to maintain their baseline biological diversity and stability and can lead to eutrophication.

These changes in Colorado Front Range Lakes have been associated with N deposition rates of ~4 kg/ha/yr. Data from NADP sites up wind from the Cabinet Wilderness show total-N deposition at levels that would produce 2.45 to 3.0 kg/ha/yr in the higher elevations of the Cabinet Mountains where precipitation rates exceed 60 in/yr. Kettner, p. 67. If a significant portion of the NOx emissions from the ASARCO mine and other nearby permitted sources such as the Montanore mine are washed out over the Cabinet Mountain watersheds, N loadings into these watersheds could approach or exceed the N deposition rates which have already caused significant adverse impacts to water chemistry in Colorado's Front Range lakes.

In order to satisfy the requirement of NEPA that federal agencies fully assess the potential changes in the human environment expected to result from a proposed action, and also to fulfill the USFS mandate in the Wilderness Act, 16 USC 1131(a), to manage wilderness lands "in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the protection of their wilderness

character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness," and to assess whether State agency action will carry out the mandate of the Montana Clean Air Act "to achieve and maintain such levels of air quality as will protect human health and safety and, to the greatest degree practicable, prevent injury to plant and animal life" [emphasis added], the CRG asks that the federal and State agencies revise the DEIS to assess fully these potential impacts of the proposed operation and not take final action on the permit application or the Plan of Operations until the permit applicant, in cooperation with the Department and the US Forest Service,

1) performs a comprehensive impact analysis which will provide the information necessary to assess the impact emissions from the mine and other regional sources may be expected to have on water quality and the plant and animal life dependent on existing water quality in watersheds downwind from the mine; and

2) demonstrates that air pollutants emitted by it and other regional air emission sources will not have an adverse impact on air quality related values in the wilderness area and on other natural resources outside the wilderness area.

If the USFS does not ask the proponent of the project to perform such impact analyses, then CRG believes section 165(d)(2)(B) of the Clean Air Act and Montana SIP Rule 16.8.960(2) along with NEPA imposes that responsibility on the USFS as the Federal Land Manager. Those provisions establish a legal obligation on the Federal Land Manager "to protect the air quality related values of any such lands within a class I area." The USFS duty to protect air quality related values in the Cabinet Mountain wilderness, along with the duty under NEPA to use the best science to assess the impact of proposed actions on the human environment, demand that these assessments be performed before final agency action is taken. (4479)

Response: The Montana DEQ has identified the potential emissions from the site and has determined that the controls placed on the applicant will allow them to achieve and maintain such levels that will protect human health and safety and prevent injury to plant and animal life. Montana DEQ and the EPA have an established acid rain program for certain sources. The Rock Creek Mine project does not meet the definitions or have the potential emissions to be required to comply with this program.

33. The assessment of expected impacts from air pollutants emitted from the ASARCO project are based on incomplete and flawed estimates of emissions attributable to the project. These deficiencies in the emission inventory and estimates of emissions released from the site must be corrected before any air quality impact analysis can be relied on as the basis for completing a NEPA review or taking final action on an air quality permit or plan of operations.

Montana Rule 16.8.1105 establishes requirements for the content of permit applications which have not been satisfied by ASARCO. These requirements include the failure to submit descriptions of the source and major equipment components required by (2)(b) that are adequate to demonstrate what expected emissions from the operation of the mine will be, and failure to describe control equipment to be installed at some emission points as required by (2)(c) so as to allow an adequate characterization of emissions from the operation. These deficiencies are potentially significant in that they result in underestimating the expected emissions from the mine and as a result lead to inaccurate low-balling of expected ambient concentrations and potential impacts on air quality related values.

CRG asks the federal and State agencies to request supplemental information from ASARCO to correct these deficiencies and to perform new air quality modeling analyses using corrected inventories and emission release assumptions before closing the opportunity for comment on the DEIS, the proposed air quality permit and before taking final action on the plan of operations. (4549)

Response: DEQ determined that the information submitted by the applicant including all supplemental information concerning Alternative V was complete. Detailed information is available

and may be viewed at DEQ's office in Helena. DEQ revised the preliminary determination. The final air quality preconstruction permit issued by the department, based on Alternative V, is the permit under which the Rock Creek Mine would be required to construct and operate (see Appendix C).

The air quality preconstruction permit emission inventory lists the sources and source categories necessary to determine potential emissions from this type of facility. DEQ reviewed the source descriptions and proposed control equipment and made the determination that it was a complete list for this source type. Also, the applicant signed that to the best of their knowledge they completed the application accurately. Any additional equipment that may be needed for operations in the future would go through a permitting action if it cannot meet the requirements of ARM 17.8.705(1) or ARM 17.8.733.

34. The largest source of NOx in the mine operation emissions inventory is exhaust from diesel equipment in the mine. The estimation of these emissions relies primarily on unreported emissions from a single engine type. The estimated emissions are 40% less than the emission factors for similar equipment in AP-42, and are reported as having been "calculated based on engine emissions data obtained from Caterpillar (Caterpillar, 1986) ... from a representative engine." Air Quality Modeling Analysis, ASARCO INC., Rock Creek Project, TRC (1995), p.3. But no information is provided to show that the engine used to develop the inventory is representative of the equipment expected to be used in the mining operation, nor is the information allegedly supplied by Caterpillar included in the application so that a reviewer could replicate the calculations made by ASARCO.

NOx emissions from the operation of surface vehicles are not reported at all. Considering the frequency of truck departures for the rail loading terminal, the use of front end loaders and other heavy equipment on the surface, these emissions should have been included in the inventory.

When CRG contacted the Division staff, we were informed that the Division had not requested any of this missing information and had not undertaken any effort to evaluate independently the justification for ASARCO's diesel emission estimate or the omission of surface vehicle emissions. Since the reliability of any estimate of ambient concentrations or adverse impacts on off-site resources depends on the reliability and comprehensiveness of these estimates, the missing information should be requested and reviewed prior to any determination of completeness or any final action on the DEIS or permit application. (4479)

Response: The emission estimates were approved for both the original preliminary determination issuance as well as the revised preliminary determination issuance. Changes were made under Alternative V to eliminate some of the diesel exhaust emissions. DEQ generally accepts emissions data provided by a manufacturer in place of an AP-42 value when they are available. The applicant (as ASARCO) submitted this information on a similar engine and it was considered to be complete. The manufacturers data is more specific to engine type than AP-42.

35. The process diagram in the application shows certain emission-generating activities, but these are not included in the inventory used for modeling air quality. These include disposal of waste rock, wind erosion from the waste rock pile, piling of concentrate, transferring concentrate from the storage pile to trucks, emissions from the concentrate carried by the trucks and emissions from re-entrained dust from truck and other vehicle traffic on the mine site and adjacent roadways. Emissions from these sources are not insignificant and should be included in the application and in the ambient modeling analyses before any final action is taken on the DEIS or the permit application. (4479)

Response: DEQ determined during the permit application review process that the above mentioned units were insignificant sources of emissions; therefore, no emissions calculations were required.

36. The calculation of both NOx and PM10 emissions from the mine adit assume that 85% of the PM emissions and 97.3% of NO2 from operations in the mine will remain in the mine because of calculated deposition rates. These calculated deposition rates are based on literature published in 1968. Much more information has been obtained during the last 28 years to allow for a more accurate estimate of mine deposition of emissions.

Important characteristics affecting deposition are not accounted for in the literature source relied on for the deposition assumptions, such as particle size for PM. Deposition rates have been addressed explicitly in recent EPA models such as the latest ISC model. Where deposition characteristics have been identified based on empirical measurements and incorporated into algorithms accepted by EPA for uses similar to this, ASARCO should not be allowed to rely on a 28-year old report which states that "definitive field measurements to evaluate the statistical depletion model and the K-theory depletion model are not yet available." See section 5-3.2.2. The failure to use current techniques which reflect the current state of the art and instead to rely on older theoretical models that have no empirical basis must be considered inherently suspect and rejected as unacceptable. (4479)

Response: The estimate of the deposition of emissions has been approved by the department at the time of the original application submittal. The air quality permit contains emission limits which are based on the applicant's calculations. The applicant will be required to test and comply with these emission limitations. DEQ does not require the source to continually update analyses once they have submitted an application and are going through the permit process.

37. The visibility analysis was performed using an old model (page 4-8). The latest version of VISCREEN should be run to determine the potential visibility impacts within the CMW. Those results should be presented in tabular form in the DEIS. (1214)

Response: At the time of application submittal, the information on visibility was reviewed and approved by DEQ. Additional information will not be requested prior to issuance of the final EIS or the final air quality preconstruction permit. DEQ does not require the source to use new models once the submittals have been determined to be complete and the source is going through the permitting process.

DRAFT EIS
RESPONSES TO COMMENTS

SOCIOECONOMICS

Employment ECON-1400
Economy ECON-1401
Community Services ECON-1402
Land Use and Ownership ECON-1403
Population and Demographics ECON-1404

ECON-1400 Employment

1. The job opportunities will not be enjoyed by Bonner County or much of Clark Fork as the long commute to work on an old narrow, high speed highway system is not the norm here, especially in winter. (1373)(1681)

Response: Commuting time and conditions were considered in the development of the revised socioeconomic analysis presented in the final EIS along with other factors such as housing, services, and labor pool availability in the various local area communities. Based on those factors, the analysis projects that during mine operation approximately 30 mine workers would reside in the Clark Fork vicinity and that about 10 additional secondary jobs would be created in that community as a result of the mine employee incomes. A total of $1.2 million dollars in annual personal income is projected for eastern Bonner County residents from mine direct or secondary employment.

2. We do not believe that the boom and bust economy created by a mine would be good for our area in either the short or long term. The mine would diminish the values of our valley related to quality of life, scenic beauty, and rural lifestyle. These are the values which brought many of us to this area in the first place and which are our greatest wealth. (1268)(1291)(1327)(1334)(1346)(1384)(1529)(1607)(1651)

Once mining begins other more sustainable forms of economic development (i.e. tourism which is growing steadily) will dwindle. Our environment + quality of life are our #1 commodity and it is sustainable. The mine would forever change that. (1273)(1361)(1363)(1371)(1389)(1410)(1547)(1640)(1753)(1734)

Response: The final EIS contains a substantially revised socioeconomic analysis. The Chapter 3 portion of that analysis gives added emphasis to the important role that lifestyle and other amenities have played in Clark Fork valley population and economic growth in recent years. The Chapter 4 section indicates that mine development could produce some "boom town" effects which could interfere with the continuation of this trend and with the continued enjoyment of these values. It is anticipated that under most scenarios such effects would be limited to the communities nearest the mine and that cooperative planning and preparation by the residents of those communities and Sterling could largely mitigate such effects. The analysis of the combined effects indicates that simultaneous operation of the Troy, Montanore, and Rock Creek projects could cause severe boom town effects.

3. The Rock Creek drainage has an economic impact on the area as far as subsistence is concerned for much of the local populace. A dollar factor can be attributed to the amount of huckleberries, mushrooms, fish, elk and deer are consumed and used by the people. Huckleberries are also a source of income for many in the area who sell them. Thus there is an economic impact as well. (1389)

Response: Most lands in the region which are accessible to the public support some degree of subsistence use. Some such use in the Rock Creek drainage would be precluded during the life of the mine and some might be lost long term. It is anticipated, however, that the area and amount of use impacted would be very small in the scope of the regional subsistence use resource base and that most subsistence users would shift their activities to other locations.

4. What would be the long and short term economic and social impacts from preclusions as a result of cumulative impacts? Have they been thoroughly evaluated? (1376)

Response: The EIS attempts to address the impacts that the project would have on the environmental and social resources of the effected area, and to predict how their future use would be altered by the mine proposal. The EIS sections discussing the Kootenai Forest Plan extend the consideration of preclusions by identifying the changes in the plan that would be required to accommodate the various action alternatives. The development of a formal, numerical (in dollars) opportunity cost analysis

has not been attempted. Although such an analysis would be valuable in theory, valid and reliable methods for applying opportunity cost concepts to a project such as the Rock Creek proposal are lacking.

5. Questions the unemployment rate in P4 pp 3-88 where it states "-- Sanders County unemployment rate has been about 14%, ---" this seems unrealistically high. (1499)

Response: The specific reference from the draft EIS has not been included in the final EIS, but during the years from 1987 to 1999, the official Sanders County annual unemployment rate, published by the Montana Department of Labor and Industry, ranged from 15.4 percent to 9.1 percent. The annual average rate for 1999 was 9.1 percent.

6. I question the statement in your DEIS that the local economy will suffer adverse long-term economic effects as industrial diversity and tourism will cease to be viable .(1273)(1345)(1361)(1363)(1371)(1389)(1410)(1547)(1640)(1734)(1753)

Response: The questioned statement from the draft EIS is not included in the final EIS analysis of project socioeconomic effects, which has been substantially revised and rewritten. The new Chapter 3 socioeconomics analysis reviews past and present social and economic conditions and trends in Sanders, Lincoln, and Bonner Counties. The revised Chapter 4 socioeconomics section makes projections and identifies changes expected to occur both with and without mine development. Please see these discussions to obtain an overview of the expected economic effects of the various EIS alternatives.

7. The loss of logging opportunities in the area due to the mine's operation needs to be analyzed according to its impacts to the local economy. (1751)

Response: The timber production impacts of the project are described in the final EIS. The economic impacts of the project's timber base changes (a reduction of 194 to 240 logable acres from the Kootenai National Forest timber base of 1,263,000 acres) would be insignificant (0.02 percent). Additional reductions in suitable timber availability could occur as threatened and endangered species habitats impacted by the project would be mitigated.

8. Page 3-89. These charts could use some actual numbers in them. The shadings are so general it is impossible to track employment trends. (1196)

Response: The charts in question have been replaced or supplemented by extensive tables which detail employment trend numbers for the period of 1970 to 1998 and show expected employment through 2020.

9. When the mine closed in Troy, it didn't have a dramatic boom-bust effect that you're always hearing about in the town of Troy. The town survived well after the closing, and it's surviving fine now with many of the positive effects left behind because of the ASARCO Mine. (1962)

Response: See the final EIS, Chapter 4, Socioeconomics, for a brief description of the employment effects of the Troy mine shutdown. Economic data for Lincoln County continue to indicate an essentially stagnant economy with minimal growth and an elevated unemployment rate.

10. Page 2-52: states that because the local labor force initially would not have all required skills for development and production jobs in the mine, ASARCO proposed to conduct intensive training programs, both in the classroom and on the mine site. Does this statement mean that the local labor force will not get the jobs, or that the mine will initially be run by unqualified workers? (1223)

Response: This means that local workers would be trained to become fully qualified workers as part of operation startup.

11. Why are the Agencies not putting more emphasis on what is good for the local economy and way of life and demanding a better alternative from Asarco that would not cause significant negative impacts to the aesthetic quality, the scenic quality and the wilderness and recreational opportunities? (1679)

Response: Please see the EIS, Chapter 4 in the Socioeconomic, Recreation, Wilderness, Sound, and Scenic Resource section for the discussion of Alternative V which incorporates substantial modifications to the applicant's proposal designed to mitigate the expected impacts of the project. Even with changes found in Alternative V, the project would still have some impacts, including those affecting scenic quality.

12. The predictable Boom-Bust cycle associated with virtually all mines would be applicable here. Some, but by no means all, persons who would benefit by better jobs would seem more likely to favor the mine then those financially less dependent however testimony at the public meetings indicated otherwise. The people who live in the surrounding communities resolutely spoke out against the mine for any reason and these voices should not go unnoticed or be discounted! The financial analysis seems to be toss up between positive and negative effects in the short range and negative in the long range. Thus there is no overriding reason to want the mine based on socioeconomic reasons alone. (1678)

Response: From a broad, long-run, perspective it simply is not possible to say with assurance what course of action would be the "best" in terms of socioeconomic effects. Whatever course of action is selected will benefit some interests, communities, and individuals and have negative effects for others--and the relative balance will shift over time.

13. Comparisons are drawn between Asarco's Troy project and the beneficial community contributions, yet there is no mention that Troy is shutdown and the effects are not very positive. (1446)

Response: The effects of the Troy mine closure are briefly described in the Chapter 4 socioeconomic analysis discussion of potential effects of the eventual shutdown of the Proposed Rock Creek project.

14. Will they retrain long term employees when the mine closes down? (1333)

Response: The applicant is not proposing to retrain mine workers as part of the anticipated mine closure efforts. If the local community feels strongly that worker retraining is important, it could use some of it's Metal Mines Licence Tax trust fund monies for this need.

15. Pages 4-116 through 4-119, Employment, Local Hire, and In-migration: Do the local versus in-migrating mine worker hiring projections and the 20 percent annual turnover rate projection reflect the mine-life experience, to date, at the Troy mine or only the earlier years of its operation? What has been the experience in Troy and elsewhere in Montana and Idaho regarding (a) retention versus turnover of local hires, (b) whether local residents remain in, or move from, the community after their employment with the mine terminates, (c) retention versus turnover of in-migrants, (d) whether in-migrants remain in, or move from, the community after their employment with the mine terminates? That is, how will employee turnover rates affect total in-migration, local unemployment numbers and rates, and the demand for public services and facilities in the impact area? (1992)

Response: (a) Mine project employee turnover rates vary from mine operation to mine operation (ranging from 10 percent to 50 percent annually). A study of the Troy mine in 1989, found that the prior year employee turnover was approximately 20 percent. (b) We are not aware of any analyses of the subsequent residential movement patterns of former mine workers after leaving mining employment. (c) We are not aware of any analyses of local community retention rates of immigrating mine workers, nor, (d) any analyses of retention rates of local mine workers.

It is expected that the project would employ approximately 75 percent "local" workers during mining operations, which would be lower than the estimated 90 percent local hire rate of the Troy Mine

(Draft EIS, p. 4 -116; ASARCO 1988; and Wenner 1992). An estimated turnover rate of 20 percent would have approximately 70 workers leaving and entering mine employment annually. Most new mine workers would be expect to be hired from the three county local area.

16. Pages 4-119 and 4-120, Income. The potential effects of job shifting should also be addressed in the earlier sections on employment, in-migration and settlement patterns. (1992)

Response: The revised socioeconomic analysis presented in the final EIS explicitly addresses job shifting with projections of the immigration to the local area that would occur as persons from outside the area were hired to fill some of the vacant positions created by job shifting. Nearly two-thirds of worker immigration projected under Alternatives IV or V would be associated with replacement hiring.

17. Pages D-32 and D-33, Questions 8 and 14, local hire rates and employee turnover rates. The response indicates, emphasis added, that "83 percent of the surveyed Troy mine workers lived in Sanders or Lincoln County before accepting a job at the Troy mine." The response omits several pieces of information that would contribute to a meaningful answer to the question; for example:

(1) How many persons worked at the Troy mine at the time of the survey (as either employees or contract workers); how many were invited to respond to the survey; and how many actually responded?

(2) How many workers moved into Lincoln or Sanders County in order to seek employment at the mine? For example, how many employees had lived in the area for more than a year before applying for a job at the mine, and how many had lived in the area less than a year before seeking a job at the mine?

3) Was the survey year, 1988, typical or atypical for employee hiring or turnover at the mine, and why is it considered so?

Is other data pertaining to the questions available from ASARCO, DOLI or other sources?

The queries about local hire and turnover rates are relevant because former employees and their family members have asserted that working conditions, employee turnover rates, and local hire rates changed markedly after a change in corporate policy and management at the Troy mine. If this is the case, then the survey must be interpreted in relation to when it was conducted. The survey and the turnover rates are meaningful only if they add to the understanding of probable local hire, employee in-migration, employee turnover rates, and place or duration of residency likely to be associated with the Rock Creek mine, or if they indicate what factors may cause the Rock Creek projections to change. Does it appear that actual or perceived work experiences at the Troy mine will affect local hire percentages at the Rock Creek mine? Additional information may be needed.

Throughout, the EIS refers to experiences at the Troy mine in some instances, but declines to do so in others. If the Troy experience is not considered relevant to projections of local hire and employee turnover, the EIS might clarify why it is not; that is, what were the experiences and causative factors at the Troy mine and in what way are they expected to differ at the Rock Creek mine? (1992)

Response: Events at the Troy Mine provide an indicator of what might happen at Rock Creek, but they are an indicator that must be used with caution. They are a "snapshot" of what happened at one point in time under the specific conditions that existed at that time. The revised final EIS socioeconomic analysis places less emphasis on the Troy example than did the draft EIS. Local hiring projections in the revised analysis are based on consideration of experience at a number of recent mining projects. Please see the Chapter 4 discussions of employment and immigration. The Troy Mine is cited as an example of the scenario that could develop upon closure of the Rock Creek Mine project.

ECON-1401 Economy

1. A negative economic point is that Sandpoint's infrastructure will be the one that will be bearing the brunt of the costs, while receiving a disproportionate amount of the revenues. (1349)

Response: The EIS socioeconomic analysis, including the discussion of Bonner County, has been substantially revised. Chapter 3 notes that in 1999 Bonner County had a population of more than 36,000, employment in 1998 totaled nearly 18,100 and total county annual personal income was over $500 million. Projections from Idaho sources indicate that by 2020 Bonner County population will grow by 17,000 persons, employment by 11,400 jobs and personal income will double to a billion dollars. These figures are based on ongoing trends and make no assumptions, one way or the other, about the Rock Creek Project. The project is expected to create a total of 500 new jobs and $14 million in annual income. Montana's Sanders and Lincoln counties are expected to experience most of the project-related population and employment growth. No set of reasonable assumptions regarding Rock Creek project effects on Bonner County would alter what is expected to happen in Bonner County without the mine by more than two or three percentage points. The EIS Chapter 4 socioeconomic analysis does predict some substantial effects of the project for the portion of Bonner County around the town of Clark Fork, please see that section of the EIS for details.

2. Our taxes will increase to fund the improvements to the local infrastructures and to pay for the inevitable cleanup during and after mine operations. (1246)

The County may get some token tax dollars which will have to be used for cleaning up, repairing bridges and taking care of other services required by the company people. (1289)

Response: Experience with other mining projects in the state and the projections for local government revenue and costs associated with the Rock Creek project indicate that revenues can be expected to substantially exceed costs to local government. The Hard-Rock Mining Impact Plan for the project, which has been agreed to by those responsible for local government financial management, provides for one-time grants and the prepayment of some mine taxes to ensure that additional funds would be available when they are needed to respond to project-related impacts. The State of Montana holds a reclamation bond posted by the mining company to ensure successful reclamation and to ensure that local communities are not saddled with responsibility for cleanup of mine projects.

3. Montana has a law (Hardrock Mining Impact Act) that requires mining companies to help pay up front for school expansion, roads, police, sewage and other infrastructure costs to the counties they mine in. The intent of the law is to prevent large tax increases when the mine is starting up. But the terms of the economic impact plan will not be decided until months after public hearings on the DEIS. It is likely that once the mine is in full swing, the company will be subject to lower taxes so it will recoup its up front costs. (1207)(1299)(1527)

Response: The Hard-Rock Mining Impact Plan is described briefly in the final EIS. A full copy is available at Montana DEQ and Department of Commerce offices and local county offices. The completed plan has been approved by the affected local governments. The plan provides for the prepayment of selected local taxes, where revenues would lag behind demands on local governments any pre-payments under the Hardrock Impact Act and would be treated as credits against Sterling's future tax liabilities. An approved Hard-Rock Impact Plan is a precondition for mining operations startup.

4. There are other benefits to the proposed Rock Creek Mine but none more important to Montana people than the lower taxes that will result from such an important enterprise. The mine will provide a substantial tax base that will result in lower property taxes. Property taxes are among the highest of taxes we pay in Montana. Without exception those Montana counties with operating mines enjoy the benefits of the extra tax revenues benefiting all. (1657)(1659)(1620)(1621)(1623)(1671)

Response: The proposed mine would provide a substantial increase in local tax base valuation, but it would impose additional costs on local government service providers. Experience with other large projects in the state indicates that there is no assurance that development of the mine would reduce taxes for local area residents and businesses over the long run. Where reductions do occur, they are often short-term and may be offset by increases needed to maintain expanded infrastructure after the project shuts down.

5. Please relate where the monies are derived from for Gross Proceeds Tax, Metals Mines License Tax, and Resource Indemnity Trust tax. If Asarco pays these taxes, do they get reimbursed at any future time? (1207)

Response: Please see the final EIS Chapter 4 socioeconomic section discussion of fiscal impacts for a brief review of project tax implications. The project Hard-Rock Mining Impact Plan (ASARCO Incorporated 1997a), which is summarized in Chapter 2, Alternative V description, was developed by the applicant and approved by local government, provides a more detailed discussion of tax prepayments and their distribution and eventual reimbursement.

6. Page 1-13, Second paragraph; Page 2-61, First paragraph; Page 4-122, First paragraph; Page D-37 and D-38, Questions 47, 48 and 49; re: affected local government units. The text is inconsistent in identifying local government units potentially affected by the ASARCO Rock Creek Project and is inaccurate in describing their roles and responsibilities under the HRMI Act. It would help if the EIS were to: identify the types of local government units subject to the HRMI Act: counties, incorporated cities and towns, school districts, and the following special purpose districts: rural fire districts, public hospital districts, refuse disposal (solid waste) districts; county water and/or sewer districts, and county park districts; identify those local government units that appear likely to be affected by the Rock Creek Project, including any potentially affected local government units in Lincoln County; and explain that, under Montana law, ASARCO is required to prepare a Hard-Rock Mining Impact Plan through which ASARCO will identify and commit to pay all increased capital and net operating costs incurred by local government units in Montana as a result of the Rock Creek Project. The EIS should also note that the Montana law does not apply to affected local government units in Idaho.

As noted above (page 2-61), if an Impact Plan identifies a jurisdictional fiscal disparity among the affected local government units, this triggers tax base sharing. Under the Property Tax Base Sharing Act, the taxable valuation of the mineral development is apportioned among the affected local government units, not the property tax revenue.

Page 4-122, Second paragraph, Final sentence: The fiscal effect of the Hard-Rock Mining Impact Plan should be to ensure that local property taxpayers and residents will not pay the increased local government costs resulting from the mineral development; that is, mill levies and fees are not supposed to be increased to meet the costs of services and facilities needed as a result of the mine. However, the Plan cannot ensure that mill levies or fees may not increase during the life of the mine for other reasons, which may or may not be associated with the mine. For example, mill levies may increase because a school district has a non-mine-related need to expand its facilities; fees may increase because a city has a non-mine-related need to repair or expand its water treatment and distribution system; the market value of property may increase, because of the mine or for other reasons, and, if mill levies remain unchanged, the property owner may pay more in property taxes, even if the mine pays all increased costs resulting from the mine.

Page D-37 and D-38, Questions 47, 48, and 49. The referenced text should clarify that special districts do not participate in property tax base sharing. Tax base sharing is limited to counties, municipalities and school districts. Certain types of special districts do participate in the Impact Plan, however, and through the Plan, the mineral

developer must identify and commit to pay to the districts all increased capital and net operating costs resulting from the mineral development. If the mineral development is not located within the taxing jurisdiction of a special district, or if its taxable valuation yields insufficient property tax revenue to meet the increased costs of the district, then the developer will provide non-tax revenue to meet the district's increased costs, as identified in the Plan.

Page 2-136, Fiscal. The DEIS appears to draw an erroneous conclusion. In most cases, the purchase local services and merchandise does not add directly to local government revenues, because Montana has no general of statewide sales tax, although voters in some resort communities have authorized a special local sales tax to provide additional revenue for local government services. The State does impose a statewide gasoline tax.

State Severance Tax: Metal Mines License Tax. The State's Metal Mines License Tax is a severance tax paid on gross proceeds in excess of $250,000 at a rate of either 1.81 or 1.6 percent, depending on the metal and the degree of processing. The Department of Revenue allocates twenty-five percent of the State's metal mines license tax collections from each mine to the County in which the mine is located. Counties must hold or redistribute their metal mines license tax revenue as described below.

County/School Hard-Rock Trust Reserve Account. The Board of County Commissioners must retain at least 40 percent of the County's annual metal mines license tax revenue allocation in the County's hard-rock trust reserve account. The money must be invested, with the earnings accrued to the account. When the mine closes or reduces its workforce by more than 50 percent, the Board of County Commissioners must distribute at least one-third of the principal and earnings in the account, proportionally, among the affected school districts within the County. The County may expend the remaining money to address fiscal or economic impacts resulting from the mine closure or workforce reduction, or the Board of County Commissioners may make grants or loans to other local government units affected by the mine closure or workforce reduction.

County/School Metal Mines Reserve Accounts. If the County decides not to retain all of the State's metal mines license tax allocation in the hard-rock trust reserve account, then it must share the remaining amount (up to 60 percent) with the affected school districts within the County: one third to the County, one third apportioned among the affected high school districts, and one third apportioned among the affected elementary school districts. Each recipient entity holds its share of this distribution in its own metal mines reserve account for any length of time the governing body chooses. The money must be invested and the earnings accrued to the account. School districts may expend the principal and interest from their metal mines reserve accounts for any purpose authorized by law. The County may expend money from its metal mines reserve account only for planning and economic development.

Pages 4-120 and 4-121, Fiscal Effects. The DEIS should clarify that the primary purpose of the annual metal mines license tax allocation is to help the County and the affected school districts deal with the fiscal and economic impacts of mine closure or a major mine workforce reduction. This is why the County must hold a minimum of 40 percent in its hard-rock trust reserve account until the workforce reduction or mine closure occurs. If the County Commissioners do distribute some of the metal mines license tax money while the mine is still in operation, the recipients (county and school districts) may hold that money in their metal mines reserves for any length of time they choose. Further, the County may use its share of this distribution only for planning and economic development purposes, which is intended, in part, to help broaden the economic base of the County. The intent and structure of the metal mines license tax allocation means that any projections of mine-related revenue that will be available to local governments for addressing the front-end and ongoing impacts of the mine should not include the metal mines license tax revenue allocation.

The last sentence in the second paragraph might more accurately note that, although property tax revenue from the mining and milling facilities may exceed property tax revenue from the mine's gross proceeds initially, this revenue producing potential may reverse itself over time, as the taxable value of the facilities depreciates. However, gross proceeds may fluctuate from year to year, depending on factors such as the quality of ore, production levels, production costs, and world metals prices. (1992)

Response: The above comments reflect the Department of Commerce technical expertise on matters pertaining to taxation and the Hard Rock Mining Impact Act. This input has been utilized in the complete rewrite of the EIS socioeconomic analysis sections. While the revised sections do not address many of the detailed points raised by the Department of Commerce, it is believed that they do provide an essentially correct overview of the fiscal implications for local government of the project alternatives. Readers desiring a more detailed analysis of the fiscal implications of the project should review the project Hard-Rock Mining Impact Plan (ASARCO Incorporated 1997).

7. The west end of Sanders County will grow with or without the mine. Have the agencies analyzed the long-term gains of a boom-and-bust economy vs. a tourist based economy? Which has more viable long term benefits? Agencies must learn from the past and look beyond one generation into the future! (1438)

Response: The revised EIS Chapter 4 socioeconomic section provides an overview of population and economic developments expected between now and the year 2020, if the mine is not developed, and then addresses how the project would be likely to alter those expectations. Different sub-sections of this discussion focus on western Sanders County, southern Lincoln County, and the Clark Fork vicinity in Idaho.

8. Page 2-84 & 2-124: How would the revised employment schedule have any significant effect on the boom/bust cycle? The boom-bust cycle is not simply "between mine construction and operation phases." The analysis of employment moderation described under alternative 4 is misleading because it addresses only the time period of mine construction and operation. Where is the long-term analysis, addressing the effects of the bust and inevitably follows mine closures? (1288)

Response: The revised construction schedule of Alternatives IV and V would only mitigate the employment and immigration fluctuations expected during development of the mine. Please see the EIS Chapter 4 socioeconomic sub-section entitled "Mine Closure and Reclamation Community Effects" for a discussion of the impacts expected to result from mine shutdown.

9. Our history of boom-bust shows us that the short term projects are very detrimental to both our overall economic stability and to the environment. (1213)

A substantial number of comments were received which expressed support for the proposed project based on the employment opportunities that it would provide. (1170)(1233)(1226)(1227-1229)(1231)(1233)(1238) (1239) (1252)(1253)(1257)(1260)(1264)(1266)(1274)(1275)(1278)(1281)(1303)(1315)(1358)(1361)(1367)(1369) (1375)(1379)(1388)(1391)(1394)(1428)(1411)(1502)(1503)(1514)(1518)(1601)(1611)(1612)(1618)(1619) (1622)(1622)(1618)(1619)(1658)(1660)(1646)(1648) (1658-1660)(1676)(1692)(1693)(1694) (1699)(1771) (1919)(1938)

Page 4-111, Economy: What is the basis for the DEIS's conclusion that Sanders County is moving to a balanced and growing economy?

Troy, after they started, gained a doctor, a dentist, a bank, a medical building, drug store, a movie theater and many other small businesses. Our young people tended to stay home instead of go away for work. Business was good and schools flourished. The mine closed 15 years later. Business suffered. Schools suffered. And we lost about a third of our students. But ASARCO metal mines money helped us through the bad times adjust and grow in our schools into a high tech rural school. Since, computers in elementary classrooms, computer labs in the junior high, two labs for the high school. Thanks to ASARCO, a Troy kid can hit the work place and compete with anyone. Thank you very much.

Page 4-125, Social Well Being: After many years of experience with the Troy Mine Project and local communities and the people living in these communities, Asarco feels strongly that the conclusions in this section are incorrect

and should not be included in the FEIS. Asarco feels that the statement that the average education levels will decrease is unsubstantiated, as the Troy School District is one of the strongest in the state with numerous awards of academic achievement. (1589)(1949)

Response: As a result of the many comments received relating to the perceived employment/ economic costs and benefits of the proposed project, the socioeconomic analysis in the Final EIS has been completely revised and rewritten. Please see the Chapter 3 socioeconomics section for an overview of the demographic and economic changes that have taken place in Sanders, Lincoln, and Bonner counties over the last 25 years and a summary of current conditions and trends. The revised Chapter 4 socioeconomic section summarizes the standard published demographic and economic projections for the local area as representing the most likely pattern of future development if the mine is not developed. Then, four action alternatives are reviewed in terms of how they would be apt to alter the expected no action pattern.

A review of the comments received relating to the economic costs and benefits of the proposed project makes it very clear that individual opinions on this issue are highly dependent on the geographical area and time period considered by the commentor. It would not be unreasonable to summarize the revised socioeconomic analysis by saying that it appears that from a broad, long-run, perspective it simply is not possible to say with assurance what course of action would be the "best" in terms of economic effects. Whatever course of action is selected will benefit some interests, communities, and individuals and have negative effects for others--and the relative balance will shift over time.

ECON-1402 Community Services

1. The Noxon area is economically depressed. Sudden influx of people, possibly of a transient nature, would create major problems for our school system and would compromise the education given to the students. More people means more pollution, more traffic, more social problems and a loss of privacy. People live here to get away from these things. The small communities of Noxon, Trout Creek, and Heron have existed relatively crime free for years. With an influx of people, one of the problems that accompany it is crime. Residents do not want this! Our school is overcrowded now, and unless ASARCO puts out the money for whole new additions and possibly new buildings, our quality of education would decline. (1245) (1299)(1371)(1384)(1650)(1735)(1736)(1915)(1923)

The change in lifestyle and quality of life that the mine will bring to the local community is not desired, and needs to be analyzed. Support services for an operation of this size are not available. (1751)

Response: It is expected that during mine development approximately 300 immigrants (equivalent to roughly 10 percent of existing population) would arrive in the Noxon, Heron, and Trout Creek area. Housing for these immigrants would be very scarce. This, combined with the increased demand for community services, could produce perceptions of crowding and other "boom town" effects. Most of these effects could be avoided or mitigated, however, if Sterling and the communities work together to plan and prepare during the two years preceding the primary population influx. Because the school-age population is expected to decrease in these communities, if the mine is not built, the roughly 60 students that would be added to the school enrollment is not expected to cause crowding. If it should happen that the Rock Creek project were to start development at a time when the Troy Mine and the Montanore Project were in operation, the population influx to the Noxon, Heron, and Trout Creek area could be nearly double the above figure, and significant boom town effects would be very difficult to manage.

2. Any increased revenues with influx of population are counter balanced by the cost of services to the new residents in education, welfare, road repair, and ...for urban crime problems. The mine will import their own workers and will not hire a majority of Sanders county residents.

Not convinced ASARCO's extra tax dollars will relieve the local taxpayers of a future burden. (1213)(1246)(1265)(1273)(1361)(1363)(1371)(1389)(1410)(1547)(1616)(1640)(1644)(1645)(1651)(1656)(1675)(1697)(1718)(1734-1736)(1753)(1923)(4474)

Response: Experience with other large mining projects in small Montana communities and tax revenue projections for the Rock Creek Mine both indicate that the significant property tax and gross proceeds tax revenues generated by the project would substantially exceed the cost of additional services required during the life of the mine. Grants and tax prepayments provided for in the project Hard-Rock Impact Plan would provide increased revenues in time to allow public service providers to plan and prepare for additional service demands before they materialize. When project-generated demands on public services require investment in additional facilities or infrastructure, project shutdown can result in inadequate revenue to support the expanded services and facilities. It is not anticipated that the Rock Creek project would require such investment, and trust funds set aside in accordance with the Hard-Rock Impact Act would be available to mitigate revenue losses.

The final EIS projects that 75 percent of the direct and secondary jobs associated with the mine would go to residents of the local area (western Sanders County, southern Lincoln County, and the Clark Fork vicinity in Idaho). Experience at other Montana mining projects has shown that these levels of local employment can be achieved if there are enough qualified or trainable workers in the local labor pool.

3. Page 2-135. Student increases. This figure (63) is hard to believe, but in any case would necessitate the construction of three new classrooms and the hiring of at least 3 new teachers in the Noxon School system. (1780)

Response: The analysis of school system effects has been substantially revised and rewritten for the final EIS. Please see the discussions presented in the socioeconomic sections of Chapters 3 and 4.

4. Next comes the "mining phase," and the unemployed from all over flock in for the "high paying jobs." The Troy experience showed us that all the "high paying jobs" were brought in from outside. A few may get some of those jobs, but many others don't and yet they stay -hoping, inflating the already high unemployment statistics. Meanwhile, the cost of welfare, medical facilities, schools, law enforcement, etc, skyrockets! And who pays for all of this? The people who have lived here, and have no interest or derive any benefit whatsoever from the mine. (1651)

Response: As you indicate, the promise of desirable employment could bring job seekers into the area and those who were unsuccessful could increase local unemployment rates. The extent of job seeker immigration, and the number who would remain in the area after not finding work are both factors that would be heavily dependent on regional and national economic conditions. The costs of benefits and services for these unemployed workers would generally be supported from statewide funding sources (unemployment insurance fund, etc.). The availability of such benefits has been sharply curtailed by changes in the law over the last few years.

5. 3-91 Ambulance Services - Noxon Ambulance has only one ambulance (Thompson Falls has two ambulances). We (Noxon Amb) cover Noxon, Heron, Trout Creek & Bull River part of Vermillion & Blue Slide. We have about 30 # responders - I'm sure we will need a second ambulance eventually - Will you bring your injured employees to the bottom of the hill to be picked up by Noxon Club? - or will we need to drive to the mine? (1987)

Response: It is anticipated that the mine would maintain its own ambulance and would support and cooperate with local emergency service providers.

6. Page 2-135, Community Services, last paragraph; Page 3-90, Community Services and Facilities, Schools; Page 4-110, Socioeconomic, Summary, Paragraph 3, Sentence 3; Page 4-122, Metal Mines License Tax, Paragraph 1; and Page 4-123, Community Services, Schools, first full paragraph.

The discussions of school capacities and needs are inconsistent and incomplete. The superintendents of both Noxon and Thompson Falls high schools have indicated that their schools are currently near or at capacity, and the DEIS concludes that the capacity of some of the schools may be exceeded (pages 4-110 and 4-123). In that case, additional teachers, alone (as implied by the DEIS), would not suffice to meet the needs of additional students. Additional classrooms and other facilities may also be needed.

The EIS does not provide sufficient information about the current capacity or needs of the potentially affected schools in Noxon, Trout Creek, and Thompson Falls (pages 2-135 and 3-90). The EIS should provide more specific information about each of the potentially affected school districts, including their current capacity, their functional capacity, their overall condition and current needs, and the current bonding capacity of the school district. For example, what kinds of space are currently at, or near, their functional capacity -- classrooms, library, gymnasium, cafeteria, offices, restrooms? Limitations on functional capacity may indicate, for example, that some classrooms are physically too small to accommodate as many students as accreditation standards would allow in classes of that type and grade level.

It is appropriate to address school impacts separately for the construction and operating phases of the mine, not only because the number of students may differ, but because during construction the number of mine-related students may fluctuate more and there may be more turnover in student population. If so, these factors are likely to affect the needs of both the students and the schools.

Page 4-110, Summary, Second paragraph. Is the EIS correct in saying that the proposed mine is in the Noxon School Districts, or is it in the Noxon High School District and the Trout Creek Elementary School District? See Sections 2 and 3 above. The Hard-Rock Mining Impact Plan should address all increased costs to local government units resulting from the mineral development. The Plan may trigger the allocation of the mineral development's taxable valuation among affected local government units (tax base sharing), but the Plan does not

direct the sharing of tax revenue, either among local government units or with the State of Montana. The Plan does not deal with impacts to State government and does not allocate revenues to the State.

Pages 4-121 and 122. [See discussion of metal mines license tax allocation for general corrections.] Page 4-122, First Paragraph, Final Sentence: The division of remaining metal mines license tax revenue would include all affected school districts in Sanders County, i.e. probably Noxon and Thompson Falls High School Districts and Noxon, Thompson Falls and Trout Creek Elementary School Districts.

Page 4-123, First full paragraph, Second sentence. The list should include the Thompson Falls schools.

Page 4-123, First full paragraph, Fourth sentence; Third paragraph, third sentence: As noted above, the EIS should identify the current capacity, condition, and bonding capacity of the potentially affected school districts.

The DEIS says that "other area schools have sufficient classroom space for these projected enrollment increases...." The EIS needs to identify which "other area schools" have space available, and how much and what kinds of capacity they have. The EIS should also identify whether additional short-term classroom space is likely to be needed, and, if so, where other, potentially usable space is available in the impact communities. (1992)

Response: The socioeconomic analysis has been substantially revised and rewritten for the final EIS. Please see the Chapters 3 and 4 socioeconomics discussions of project-related school enrollment effects. Because the enrollment, staffing, and facilities specifics of each of the several school districts changes each year; because the timing of the Rock Creek project development is not known; and because the exact numbers, district of residence, ages, and possible special needs of students who might enroll cannot be predicted; attempting a detailed analysis in the EIS of the current school systems or of the exact project effects on them would not be productive or meaningful. As stated in the EIS, most school systems in the area are expected to experience declining enrollment if the mine is not developed, and immigration associated with mine development would partially offset those declines. The influx and exodus of students associated with construction activity might be disruptive for some systems, but the effect would be a matter of inconvenience rather than a significant impact. Provisions of the Hard-Rock Impact Plan would provide the financial resources needed to deal with impacts that did occur.

7. Page 4-123, Law Enforcement. The mining project may also result in an increase in demand for other types of services provided by law enforcement personnel. For example, additional time and resources may be required to find and serve papers on in-migrating employees, family members, and other mine-related in-migrants. The company can alleviate some of the difficulty for law enforcement personnel by keeping, and making available to law enforcement personnel, its record of where its employees and the employees of its contractors reside while working at the mine and its associated facilities.

Similarly, if the County has an emergency services dispatch system (911), the workload of its personnel may increase and, depending on what is in place now, additional communications equipment may become necessary to provide adequate communication links along the entire route to the mine.

The EIS might also note that per capita law enforcement problems may increase during the construction phase, because of the more transient workforce, and may subside during the operations phase, when the workforce is better integrated into the community. (1992)

Response: The Hard Rock Impact Plan for the proposed project provides monies to the local government agencies to use to mitigate impacts on services, including law enforcement. It will be up to the agencies to determine the best use of those monies. It is beyond the agencies' authorities to require the Rock Creek Mine owner/operator to provide a record of employees' residences, although they would be required to report employees' social security numbers to the state to assist in locating dead beat parents who owed child support. Chapter 4, Socioeconomics, states that "temporary residents with large cash incomes, few ties to the community, and limited social and recreational

opportunities could pose problems for limited law enforcement resources." However, it is difficult to predict how much of a problem that could become.

8. The mine is needed to shore up the overburdened social service budgets in Lincoln and Sanders Counties which are a growing burden on federal and state taxpayers. (1691)

Response: The "Fiscal Effects" and "Hard Rock Impact Plan" discussions in the revised Chapter 4 analysis address the effects of tax revenue generated by the mine on local government service providers.

9. The mine is expected to employ approximately 350 people. That will cause a significant economic effect in Sandpoint, Idaho, which is the largest town in the area. This is where many mine employees will originate or move to since infrastructure supporting housing, schooling, transportation, medical care, etc., is not readily available in Sanders and Lincoln Counties, Montana. Clark Fork and Hope will be affected by population growth. Montana makes provisions through its Hard Rock Mining Act that major projects will contribute to an area's infrastructure in proportion to its impact. Idaho does not have impact legislation and there is a severe shortage of affordable housing. Bonner County provides the area's shopping and service center for western Montana. How can anyone accept the analytical thinking of an EIS that concluded Bonner County may receive "Slight Socioeconomic Spill over Effects?" (Refer to Chapters 2-135, "Changes in Socioeconomics"; 3-1, "Socioeconomic"; 3-88, "Local Employment and the Economy"; and 4-110, "Socioeconomic, Summary")

Your agencies must address the impact of additional families putting stress on an already difficult situation in Sandpoint and Bonner County. The difficulty includes overcrowded schools, marginally adequate highways, high cost of housing, increased traffic load on local streets, waste water and sewage treatment facilities, cost for additional police and fire protection and trained personnel to provide medical and dental care. What provisions will be made to assure that ASARCO and/or Montana makes timely and adequate payments to Sandpoint, Bonner County and Idaho so that they do not have to pay for the privilege of hosing this activity? (1351)(1357)(1446)(1482)(1501)(1727)(1730)(1731)(1732)(1737)(1738)(1741-1744)(1746)(1747)(1913)(1926)(1970)

Why have these impacts been limited to Sanders County, MT? Why did you not include counties like Bonner or Boundary in Idaho? (1914)

Response: The EIS socioeconomic analysis, including the discussion of Bonner County, has been substantially revised. Chapter 3 notes that in 1999 Bonner County had a population of more than 36,000, employment in 1998 totaled nearly 18,100 and total county annual personal income was over $500 million. Projections from Idaho sources indicate that by 2020 Bonner County population will grow by 17,000 persons, employment by 11,400 jobs and personal income will double to a billion dollars. These figures are based on ongoing trends and make no assumptions, one way or the other, about the Rock Creek Project. The project would be expected to create a total of 500 new jobs and $14 million in annual income. Montana's Sanders and Lincoln counties would be expected to experience most of the project-related population and employment growth. No set of defendable assumptions regarding Bonner County's share of Rock Creek jobs and income would alter the projected Bonner County growth estimates by more than two or three percentage points. The EIS Chapter 4 socioeconomic analysis does predict some substantial effects of the project for the portion of Bonner County around the town of Clark Fork, please see that section of the EIS for details.

10. There is a need to assess the capacities and growth potential of water and sewer systems (page 3-92). Indirect effects of the mine including growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate and associated impacts, such as potential increased loads to municipal waste water treatment facilities will need to be considered. (1214)

Response: Impacts to water and sewer systems are discussed in Chapter 4 of the EIS under socioeconomic impacts. Land use impacts are also discussed in Chapter 4.

ECON-1403 Land Use and Ownership

1. I am also concerned with the decrease in the value of my property that this project will bring about. Increased traffic (350 mine workers going to and from work each day), polluted or no water, close proximity to a huge tailings impoundment, mine water discharge flowing past my house, increased air pollution from the impoundment and highway and the stench from the water treatment facilities will all contribute to this. I feel that all the above mentioned activities constitute a "takings" of my personal property rights and that I am entitled to compensation. (1271)(1689)

Response: Projections for increased housing demand during mine development and operation suggest that most property values in the area would increase, but the value of some specific parcels or types of properties could be affected negatively for some periods during mine development, operation, and closure. It is also possible that the utility of a parcel to its current owner, that is its ability to serve the particular purposes for which the property was purchased, may be impacted negatively even though its potential market value may not decrease. Any questions relating to what constitutes a basis for legal action relating to property issues should be addressed to an attorney who has expertise in real property law.

2. Page 2-136, Land Use, paragraph 4: The DEIS text states that selection of all action alternatives would restrict land use of the proposed tailing impoundment site (about 400 acres) to exclude future potential land uses (especially residential, commercial, and industrial uses), and by doing so implies that non-selection would make these future uses possible. This area is privately-owned land (Asarco), and for the agencies to identify the possibility of these future uses for purposes of restrictive land use comparison is entirely misleading and inappropriate. (1589)

Page 4-124, Land Use: As previously discussed, this land is in private ownership (Asarco). Should not the EIS consider the Cabinet Wilderness Areas that have become unsuitable for other uses such as housing, recreation, and timber harvest activities? (1589)

Response: Although the specific statement referenced in this comment has not been retained in the final EIS, similar statements regarding the land use implications of the various alternatives have been retained. These statements simply note effects on the physical capability or suitability of the lands discussed. They are not a characterization of land-owner intentions and are no more misleading or inappropriate than any other projections about the effects of the various alternatives. On the contrary, the identification of differences in potentials available to society, and land-owners, is precisely the purpose of conducting an EIS analysis.

By law an EIS addresses the reasonable and foreseeable effects of the proposed action and possible alternatives (including no action). The proposed action which is the subject of this particular EIS is the proposal by Sterling to develop a mine within a specific permit area. Should Sterling propose lands for wilderness designation as part of the proposed action, then the effects of making those lands unsuitable for housing, motorized recreation, and logging would be addressed in the EIS analysis.

3. The consequences this project will have on the human element represented in our communities should not be summarily dismissed. We should not ignore the fact that we human beings are an integral part of the whole environment. This project would result in significant impacts of varying magnitude, duration and importance to the rural areas of south Lincoln County and north Sanders County inhabited by our friends and neighbors. Can we find common ground that will carefully weigh and balance competing factors to arrive at a reasonable determinations? (1238)

Response: The description of project impacts on the local communities can be found in the Chapter 4, Socioeconomic section. This analysis addresses the effects of the proposed action and alternatives on local area population, employment, earnings, housing, land use, and community services. Alternative V was developed to further minimize impacts.

4. What will be the effects of land disturbance associated with construction of roads and buildings? (1223)

Response: The effects of land disturbance associated with construction of roads and buildings is discussed in Chapter 4 of the EIS.

ECON-1404 Population and Demographics

1. The impact of 350 out of state and out of the valley families moving into the area adds up to 1,400 people (that's families of four) needing services we can't supply. (1245)

Response: The action alternatives would be expected to have employ 340 to 355 workers directly and to create approximately 140 indirect jobs. It is expected that 75 percent of these jobs would be filled by people who are already residents of the local area (western Sanders County, southern Lincoln County, and the Clark Fork vicinity in Idaho). The maximum immigration projected under any of the action alternatives is less than 1000 persons, a quarter of whom would be expected to settle in Lincoln County. The additional tax revenues generated by the mine together with the grants and tax prepayments provided for in the Hard-Rock Impact Plan would give local government more resources to meet the demands created by this immigration than they would have to respond to the growth expected under the No Action Alternative.

2. We have been aware of the increasing rate of development in the Clark Fork valley in recent years. The newcomers to the area are retired citizens seeking low population and serenity. These values will be compromised with the development of the mine. We have found increasing conservation problems related to development which happens too fast or is not well thought-out. The mine development impacts of large numbers of people (proportionate to the existing population and existing services) moving to the area and developing home sites, business sites, etc. in a short time will likely increase risks to our natural resources even further. There will be many indirect effects from increased population, demand on local services, etc. Somehow these effects need to be addressed and planned for. (1389)(1429)

Response: Population growth in the Clark Fork valley is expected to continue even without the mine. If mine development does take place, it is likely that mine-induced growth would reduce retiree immigration so that the overall rate of growth might not differ significantly from that expected under the No Action Alternative--although the pattern of growth would likely differ. Studies in several Montana communities have revealed that residential development generally adds more to the cost of local government services than it adds to local government revenues. The additional tax revenues generated by the mine together with the grants and tax prepayments provided for in the Hard-Rock Impact Plan would give local government the fiscal resources needed to meet the demands created by mine-related immigration. However, careful planning and close cooperation between area communities and Sterling would still be required to maintain the values that make the Clark Fork valley an attractive place to live.

3. Page 4-118, Table 4-33. It is not clear from the footnote to Table 4-33 whether seasonally occupied housing is included in the "vacant housing" count -- i.e., seasonally occupied housing is also "seasonally vacant," but it is not necessarily either available or suitable for year-round residency. Housing that is not available or suitable for year-round occupancy should not be included in the "vacant housing" count. (1992)

Response: Time has made the 1990 census count of vacant housing meaningless as a tool for predicting project housing availability, and the Final EIS socioeconomic analysis does not use that information. A variety of other indicators provide strong evidence of the scarcity of available housing in the communities near the mine. The point that seasonally vacant units often are not suitable for employee housing is well taken. A lack of suitable housing in an area can result in such units being pressed into service even though they are marginal or substandard for any purpose other than brief seasonal use.

DRAFT EIS
RESPONSES TO COMMENTS

SOUND

Sound SND-1500

SND-1500 Sound

1. We are also concerned about the noise that would accompany the mine, the crushing of the rock. The valley carries sound a long ways. (1252)(1290)(1356)

Response: As indicated in the EIS, Chapter 4, Sound, the crushing of ore would be expected to produce noise levels of approximately 60 dBA under Alternative II and approximately 55 dBA under Alternatives III, IV, and V. These noise levels are approximately the sound levels of a busy city street and would be much louder than the current quiet wildland sound levels of 30 dBA.

2. Page 2-31 - ore processing: DEIS fails to give number of trips per day for trucks hauling concentrate. ASARCO will be loading ore at a railroad siding 24 hr/day for 30 years. In a narrow valley it will be heard for miles in all directions. How will noise from increased traffic of trucks and trains affect the quality of life in the valley? (1363)(1381)(1504)(1734)

Response: Under Alternative V, the concentrate would be sent from the mill to the rail loadout in a pipeline, thus negating the need for trucks and their ensuing noise. The loadout building would be completely enclosed, thus reducing the perceived noise level to all outside the building compared to the proposal in Alternatives II-IV.

3. We are also distressed by the increase of noise and air pollution that this mine will generate. Blasting twenty four hours a day has no place in a recreational/retirement area. The draft EIS must discuss impacts of noise pollution being heard in the wilderness area. (1252)(1351))(1389)(1607)(1770)(1923)

Response: Mine blasting would be expected to produce surface sounds of "up to 55 dBA, but generally would be marginally audible at the surface" (see Chapter 4 - Sound in the EIS). While the Cabinet Mountains Wilderness provides a general quiet environment (about 30 dBA), human sounds are often audible from within substantial portions of the wilderness. The mine would be expected to slightly increase the areas of the wilderness with audible human sounds (Alternatives II and III), while Alternative IV and V would generally not generate sounds noticeable to humans in the wilderness other than when adit blasting occurred at or near the surface.

The effects of noise on wildlife were one of the several impacts noted in the effects analysis section of the draft EIS. The effects to wildlife from being able to see human activities varies depending upon the type of human activity. The effects to wildlife from seeing, hearing, or otherwise noticing human activities partly depends on the distance from the activity (which is true for sound as well), and it frequently is based on a "buffer" that is considered to have reduced habitat effectiveness. An example of this is the grizzly bear analysis.

4. 2-22. What noise abatement procedures will be provided to muffle the noise of the exploration adit generators that will be less than 2000' from the CMW? (1196)

Response: No noise abatement measures are proposed for the exploration adit generators other than the use of standard mufflers (draft EIS p. 2-22), which would operate for an estimated one-year period. However, under Alternative V, propane generators would be used, which may be slightly quieter.

5. As shown by the chart of anticipated noise levels (page 4-152), mine related noise sources are expected to generate noise levels as high as 120 DBA. Noise levels of this magnitude will be disturbingly audible in a number of wilderness locations and will have adverse impacts on both the wilderness experience of visitors and the effectiveness of wildlife habitat. All reasonable and practical measures to reduce these noise levels should be taken. At the very least, noise levels from ventilation adits should be minimized by using the quietest fans available, and by

moving the fans to locations as far from the adit portal as possible. Trucks and other power machinery should be equipped with the most effective mufflers available and the effective operation of such mufflers should be monitored on a regular basis. (1653)

Response: Noise levels of 120 dBA are very loud, even painful. These 120 dBA sound levels would be occasional instant booms during surface blasting action in the initial period of mine adit construction. The vast majority of the blasting would occur underground where the ground muffles the sounds. Underground activities, such as ventilation fans and trucks are muffled by the surrounding earth (see Alternatives III, IV, and V descriptions in Chapters 2 and the sound section in Chapter 4 of the EIS).

The effects of noise from the ventilation adit on wilderness wildlife for the action alternatives is disclosed in Chapter 4 - Biodiversity and Threatened and Endangered Species sections (Rock Creek and Montanore).

6. Under the proposed plans, the ventilation adits will be less than three miles apart. This distance is further reduced by the noise influence area of 2500 feet surrounding the adit (Rock Creek DEIS 1996: 4-155). Careful study of the cumulative noise effects is required to accurately assess the potential damage. (1592)

Response: As indicated in the EIS, there would be no areas of noise overlap between the Rock Creek and the Montanore projects. Under Alternatives III, IV, and V, the sounds emitting from the air-intake adit would be reduced by 21 dBA, so that only about 12 acres of the Cabinet Mountains Wilderness at the adit portal would have elevated sound levels during operation.

7. Noise penetrating the CMW and CF Valley during construction will approach the sound of a truck passing by 24 hours a day, 7 days a week. Near the impoundment, it will be audible at the loadout area (Miller Gulch) impacting all surrounding private residences. This is unacceptable to the Noxon community. (1207)

Response: As stated in the EIS, construction equipment noises would be audible for approximately 1 mile. The construction activities at the Miller Gulch ore loadout facility (see Figures 2-23, 2-24, and 2-26 in Chapter 2 for mapped locations) would not operate on a 24-hour per day basis. Under Alternatives III and IV, the Miller Gulch loadout would involve ore truck travel at lower speeds around the base of the proposed tailings facility (this would lower truck noise emissions) and these haul trucks would operate from 7 a.m. to 12 p.m. seven days per week. These truck noises would be normally audible for approximately 1 mile. There are approximately 20 residences with in 1 mile of the load-out facility and they would experience elevated noise levels, similar to that of having 8 additional trucks traveling on Highway 200, except that these trucks would generally have an additional 1/4 mile of forest screening to muffle their sounds. Under Alternative V, the concentrate would be piped to the Miller Gulch loadout, eliminating haul truck noises.

8. Page 2-4: Effects on wilderness experience: The project's potential to create noise that exceeds ambient levels to be predicted by "estimating changes in dBAs and significance of areas exposed to elevated noise levels." How is the latter evaluation (underlined) appropriate for a designated wilderness area? How is estimating only dBAs appropriate here? (1288)(1438)(1613)

Response: The estimation of physical impact levels was done in dBA (decibels A-scale), a widely used sound measuring system. This gives a physical scale on which to assess sound levels and their impacts. The significance of measured sounds depends on the receivers' expectations regarding sound levels and the importance of the particular sound impacts to one's desired sound environment. As indicated in the EIS, the Cabinet Mountains Wilderness has quieter sound levels (below 50 dBA), and "because wilderness visitors expect quiet and solitude" "any mining noises would be disturbing to wilderness visitors because of their obvious mechanical origin. These impacts are judged to

"reduce the opportunity to experience solitude or enjoy primitive recreation experiences at those (affected) locations." "However, human-caused noises (such as vehicles and trains) can already be heard from many location in the wilderness, moderating this impact."

9. Page 2-138, Changes in Aesthetic Quality, Noise: While noise considerations are important, where is the information and consideration in the DEIS of the historic noise "impacts" experienced from the Troy Project? After the many years of operation of the Troy Mine Project (also adjacent important wildlife habitat), it would seem appropriate for the DEIS to reference, at a minimum, whether the occurrence of noise "impacts: (or lack thereof) to wildlife have been associated with the Troy Mine Project. (1589)

Response: There is no direct statistically valid evidence that the effects of noise from the Troy mine have had an effect on wildlife there. The effects of noise on wildlife are hard to quantify, but because it is one of several forms of human activity that occurs when wildlife are displaced from otherwise suitable habitat, noise can be assumed to be a contributing cause. Controlling noise effects is a proactive means of moderating wildlife displacement.

10. Additionally, the effects of noise and light pollution on fish, birds and mammals other than humans must be disclosed and analyzed, and alternatives developed that prevent or minimize their negative impacts. Potential effects of underground blasting to these animals are not discussed at all in the DEIS. (1732)(1737)(1738)(1741-1744)(1746)(1747)(1913)

Response: The effects of noise on wildlife is disclosed in the Chapter 4, Biodiversity and Threatened and Endangered Species sections. The effects of light on wildlife is only considered to be an issue for night-migrating songbirds. The effects analysis for this issue has been added to the final EIS.

The effects of underground blasting were not disclosed because there is expected to be no impacts to wildlife from this activity.

11. The DEIS fails to adequately discuss the impacts of the following: Unremitting noise pollution, inadequately described in terms referring only to decibel levels with no mention of frequency spectrums that would affect all animals including humans who seek wilderness solitude and people who live in the valley. (1732)(1737)(1738)(1741-1744)(1746)(1747)(1913)

Response: The effects of noise on wildlife are widely variable and not clearly understood. Effects are increased or decreased by topography, vegetative screening, wind, and the variability of each species' response to human activities including sound. Thus, an elaboration of the effects of sound on wildlife would likely be more conjectural than factual.

12. The project will destroy the aesthetic quality of the valley because of noise pollution associated with the bulldozers building the mountains of waste will be heard for miles around the tailings compound. (1363)

Response: The Clark Fork River valley currently has a major highway and an active railroad line through it. The construction of the tailings facility would be a noticeable but moderate addition to these human sounds. As indicated in Chapter 4 of the EIS, tailing facility construction sounds would be audible for up to one mile, but would generally fade into the background and would be similar to trucks hauling logs from a timber sale.

13. The mitigation proposed for noise from the ventilation fans is difficult to follow. On page 2-68 it is indicated (prior to any discussion of impacts) that limits would be placed on fan noise (82 dBA). On page 4-151 it is indicated that fans would produce 114 dBA at the portal and then on page 4-154 the fan in the wilderness is indicated to be 67 dBA. Further the impact area (figure 4-6) is offered without explanation why the company's proposal would create impacts over 450 acres (implausibly including an area on the opposite side of St Paul Ridge) while the alternative site would impact an area of 100 foot radius. Need for noise mitigation is not justified by information contained in the DEIS. (4502)

Response: See revised sound impacts analysis in Chapter 4 of the final EIS for details. Alternative II has no separate noise mitigation measures. Alternatives III, IV, and V would include noise mitigations (see Table 2-23) that would limit the adit air intake fan noises to 45 dBA at the surface in the wilderness.

DRAFT EIS
RESPONSES TO COMMENTS

MISCELLANEOUS TOPICS

Miscellaneous MISC-1600
Reclamation Bonding MISC-1601
Health and Safety MISC-1602

MISC-1600 Miscellaneous

1. The proposed ASARCO mine contains insufficient environmental safeguards. (1314)

Response: The Agencies are charged with developing alternatives which include mitigation measures and relevant management requirements such as state water quality standards. These alternatives are modified or new ones developed as the analysis proceeds. The interdisciplinary team who put together the analysis put forth the safeguards they believed were necessary to protect the resource for which they were responsible. It will be the call of the deciding officers if there are enough safeguards proposed.

2. Strict guidelines must be enforced to protect the ecosystem and preserve this wonderful area for future generations! (1372)(1424)

Response: The Rock Creek Mine would be required to meet federal and state standards which are applicable to the project. Mitigation measures have been developed to minimize impacts of the project. Based on the specific aspect, there would be different monitoring schedules to ensure the company is living up to the requirements placed upon the project by the Agencies.

3. Please require mitigation that goes far beyond Alternative IV. We encourage you to take a responsible course of action to implement reasonable mitigation measures that protect our quality of life and our environment while wisely utilizing our natural resources. We are convinced that by incorporating current technologies the ASARCO Rock Creek Project can proceed with positive overall results. (1222)(1238)

Response: During the agencies' review of public comments on the draft EIS, new information was obtained that resulted in the development of a new alternative, Alternative V and numerous new and expanded mitigations that were added to this alternative. This new alternative was disclosed in the supplemental EIS. The response to comments on the supplemental EIS, has a few more modifications to Alternative V and various mitigations have been incorporated into the final EIS.

Chapter 2 contains the descriptions of all alternatives evaluated in the final EIS and Chapter 4 contains the analysis of each alternative relative to various resources. The Chapter 2 section, Alternatives Considered but Dismissed from Further Study describes various alternatives and the rational why they were dismissed; this section has been expanded since the draft and supplemental EISs. Agencies can and do require mitigations to address potential project-related impacts to bring the project into compliance with laws and regulations. The requirements for some mitigations are spelled out in the regulations, other mitigations are designed to lessen potential environmental impacts which in themselves would not violate laws or regulations.

4. Users record for past compliance to environmental issues, monitoring controls, and clean up responsibilities are poor at best. (1290)(1771)

Response: The purpose of an EIS is to evaluate impacts of a proposed plan. Failure to comply with an approved plan results in the appropriate enforcement action. Once a permittee has complied, the issue is considered resolved. There are no outstanding enforcement actions against Sterling.

Bonding would be required to ensure the site can be reclaimed by the Agencies should the company abandon the site prior to completing reclamation. Inspections during mine life would be conducted to enforce compliance with the permit and all applicable state and federal laws, rules, and regulations.

5. If the mine is permitted will there be independent consultants (not from the state or ASARCO) who monitor the mine, the water quality, the air quality? Who will monitor the clean up in case of any accidents? (1246)(1331)(1333)

Response: Environmental monitoring would be done by both the applicant and the Agencies. The applicant's environmental monitoring programs, including field and laboratory procedures, would be approved by the Agencies. Results of monitoring would be routinely submitted to the Agencies. The Agencies would also routinely inspect and monitor the mine. Agency inspection reports are public documents and would be on file with the Forest Service in Libby and Trout Creek and with the Montana DEQ in Helena. See Appendix K for the list of monitoring being proposed for this project.

6. With the increased trucking of materials, what plan does ASARCO have should an accident/spill occur on our highways? Who is going to supervise a cleanup if there is a spill? (1331)(1337)

Response: The location of any spill would determine who would have cleanup responsibility. Spills by the applicant within their permit area would be their responsibility. They would have workers who are trained and equipped to handle the general spill. If the spill were beyond their control, they would most likely contract with a firm who specializes in such cleanup. If the spill occurred along the highway, the trucking firm would be responsible for having the material cleaned up with highway department oversight. Hazmat response would be coordinated with the Sanders County emergency disaster coordinator and Sheriff's Department.

7. Who is ASARCO? What do these initials stand for? Are they a Canadian Co? (1221)(1294)

Response: ASARCO stands for American Smelting and Refining Company. They are a U.S. corporation incorporated in New Jersey and licensed to do business in the state of Montana. The Rock Creek Mine project has since been purchased from ASARCO by Sterling Mining Company.

8. There appears to be little, if any, effective mitigation available to offset the adverse impacts to the natural and social environment around the proposed ASARCO Rock Creek mine. (1430)

Response: The impacts of the project can not be completely offset with mitigations. There will be impacts to the natural and social environment. The preferred alternative has been made up with parts of the applicant's original proposal and considerable modifications and mitigation measures to lessen the overall project impacts.

9. Baseline data should be taken for all water bodies and plant and animal populations which might be affected by the project. Data should be taken by a neutral party - not by ASARCO personnel. Data should be complete before any work begins on the project. (1364)(1371)(1429)(1527)

Response: Baseline data was gathered by the applicant (as ASARCO) and submitted in 1987. The Agencies reviewed the data to ensure it was complete and satisfactory for use in our analysis. As time passed other information needs came up and generally the applicant was asked to provide them for Agency review. The Agencies conduct site visits and review the information being provided by the applicant to ensure it is accurate and meets our needs.

10. Do the agencies really have the power to make ASARCO accountable and responsible for this mining project? Do they have the power to enforce ASARCO to fully comply with the laws of the land, or is the real power coming from the lobbyists and officials back in Washington D.C.? (1371)

Response: The Agencies must hold the applicant accountable and responsible for actions regulated under various statutes. If something is found to be out of compliance, the Agencies would normally work with the mine owner to get it corrected in a reasonable time (the time depends on the

seriousness of the problem). Failing this, the Agencies have an ascending level of consequences which can be invoked up to and including shutting down the operation.

11. It would appear to me that the entire project needs to be reexamined, both from a cost benefit and environmental standpoint! (1444)

Potential socio-economic impacts to the Noxon - Trout Creek area from a new mine are not sufficiently contemplated in the DEIS. A cost benefit analysis of the mine proposal (including years of monitoring and treatment) compared to no action should be included in the EIS analysis. Potential worst case scenarios should also be considered…The analysis must assess values of the proposed mine against all environmental and economic costs. The value of and need for the minerals should also be discussed and compared against values of the Cabinet Mountain Wilderness and area waters.

The social costs of the mine have not been adequately addressed. Support of the mine will require substantial public investment in additional services, including police, fire and schools. Workers for the mine will largely be drawn from outside the area in all probability and require local housing and services. Traffic will increase as well requiring new or renovated roads outside the mine project. These costs must be included in any cost benefit analysis. Indeed, cost benefit analysis will probably not be adequate to address quality of life concerns of local residents.

The eventual cost of all the reclamation monitoring, mitigation and preventative measures, taking place over "several decades," makes the true costs of such a project impossible to project and likely far over any guesses given in the DEIS. We believe that if the EIS would take an honest look at all of the costs to society-long term and short term-that would be caused by the project, they would far outweigh the benefits of the mine. (1196)(1638)(1670)(1695)(1732)(1737)(1738)(1741-1744)(1746)(1747)(1913)

Response: Neither MEPA nor NEPA requires an agency to prepare a formal, mathematically expressed cost-benefit analysis in which all benefits and costs of a project, including environmental values, are expressed in terms of a common unit of measure. Rather, agencies are required to describe the impacts of the project so that the environmental amenities and values, which cannot be definitively quantified, can be given consideration along with economic and technical factors.

The draft and supplemental EISs contain analysis of impacts to environmental values including biodiversity, threatened and endangered species, recreation, wilderness and aesthetics. Together with their analysis of socioeconomic impacts (including demand on community services, housing, and quality of life) and impacts on the physical environment, the documents provide a sufficiently detailed basis for a comparative evaluation of the benefits, costs and risks of the proposed action and alternatives to the proposed action.

Additionally, the analysis of reasonable foreseeable adverse impacts contained in the draft and supplemental EISs addresses those impacts which have catastrophic consequences, even if the probability of their occurrence is remote. These impacts include subsidence from collapse of underground mine openings, failure of tailings impoundment due to an extreme rainfall event or to earthquake-induced liquefaction, and breaks in proposed tailings slurry lines or accidental rupture of supply or tanker trucks. The documents acknowledge uncertainty as to the extent of these impacts because of insufficient information. The information is unavailable either because it cannot be obtained until the exploration and mine adits are constructed (as is the case for subsidence impacts) or cannot be obtained because of the large number of variables at play (as is the case for subsidence, tailings impoundment failure, and accidental spills). In these instances, the draft and supplemental

EISs summarize and apply available scientific information to give a general description of the remote environmental impact.

12. Most of the Tables in Chapters 3 and 4 have noted as the source "ASARCO, Incorporated 1987-1994". This is not specific enough. The reader should be able to track the source of the information to the specific document that it came from and the page number in that document would be nice. Please provide this information and also make sure that all of the documents are available in the libraries and ranger stations in the affected areas. (1504)

Response: This citation is for the applicant's permit application. Replacement pages have been submitted over several years; hence the date range in the citation. The application is on file with the Agencies. If data has been collected at other dates and was not incorporated into the application, the citation for that data has been added to the appropriate spots in the document. Where possible, more specific sections or reports in the application have been cited. The table of contents in the application would direct the reader to sections of interest.

13. Page 2-24. How long will the surface conveyor belt be? Will it be covered? How will it be serviced? How will it be designed to handle deep snow? (1196)

Response: The surface conveyor will be approximately 700 feet long. That part outside the underground mine will be covered to keep snow and rain off the ore. It will be readily accessible for servicing because it will be close to the ground.

14. Page 2-47.....Last paragraph. Where is ASARCO's permit application? It is referred to constantly as a reference to answer all sorts of questions. How is the general public supposed to make substantive comments on this DEIS and the project if half the information is always missing? Rewrite the Draft and include the permit application in an appendix so we can make decent comments. (1196)

Response: The last page of Chapter 7 gives the locations were the draft EIS may be reviewed. The applicant's permit application is located in many of the same sites (Kootenai Supervisor's Office, Cabinet Ranger Station, Montana Department of Environmental Quality, Kootenai National Forest, Lincoln County Library in Libby, Missoula City-County Library and Thompson Falls Library. The application consists of several volumes and consists of several volumes and is many thousands of pages long and as such it is not in an appendix. The application is not needed in order to make substantive comments. The information from the application which is needed to describe and evaluate the alternatives is included in the EIS where necessary. The application is on file at agency offices and is available for public review during regular office hours.

15. Page 2-54. Second paragraph. Do not bury paving material on site. Cart if off. This is ostensibly Forest Service multiple use land and burying petroleum products or other construction waste in the Rock Creek valley is not acceptable. Period. All human made debris must be removed and disposed in appropriate landfills. In the same vein, all the garbage from the old Noxon dump should be dug up and carted to an appropriate landfill. If any problems ever surface from that old landfill, it will be impossible to remove the garbage from under 300' of tailings. So do it in advance. (1196)

Response: Under today's standards, asphalt products are not to be buried. The product can be recycled or taken to an approved site. The wording in the final EIS has been changed to reflect this. No specific disposal method will be recommended at this time. When it is time to reclaim the site in 30 years there may be better options for handling the material. The decision would be made then on what to do with the asphalt. The mine operator would attempt to salvage as much of the other building material as possible. An onsite disposal area for inert substances is within the realm of possibilities. Such a site would need to meet the need for disposal and yet be able to support intent of returning the land to a productive use. The old Noxon dump would be under the tailings

impoundment. With utilization of a paste tailings disposal method, the dump would likely be more environmentally stable than it is now.

16. I want the law, rules, regulations of all Federal, State, County and local agencies to be met totally and that to be the deciding factor, not cost-effectiveness for ASARCO. (1527)

Response: Though cost effectiveness is of concern to the applicant, agency proposals need to be practical and reasonable for meeting the identified need as laid out in Chapter 1, Identification of Issues which are driving the development of this EIS.

17. ASARCO's performance in complying with permits and environmental laws in Montana and elsewhere should also have been disclosed. Though a mining permit cannot be denied based on performance, it is still important for the public too know what kind of activities it can expect from the mining company. (1245)(1526)

Response: The EIS is predicated on the premise that the mine owner and operator would comply with the mining laws and requirements as laid out in the EIS (mitigations/modifications). There are consequences if they do not follow requirements. The Agencies (and thus the public should) expect the applicant to comply with the requirements.

18. Page [2-19]--3rd complete par.: The DEIS does not explain why 2,422 acres of which 65% of National Forest Land would be encompassed by the permit boundary when only "583 acres are proposed to be disturbed." (1288)

Response: Montana regulation (ARM 82-4-335(4)(e)) requires that the proposed mine and boundaries of land that would be disturbed as well as access roads be shown on a map. Only lands identified to disturbed could be disturbed within the permit boundary unless future revision were approved to extend disturbances. It would be too impractical to try and identify every square foot of land to be used on a map so a boundary is drawn to encompass all their activities. There is an intent to minimize the number of acres in the permit boundary. For example the boundary which encompasses the road is fairly narrow compared to the mill site and tailings impoundment.

19. Page 2-19: par 3, sentence 2 confusing: What does "...and 0.68% copper" mean in reference to 1.65 oz./ton of silver and 144 m tons of ore reserves? (1288)

Response: The figures given, 0.68 percent copper and 1.65 oz/ton of silver, represent the average quantity of each mineral in one ton of ore. For each ton of ore, the applicant expects to extract 85 percent of the available minerals. The 144 million tons of reserve represents the quantity of ore estimated to be in the deposit of which the applicant expects to extract 75 percent of it. The applicant has refined its estimates since the draft EIS. It now estimates that the ore body may be closer to 136 million tons in size and that it may be only able to extract as little as 65 percent of the ore from the mine. The mill extraction rate may range between 75 and 85 percent. This could mean that more ore would remain underground and that there could be less concentrate obtained and slightly more minerals remaining in the tailings. The actual rate of mining and milling extraction rates would probably be between the original estimates and the recent, more conservative estimates.

20. In Chapter 2, page 47 (Volume 1), the topic of "Utilities" is discussed. In the last paragraph, it states, "ASARCO has selected ...(WWP) as its power provider. It is our understanding after discussions with representatives from ASARCO, that no decision has been reached on the actual provider for the electrical power to supply the project site....referenced paragraph be changed to show that no specific utility has been selected at this time to provide power to the site. (1988)

Response: This statement has been changed in the EIS to show that no specific utility has been selected.

21. The State then signed a statement saying that in the future, insofar as it at least applied in the Hard Rock Mines in western Montana, that there was a document in on which was given the State the authority to modify or deny a permit. And then I see nothing about that here, and I would like to see that addressed. (1698)

Response: In Chapter 1, Agency Decision, the discussion of reasons for denial by DEQ has been expanded to explain that since 1982 and the Bennett decision, DEQ and the courts have interpreted MEPA as supplementing the basis upon which an operating permit may be conditioned or denied in order to avoid, minimize, or mitigate an impact that would significantly degrade the human environment. Many of the mitigations incorporated in the three agency alternatives were originally included on this basis rather than for compliance with a specific standard in a law or regulation. However, with the passage of HB473, the 2001 state legislature mandated that no permit can be denied or conditioned based on MEPA analysis unless it is necessary to comply with a state law or regulation.

22. Our understanding is that the USFS rules do not permit the authorization of an unprofitable mine in a National Forest. Currently silver prices are hovering around $5.60 per ounce. With the estimated production rate of 1.65 oz/ton, and 10,000 tons per day, (75% ore extraction and 85% milling efficiency) the estimated daily gross receipts are $58,906. Currently, there is a "glut" on the marketplace for copper and silver. Copper and silver mines are being shut down due to the cost of production and availability of these minerals in the open market. Plus, there is not a clear picture as to when prices of copper and silver will be going up. If all expenses related to current estimated development costs are included along with the estimated costs related to: mitigation expenses; future bonding; and allowance for breakdowns; costs of closure of the mine and its support facilities; and failure of any of the required resource protection devices, what is an accurate cost/benefit ratio? This information needs to be clearly displayed for all alternatives in order to fully address the profitability question. Is this an economically feasible operation? (1991)(1993)(2026)

The cost of environmental protection measures has been portrayed as key to determining the profitability of the mine. This information needs to be clearly displayed for all alternatives in order to fully address the profitability question. (1993)

The Kootenai Tribe of Idaho does not understand the economics that are associated with this mine. Currently, there is a ``glut'' on the marketplace for copper and silver. Copper and silver mines are being shut down due to the cost of production and availability of these minerals in the open market. Plus, there is not a clear picture as to when prices of copper and silver will be going up.

Ten to fifteen years ago, the price of silver was approximately $10-15/oz. Currently, prices of silver hover around $5 - 5.75/oz. How can ASARCO truly make the Rock Cr. project feasible with all the expected environmental damage that will occur and all of the reclamation work that will need to be conducted and still be able to make a profit? The Tribe does not believe it can be done nor does it want to risk its culture and environment to see if it can be accomplished. (2026)

Response: The 75% ore extraction rate does not enter into the equation to calculate daily gross receipts. Using your figures the gross should have been $78,541. Copper is the main mineral in the deposit with silver being the secondary mineral. Using an average price for each mineral as of September, 1996, (copper - $.8825/pound, silver - $4.87/ounce) and a milling efficiency of 85% the daily gross receipts would be silver - $68,302, copper - $120,020 for a total of $188,322.

The Agencies lay out the requirements to meet environmental standards and it is up to the company to decide if they can economically mine the deposit.

23. How important is the need for mining silver and copper? We use metals in our daily lives, but we are beginning a phase in our society to recycle, reuse and reduce. With our country's Defense Department stockpiling huge reserves of metals, do we really need this ore mined? What research has been done on this? (1371)

Response: Most minerals pricing and demand are based on a world wide market. Copper/silver are mined in the United States as well as in other parts of the world. The decision on whether to open, close, or expand a mine are corporate decisions predicated in part on where they see the demand going. Examining the worldwide need for these minerals is beyond the scope of this EIS.

24. On the first page of chapter one, third paragraph, the statement is made that "the 1872 Mining Law gives ASARCO the right to mine this deposit and remove the copper and silver." Two sentences later, we're told that "Society needs and demands these metals…" There is no mention of the fact that the State constitution says we have a "right to a clean and healthful environment," or that it is the stated policy of Montana (Montana Environmental Policy Act) to "prevent or eliminate damage to the environment"…,"ensure safe, healthful, productive, and aesthetically and culturally pleasing surroundings; attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences" (emphasis added) and that there is a "responsibility to contribute to the preservation and enhancement of the environment." Similar language in the National Environmental Policy Act (NEPA) also is unmentioned. (1698)

Response: The statement about the 1872 Mining Law was included because it is important for the reader to know that the applicant has a property right in the mineral deposit. The EIS states that the Agencies intend to minimize the adverse environmental impacts and they would be complying with all other laws and regulations.

25. pp. 2-68-69: "…agencies would conduct a second review…" Who would do the review? What group of qualified, impartial professionals? The results must be acknowledged, reported to the public, and if they indicate that the No Action alternative is the only feasible one, this must be followed. "Given the expected changes in …ASARCO would submit detailed mine plans for Agency review prior to entering areas…" What would the agencies do with the submitted plans? Merely submitting them, as stated in the DEIS, would not "ensure development [was meeting the environmental objectives and intentions of the original design]." What does the italicized phrase in the previous sentence mean? What original design? (brackets added to show italicization). (1288)

Response: Specialists within the Agencies would review the applicant's updated mine design prior to exploration and mine start-up to ensure they conformed to laws, regulations, and requirements, laid out and impacts disclosed in the final EIS and Record of Decision. If additional specialists were needed, the Agencies could contract with private consultants to assist in the review. Other state and federal agencies such as Idaho DEQ, EPA and Corps of Engineers would be invited to participate in this panel as well. The level of review being discussed here would take place after the project were permitted. If the Agencies disagreed with the applicant's proposed design, the applicant would need to do a redesign. Operations would not take place until plans were submitted that were acceptable to the Agencies. If the impacts would be greater than, or different from that disclosed in the final EIS or if changes to the approved plan were required, then additional MEPA/NEPA analysis would be required.

26. ASARCO should pay for independent detailed studies to predict down stream impact of worst-case scenarios at the mine. (1998)

Response: A worst-case analysis is not required for this EIS process nor is it a requirement of NEPA or MEPA. The Agencies have identified in Chapter 4, Alternative II, Surface Water Quality, Tailings Impoundment Failure what would probably happen if there were a catastrophic failure of the tailings impoundment.

27. Additionally, mine operating specifications should be included in the permit, which require shutdown of the mine for noncompliance. (1501)

Response: Sufficient detail would be included in the permit to make environmentally protective stipulations enforceable. Noncompliance is covered by ARM 26.4.107(m), (p), and (o) which define what conditions would lead to suspension of a permit. Noncompliance or violations do not necessarily require permit suspension, but includes assessment of penalties, fines, and abatement orders.

28. In the event the ASARCO project has a worse case scenario and a NRDA action is required to remediate the project, what liability is retained by the agencies which prepared the DEIS? (1991)

Response: This comment seems to be referring to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended, (CERCLA) or superfund law, or Montana's corresponding statute, CECRA. In the event of a release of hazardous wastes or substances, the United States as owner of land on which a release occurred could be a potentially responsible party or potentially liable person under those acts. But neither the Kootenai National Forest nor the Montana DEQ would incur CERCLA or CECRA liability as preparers of the EIS.

29. The MNPS asks that you put all other uses of Rock Creek on an even footing with this proposed mine, and complete the Final EIS from that point of view. (1668)

Response: Thank you for your comment. The decision maker must review all existing information and apply all existing statutes and management policies at the time of the decision.

30. We suggest that you check with DFWP regarding the description of DFWP permit/review authorities presented on page 1-12 to verify that they accurately portray DFWP Montana Natural Streambed and Land Preservation Act authority. It is our understanding that the County Conservation Districts administer the Montana Natural Streambed and Land Preservation Act (i.e., 310 permits) rather than the DFWP, although the DFWP participates in 310 permit review. The DFWP administers the Montana Stream Protection Act. It may aid in public understanding to explain the difference between the State Stream Protection Act and Natural Streambed and Land Preservation Act . (1214)

Response: The description of Department of Fish, Wildlife, and Parks responsibilities in Chapter 1 has been corrected.

31. The agencies should be questioning whether it is economically feasible for ASARCO to pursue this mine because it will simply cost too much to keep the water from being degraded. (1248)

Response: The economic viability of the proposed project is outside the scope of the EIS.

32. The ion exchange has its place as a potential scenario, but its never been tried in the munificence of scale as proposed by ASARCO. When you add up the probable amounts of water being considered here, (pg. 2-36) "By year 30 of mining, up to 207.7 million gallons of mine and adit water per month potentially would require storage in an underground reservoir." When you consider the cost of ion-exchange resins and disposal, the electricity requirements, the decades of dewatering to stabilize the tailings impoundment; you kind of begin to smell a dead rat! The only conceivable way this venture is fiscally possible for ASARCO is if the State abrogates its responsibilities and the good citizens of Montana and Idaho roll over and play dead. (1780)

Response: The economic feasibility of the proposed project is not discussed in the EIS because the cost of the treatment system is not a factor considered in the environmental impact analysis. Regardless of the system to be used, all discharged water would have to comply with the MPDES discharge limits. The type of system used would, however, effect the bond amount.

33. Evaluate the effectiveness of blasting agents which do not contain nitrogen compared to ANFO; is the use of ANFO absolutely necessary? (1223)

Response: Most commercially available explosives have nitrogen as part of their chemical formula. Ammonium nitrate/fuel oil, while the least expensive, is also the safest to use. Incomplete combustion results in residual nitrogen in the mine and mine water. To minimize incomplete combustion, Sterling will be required to conform to a strict blasting protocol, and blasting techniques would be inspected by the Agencies.

34. Page 2-17 - Fig 2-4 map of mine facilities: Permit boundary totally encompasses road #150 and Rock Creek. concern: Mining Co. can do whatever they want to lands, roads and ground waters within permit boundaries. Road could be gated and closed to public at any point within permit boundary. Lands, plants and animals and ground water could be altered in any way regardless of approved plans. (1504)

Response: The inclusion of lands within a permit boundary grants no such rights. No activities can be conducted by the mining company within the permit boundary that are not in the approved plans. The permit process does provide for certain controls and mitigation for the mine. These restrictions are noted in the EIS. If a mining permit was approved, the mining company could only complete actions permitted under the state operating permit and Kootenai Nation Forest-approved Plan of Operations. Any unapproved disturbance would be grounds for a noncompliance and monetary penalties. See the Metal Mine Reclamation Act 82-4-336(2). Access would have to be provided through the mine area as part of any alternative plan on FDR No. 150. See the Alternatives described in Chapter 2, Alternative II, III and IV, Transportation sections and look at the requirements for public access described in Chapter 4, Alternative II, III and IV, Transportation sections. The Agencies have analyzed impacts to lands, plants and animals in Chapter IV. The mining company would only be allowed to disturb the approved portions of the permit boundary discussed in Table 2-2 titled "Surface Disturbance Acreage" for the action alternatives.

35. Re Figure 2-4 and the water make up well. On whose property is the well proposed? Are water rights an issue and need they be addressed? Is this within FERC project boundaries? (1196)

Response: The make-up water well would be located on lands owned by Avista and is within Federal Energy Regulatory Commission boundaries. The applicant would need to obtain permission from Avista to lay the pipeline and drill the well and would need to apply for the right to use that water.

36. ASARCO proposes to discharge treated water to the Clark Fork River through an outfall and engineered instream diffuser downstream from Noxon Dam. The diffuser is described as fixed at the bank on concrete thrust blocks and surrounded by cobble repwrap to provide shoreline protection. The location of this discharge point, identified as Outfall Serial Number 001 in the Montana DEQ Draft Authorization to Discharge, as well as other project associated facilities are within WWP's FERC licensed project boundary as defined in FERC license NO.2058. Typically, such uses of project land for nonproject uses as described in the discharge permit require amendment to the FERC license or approval by FERC. Generally, this amendment would require conveyance by the licensee of fee title to, easements or right-of-way across, or leases of the required project lands for non-project use. The licensee, in this case WWP, has authority to make the initial determination to grant or deny permission for such use. Final action would require FERC approval. Such conveyance must be preceded by several actions undertaken by the licensee (WWP), including determination by the licensee that the proposed use if the license and the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall scenic, recreational and environmental values of the project. I am not aware of any request to WWP for such determination. (1779)

Response: Table 1-1 has been modified to include pipeline easement approval from Avista Corporation to allow construction of the discharge pipeline and makeup water well within the

Federal Energy Regulatory Commission boundary for Cabinet Gorge. Additional text has been incorporated into Chapter 1, Agency Roles and Responsibilities with regards to Avista as well as in Chapter 2, Reasonably Foreseeable Activities.

37. Page 2-48 - Material here is mainly lists of platitudes that lack substantive descriptions of means of implementation and means by which agencies will monitor and enforce the proposed actions. Specifically, what professionally capable agency will monitor, and who will enforce necessary changes when appropriate? (1288)

Response: The Montana DEQ and the U.S. Forest Service have this responsibility.

38. On page 4-45 third paragraph, "The Agencies are confident that a perimeter seepage collection system can be properly engineered to prevent degradation to ground water…". We suggest you specifically identify agencies you cite taking a position. Use of the categorical term "agencies" misrepresents the individual agency positions which happen to differ widely on this issue. (1993)

Response: The "Agencies" are identified as the Montana DEQ and the U.S. Forest Service in Chapter 1 of the EIS.

39. Can ASARCO guarantee the safety of these activities in the future? (1381)

Response: Please refer to Chapter 4 of the EIS for specific discussion on impacts to the environment. No guarantees can be offered, but several alternative locations and procedures have been developed and included in the three agency alternatives along with numerous mitigation in order to reduce impacts from the implementation of these alternatives.

40. From what I have observed, the 350 gallon per minute seepage will principally seep down into the ground water that is lower than the perimeter drainage ditches that will be detected by the monitoring well to let us know that it's already flowing into the Clark Fork River. This is an 1872 law. (1951)

Response: The 1872 mining law is a property law which sets environmental safeguards. At that time tailings would have been disposed of directly in Rock Creek or the Clark Fork River. Environmental standards are set in the Organic Act, the National Forest Management Act, and other statues, thus in contrast, the proposed project comes under the jurisdiction of a variety of environmental laws and regulations designed to protect human health and the environment and the impoundment has been designed to provide appropriate resource protections.

41. Which municipal sewage treatment disposal facilities are being considered? Mine Operation Requirements. What happens to the water during years 0?10? (1196)

Response: No municipal sewage facility has been selected for disposal of sewage wastes if evaluation adit facility sites were unsuitable for drainfields. Sterling would have to contact nearby municipal facilities to determine what was available and what the cost would be.

42. ASARCO should have to prove with hard scientific facts over a reasonable period of time that there will be no degradation of the water & surrounding area, and have to bond or have an insurance policy in force before hand that would cover any accidents or problems long after the mine is closed. (1321)

Response: The amount of the reclamation bond may include the cost of cleanup of reasonably foreseeable accidents. The bond is required prior to permit issuance and would be reviewed and updated every five years as required by law.

MISC-1601 Reclamation Bonding

1. How can we be sure ASARCO will be responsible for the impact this mine has on the natural environment, the economic situation during & after the operation, the community, people, roads, traffic? Will they be held accountable? To what extent will they be held accountable? (1333)

Response: The environmental impact statement analyzes the potential impacts to the environment as well as socioeconomic impacts to the surrounding communities. The cost of mitigating potential community socioeconomic impacts is addressed through the Hard Rock Impact Plan. This document outlines projected economic impacts to surrounding communities, and provides for payments by the mining company to the municipalities for the upkeep of community infrastructures and services to account for impacts to these systems by the mine's operation. To mitigate potential impacts to the environment, the applicant is required to develop operating and closure plans which comply with air, water, waste and reclamation statutes. The applicant is then required to post a reclamation bond to cover the cost of full mine reclamation. Chapter 1 of the final EIS contains a discussion of the state's and the Forest Service's bonding authority. Under a Memorandum of Understanding the State of Montana will hold the bond. Should the U.S. Forest Service (USFS) determine that the bond is insufficient to cover reclamation costs or that the bond is administratively unavailable to the USFS, the USFS would require the applicant to submit an additional bond to the Forest Service. The bond must be submitted to the Montana DEQ prior to the applicant receiving a mining permit if the state and the Forest Service approved its plans. The reclamation cost is estimated by Montana DEQ personnel and will be reviewed by the USFS. Bonding calculations would be included in the Record of Decision. Additional detail would be available to any interested party in the agencies files. The applicant would be required to post a bond sufficient to cover the cost of reclamation of all of the mine disturbances, and these monies would not be released by the agencies until reclamation has been deemed successful. The review of a request for bond release includes an opportunity for public comment.

2. What reclamation bonds and in what amounts will be required of ASARCO? Will this amount increase as inflation increases? Could be subject to modification up or down depending upon their actual record & practices at the sight. Will ASARCO guarantee to clean up the entire site even if the cost exceeds the initial bond posted in the beginning?

Will ASARCO really pay for the area's reclamation, restoration, of a natural healthy habitat, regarding, air, soil, water?

Please address the proposed reclamation bond and the process used to arrive at a numerical figure. The bond must be sufficient to cover all costs. (P1)(P2)(1223)(1301)(1304)(1333)(1346)(1347)(1384)(1427)(1712)(1717)(1780)(1998)

A cash bond large enough to completely reclaim the project area should be posted prior to the beginning of any construction by ASARCO. (1301)(1304)(1347)(1384)(1427)

It is incumbent upon the agencies to demonstrate and justify, on the basis of existing data such as that from Silver Valley, that the amount of this reclamation bond will be adequate to do the job. Require ASARCO post an adequate reclamation bond to cover a worst-case disaster and to treat water well into the future. The reclamation bond should be adequate to cover the costs of perpetual mine water treatment, perpetual maintenance of the tailings collection system and clean-up costs for a catastrophic failure at the mine facilities and impoundment or for adverse impacts to wilderness waters and other resources related to potential subsidence or drainage or interruption of surface waters. We, the taxpayers, should not be left with the clean-up. (1207)(1220)(1237)(1298)(1301)(1305)

(1326)(1322)(1330)(1331) (1333)(1344)(1345)(1347)(1362)(1351)(1371)(1386)(1429)(1439)(1443)(1453)(1454) (1460) (1479)(1484)(1487)(1506)(1516)(1517)(1553-1586)(1590)(1603)(1609)(1616)(1628)(1630)(1632)(1636) (1637)(1645)(1654)(1656)(1667)(1700)(1721)(1724)(1730)(1732)(1737-1744)(1746)(1747)(1751)(1776)(1782-1876)(1878-1911)(1918)(1929)(1935)(1941)(1943-1945)(1957)(1998)

These issues of adequate bonding are absolutely critical because of the numerous uncertainties regarding the effectiveness, or lack there of, of the proposed mine reclamation plan. The DEIS identifies several factors that may preclude successful reclamation, including soils with high clay content, low fertility, low organic matter content, elevated aluminum concentrations where soils ph is below 5, and nutrient deficiencies or toxicity problems if stored soils create acidic conditions. The DEIS fails to disclose how these factors will be mitigated and how successful reclamation can be guaranteed. Major problems with the reclamation plan include the fact that the plan has not been finalized, the soil salvage and revegetation discussions are inadequate, and the effects that perpetual pumping of contaminated ground water on revegetation efforts have not been disclosed. (1223)

Response: The department uses a variety of sources in estimating reclamation costs. Included in these are current wage and equipment production handbooks and tables, as well as comparisons to other similar mining-related reclamation projects. Costs for contingency measures are included in the bond to account for any uncertainties and as a security against any unforseen developments. Regardless of the final bond amount, the company is liable for impacts to the environment due to their mining activity. Bonding requirements as described under the Montana Metal Mine Reclamation Act (MMRA) are intended to ensure that there are adequate monies available to complete the reclamation of the mine site according to the reclamation plan approved by the department and which is described in the EIS. The DEQ approaches bond estimation as follows:

Bond Calculation - Reclamation costs for a mine site are based on the approved reclamation plan. DEQ personnel calculate estimates for task-specific items using references for current technology, equipment, and rates. Typically, the DEQ calculates the bond as if the mine were at the height of its production when there would be the maximum amount of disturbance. Estimates of the cost of reclaiming each disturbance are then made using current wage and production handbooks and tables, direct quotes form vendors, and examples of actual reclamation projects of a similar nature. As an example, for the reclamation of the tailings facility, DEQ personnel would calculate reclamation costs for:

Tailings Facility Assumptions:

tailings facility footprint at maximum disturbance on reclamation of facility except what is stated in reclamation plan

Calculated Reclamation Tasks for Bonding Purposes:

tailings dewatering
tailings consolidation
tailings surface capping placement
tailings surface capping grading
tailings surface topsoiling
tailings surface reseeding
tailings embankment regrading to final contours
tailings embankment topsoiling
tailings embankment reseeding
maintenance of dewatering wells and discharge system around perimeter
maintenance of monitoring wells around perimeter

sampling and monitoring of wells
replacement of same
redesign and re-engineering of tailings impoundment reclamation scheme
contingencies
inflation cost adjustment factor

DEQ attempts to anticipate all reasonable costs associated with reclamation, including contingencies, monitoring, re-design, and inflation adjustments. By law, DEQ must re-evaluate the bond at least 5 years and make adjustments and modifications as the situation dictates. DEQ also has the prerogative to revise the bond at any time if there is a change in the reclamation plan or if there are any unexpected developments not formerly accounted for in the original bond estimate. The applicant must reclaim the mining disturbances in conformance with the approved reclamation plan regardless of the posted bond amount, and the entire bond must be submitted prior to the approval of the permit. However, there is a provision in the law that stipulates that a company can post only a portion of the bond that is tied to a specific phase or disturbance provided this phase is identified in the plan of operations. Should a company refuse to reclaim a disturbance DEQ would pursue legal action against them.

3. Could an incremental rate be assessed against the mining proceeds, based on receipts or tonnage, to encourage environmentally safe practices and ensure reclamation? (1237)

Response: The Metal Mine Reclamation Act (MMRA) is very specific about how the reclamation bond is determined. The bond amount is based on the estimated cost of actual reclamation; the department cannot assign costs "earmarked" as inducements, or incentives based on a percentage of receipts or tonnage. The department only requires that the form of the bond be either a surety bond, or a collateral bond, however it is the prerogative of the company to decide what form to use. Under Forest Service regulations, the applicant must submit either a bond, or cash in the dollar amount of the bond, or negotiable securities with a market value equal to the dollar amount of the bond.

4. Hire a consultant to explore and find correct estimation of cost for the reclamation bond. (1331)(1527)

Response: The calculation of the reclamation bond is the responsibility of the department and the Forest Service. The bond estimate is open for public review at any time.

5. Any bond money should be paid immediately so that the county can start preparing for a very changed life in Sanders County. (1245)(1751)

A trust fund and reclamation bond, held by the government of adequate amount, should be maintained to deal with the extra burden the mine will have on government services and that the mine will require during its operation and after. (1751)

Response: The reclamation bond money is to be used for reclamation of mining-associated disturbances only. The company has filed a Hard Rock Mining Impact Plan with the state and with the county where the mine is located. Financial obligations to mitigate social-economic impacts identified in this impact plan are negotiated with local government and are often pre-paid to allow for infra-structure development in anticipation of the mine's opening.

6. Also, say the water system is not affected for 25 years, what is the plan to finance possible reclamation. Would this be a taxpayer expense? Could the system be reclaimed economically? (1414)(1674)

The EIS must document realistic figures of restoring water quality if experimental water treatment methods fail, realistic figures for maintaining and operating water treatment systems for 75 years after closure of the mine, and realistic figures to restore water quality if the impoundment facility fails. All of these costs must be included in an adequate reclamation bond. (1674)

Response: The bond is intended to ensure there are no taxpayer expenses associated with a permittees' reclamation obligation. The applicant would not be allowed to operate with an ineffective water treatment system. This is explained in the DEQ Water Quality Permits subsection of Chapter 1 of the final EIS. No bond monies are released without an opportunity for public comment. When a mining company requests that its bond be released after reclamation, DEQ publishes a public notice of request for bond release. The public then has an opportunity to comment on the success of reclamation and the merits of releasing the bond. Indeed, the success of reclamation activities may not be known or become apparent for many years after reclamation. DEQ evaluates trends and uses environmental indicators (e.g., geochemistry, water quality) to indicate whether reclamation has successfully accomplished its intended goals. No bond monies would be released (and thus the company would still be liable for reclamation) until DEQ and the Forest Service are satisfied that there is no environmental threat. This indeed could take several decades, perhaps longer.

7. Please require ASARCO to post a percentage of the bond (15%-20%) as a cash bond to be used for emergency situations and simply for prudent regulatory practice. (1461)

Response: A company cannot be required to post its reclamation bond in one particular form over another as long as it chooses a form authorized by the Metal Mine Reclamation Act and U.S. Forest Service regulations. The company has the option of posting a surety bond or a collateral bond. Of course, the company may choose to use cash as its collateral, however the agencies cannot require them to do so. In any event, the bond would cover 100% of the estimated cost to reclaim project disturbances including costs to implement contingency plans.

8. The analysis for this restoration cost as well as the cost of restoring the fishery and the water quality including monitoring must include figures for a minimum of five decades, 100 years, long-term recovery. (1214)(1220)(1223)(1427)(1433)(1438)(1482)(1500)(1527)(1532)(1678)(1935)(1957)

Response: Bonding covers reclamation including long-term water treatment should it be needed.

9. ASARCO should be required to post a bond to cover any potential or possible liabilities including economic to the surrounding areas including Clark Fork, Idaho & Bonner County, Idaho because these areas in specific receive no profit from ASARCO only possible pollution & impact to area economy. (1373)(1727)(1751)(1917)

Response: The company must post a bond for specific on-site reclamation tasks. Economic impact mitigation to off-site areas is addressed as part of the Hard Rock Impact Plan which discusses fiscal impacts to community infra-structure (see Chapter 1, Agency Roles and Responsibilities). Compensation is discussed as part of that plan. However, the Hard Rock Mining Impact Act applies only to the state of Montana.

10. The reclamation bond should include the cost of reimbursement of lower property values for those people whose domestic wells have been contaminated by waste generated by this mine. (1607)

Response: The reclamation bond is intended to account for all reclamation costs associated with mining. The department cannot however bond for all costs associated with hypothetical simulations. If there is an impact to drinking water wells or any other resource, DEQ has the authority to order the company to correct the situation (MCA 82-4-337 and 355).

11. There are many uncertainties and risks associated with this mine. Some mine features include a greater degree of uncertainty and risk than others (e.g.) greater risk of seismic liquefaction with tailings impoundment w/upstream design; uncertainty/risk in tailings impoundment seepage to ground water; risk of subsidence and risk to Wilderness Lakes may vary depending upon mine design; adequacy of prohibitions on removing or reducing the size of pillars; adequacy of monitoring and rock analysis; risk of acid rock drainage and metals dissolution; risk of degraded mine drainage water quality and uncontrolled seepage/discharge from underground storage reservoir; greater risk with unproven water treatment system; etc.,). To what degree will these uncertainty and risk factors be provided for in the bond cost calculations? Will there be calculations for funding needed to provide post-mine tailings impoundment maintenance/stabilization, long term post-closure operation of the tailings impoundment seepage collection system; underground storage reservoir seepage/discharge control, and or long term adit water quality treatment; or other corrective and restorative actions that may be needed? Bonding should provide for any corrective or restorative actions that may be needed to address any problems. (1214)(1440)(1638)(1696)(1732)(1737)(1738)(1741-1744)(1746)(1747)(1913)

It is stated on page 1-9 that bonding includes costs for "reasonably foreseeable accidents." We note that it is the unforeseen problems and accidents that often present the greatest difficulties, since they catch us unaware and unprepared. "Reasonably foreseeable" should include impacts which have catastrophic consequences even if their probability of occurrence is low, provided that impacts are within reason and supported by credible scientific evidence (40 CFR 1502.22 [b]). (1214)

We do not believe that the mine adits should be left open to drain into the surrounding area. Reclamation should provide for sealing of the adits. The entire project, including reclamation, could take fifty years or more. Some systems, such as a water treatment system might need to be operated for years after reclamation was completed. There can be no guarantee that any corporation will continue in existence for that long a period. Therefore, there must be provision for a reclamation bond of sufficient amount to assure that Montana taxpayers will never be forced to assume the cost of clean-up of another abandoned mine. The bond should include adequate amounts to cover at least the following costs: The cost of maintaining and operating water treatment systems for at least 50 years following the close of mine operation. The cost of restoring water quality should the experimental water treatment system prove inadequate. The cost of maintaining and operating the tailings impoundment pump back system for at least 50 years following the close of mine operation. The cost of restoring water quality should the tailings impoundment fail. (1696)

The post-closure trust fund (page 4-60) should provide for the possibility of corrective/restorative actions that may be necessary to address adverse impacts of mine outflow through natural pathways such as fractures. (1214)

Bonding for Rock Creek is especially critical. Discussion of bonding and a bonding plan keyed to the operation must be in the DEIS. Bonding levels should reflect: the cost of restoring surface and ground water if the tailings impoundment, pumpback system, or experimental water treatment system fails; the cost of maintaining all facilities and water pumping and treatment systems for decades if not hundreds of years; monitoring costs in perpetuity. (1638)(1737)(1732)(1738)(1746)(1747)(1913)(1741-1744)

Response: The Forest Service and the state of Montana bonding authority is explained in Chapter 1, Agency Roles and Responsibilities and rough bond estimates are provided for all alternatives and water treatment costs. The agencies are mandated to assess a reclamation bond for all activities associated with closure based on the anticipated disturbances and the approved reclamation plan.

Assigning costs for reclaiming disturbed lands above and beyond what is anticipated and outlined by the plan of operations can be approached through line item entries in the bond under the heading of 'contingencies.' The comment raises valid questions regarding how to bond for uncertainty and risk. The Rock Creek project has gone through an exhaustive completeness review and EIS process, marshaling the efforts of many individuals and organizations. The net result of this exercise is a

document which highlights likely, possible, and improbable impacts to the environment according to the best available science and technology available to the investigators, the public included. While the agencies do not bond for every possible 'What if?' scenario, DEQ has the authority to include line items for contingencies for corrective actions necessary as a result of 'possible' impacts. As an example, that portion of the bond earmarked for adit water treatment or tailings facility seepage collection and monitoring will be held until the all applicable water quality standards have been met. This may take decades. The department can demand that the company post additional monies for these areas to account for unanticipated developments, however it is not the intent of the Metal Mine Reclamation Act to provide bond for completely redundant systems.

12. We recommend that the KNF carefully review MDEQ bonding levels and give serious consideration to potential utilization of Forest Service authority (identified on page 1-8) to require additional bonding beyond that held by MDEQ if the KNF determines that the MDEQ bond is inadequate to reclaim national forest land or if the MDEQ bond would be administratively unavailable to meet FS requirements. (1214)

Response: As a co-lead agency on the Rock Creek project, the Kootenai National Forest (KNF) will work with the Montana DEQ in developing the reclamation bond should the project be permitted. As such, the KNF would ensure that adequate bonding is held so that disturbances to National Forest System lands would be reclaimed.

13. Similar to the comment above, we note that the U.S. Army Corps of Engineers can bond a 404 permit to ensure that work that is necessary to protect the public interest is carried out (33 CFR 325.4(d)). We recommend that the Corps carefully review MDEQ bonding levels and give serious consideration to potential utilization of Corps bonding authority to require additional bonding beyond that held by MDEQ if the Corps determines that the MDEQ bond is inadequate to indemnify the government against any loss as a result of corrective action the government may have to take and to protect the public interest. (1214)

Response: The Corps of Engineers (COE) is a cooperating agency on this EIS project. As such, the COE would review the bond for conformance with applicable laws.

14. When are bond(s) released? What if catastrophic events (e.g., earthquake, flood) occur at future date which in combination with mining activities results in environmental degradation (e.g.) shifting rock pile, subsidence, etc. (1214)

Response: Facilities such as the tailings structure and waste rock piles are designed using the applicable design criteria for the area such as expected seismicity and expected maximum flood. While these design criteria are developed using the best available current analytical techniques, the agencies recognize that there may be unexpected developments. To account for these, DEQ does have the authority to include in its bond calculation provisions for reasonable 'contingencies.' While these contingency bond levels do not account for complete failure of systems, the contingencies do provide for extra funds for modification and/or repair. Bond monies are released only when the company has complied with the reclamation requirements of which reclamation sustainability is a large part. The request for bond release includes opportunity for public comment, so one has opportunity to review the request and provide substantive input.

15. Page 1-8 states that DSL is authorized to bond mining operations under the Metal Mine Reclamation Act (82-4-338 MCA). The bond amount must be sufficient for the state to complete reclamation in case of default by ASARCO. Consequently, neutralization of chemicals or long-term water treatment are often part of the bonding calculations. Bonding for water management and treatment is based on the volume of water that must be managed and or treated, expected water quality, and method to be used. Because the mining, treatment, and reclamation plan for the Rock Creek project rely so heavily upon experimental technologies, and because perpetual seepage and discharge of mine water is expected, the Agencies should require a perpetual bond for the project.

Page 4-65: states that long-term monitoring and water treatment likely would be required for the proposed project. The Agencies would establish a mechanism for retaining financial assurance for long-term monitoring, maintenance, and possible perpetual waste treatment. Because the project relies so heavily on experimental and unproven techniques to control and treat discharges of mine water from the site, the EIS must provide a more detailed discussion of this funding mechanism. This discussion must address the following issues: 1) impacts that the perpetual pump back of tailings impoundment seepage will have on the timing and success of reclamation efforts, and 2) impacts from springs and seeps of mine water from the underground mine workings. These discharges will have to [be] permitted and treated until they consistently meet water quality standards. The public and decision-makers must be assured there will be adequate funding to implement all monitoring and reclamation activities in the event of a default by ASARCO. The bond should be based on the costs for constructing, operating, maintaining, and decommissioning a conventional water treatment facility-not on the costs for perpetual operation of the experimental passive bioreactor/ion exchange system. (1223)

Response: Should the project be approved, DEQ will calculate its estimate of financial assurance for the reclamation of all disturbances and their associated appurtenances, including those that call for "bonding in perpetuity." The public would be welcome to review the department's calculations at any time. See responses to prior comments for additional detail.

16. Overall, the Agencies cannot permit a project that cannot be fully reclaimed. Any potential long-term water quality problems at the site per se means that reclamation is not complete. Thus, the Agencies have two options: (1) deny the project approval since successful reclamation completion cannot be assured; or (2) require that sufficient financial assurance be a condition of project approval (and fully discussed in the DEIS) in order to ensure that ongoing reclamation (i.e. water treatment) can be completed by the government in the event of operator abandonment or default. Without such adequate financial assurances, the project as currently described in the first DEIS, must be denied. (1223)

Response: The Forest Service has the authority (36 CFR 228) to require, where practicable, reclamation of surface disturbances and to require a bond to ensure that the planned reclamation is achieved. The department has the authority to bond for the operation, maintenance and periodic replacement of facilities that are proposed to have an unlimited operational life. Any request for bond release is required to go thru a public comment period. The public may review the calculations when they are completed (which is prior to the issuance of a permit if in fact the permit is authorized). See response to 1501-2 for more specifics on bond calculations.

17. How will the value of the liability for a worst-case disaster be determined? Can the public have a say? (1679)(1525)

Response: The company posts a reclamation bond sufficient to cover the costs of reclaiming the mining disturbances as prescribed in the plan of operations and reclamation plan. The department has the authority to include reasonable "contingency" charges to cover the costs of unexpected developments. The department does not bond for the "worst-case disaster" however. As an outcome of the completeness process and the EIS preparation, alternatives were developed which addressed the issues surrounding the trigger mechanisms for the "worst-case" event. For example, the seismicity of the Rock Creek site will be assessed for accuracy once again by a technical review panel during final design. If there are any questions regarding the choice of seismic design criteria by the applicant, changes would be made to the design to avoid potential failure - the "worst-case disaster." Similarly, alternatives have been developed wherein the risks associated with a "worst-case disaster" like large scale failure of the tailings structure are avoided by designing an alternative using paste technology, a non-aqueous tailings deposition process (see Chapter 2, Alternative V). The public is welcome to scrutinize the bond calculations for this project when they are completed.

18. What is the level of bonding required of ASARCO for the cost of remediation of all resources affected by the Rock Creek mine? Who has determined the bonding level and how was this value calculated? Who has the authority to determine a loss and therefore file a claim against the bond to mediate for that loss? What is the form of the bond, such as; Irrevocable Letter of Credit, Cash, Surety, etc.? (1440)(1991)

Response: The bond for this project has not been calculated yet. However, the bond for the nearby Montanore project is $13.1 million. Other bonds for similar mining operations of this size have ranged upwards of $25,000 per acre.[1] Once completed, the bond will be on file for public inspection. The DEQ and the U.S. Forest Service (USFS) are entrusted with determining the bond amount. Both the DEQ and the USFS bear the responsibility for evaluating the degree and extent of environmental degradation should there be any. Authorized bonds as recognized by DEQ and the USFS are surety and collateral (cash, CD, letter of credit). See earlier response or more specifics on bond calculations.

19. Pages 1-8-1-9: The Reclamation Bonding: paragraphs are quite specific about costs that must be covered. Calculation of amount: "Bonds are calculated once an alternative has been approved. The calculation would then be on file and available for public review." Where? How announced to Public? How can this information be obtained and how long does the public have to evaluate it? What input does the public have? Why are these questions not addressed? (1288)

Responses: The reclamation performance bond would be published with the Record of Decision and is on file at DEQ and with the U.S. Forest Service. Anyone may comment on the bond at any time there is no prescribed comment period. However, calculations are based on documented volumes (of tailings, waste rock, water, etc.) and published rates for equipment and labor, etc. Thus general opinions regarding the bond are unlikely to result in a change in the bond amount.

20. No mention can be found in the DEIS as to the amount of bonding required of ASARCO to cover mitigation and cleanup of the project area. Page 4-73 contains a series of disclaimer statements concerning impacts to water quality, catastrophic failure of the tailings impoundment, aquatic life, etc. It is not proper to accept any unmitigated degradation of the current state of all the resources in the Rock Creek, Clark Fork River of Lake Pend Oreille. It is the financial responsibility of ASARCO to assume ALL associated costs related to the operation of this project. (1982)(1991)

The bonding issue is not discussed thoroughly in the DEIS. It must be thoroughly discussed including what ASARCO is going to be held responsible for in the final Draft. (1982)

Response: In response to public comments, the bonding authority discussion has been expanded in the final EIS and includes a statement about the likely range of the bond (see Chapter 1, Agency Roles and Responsibilities). Other responses to comments in this section (1501) further address the bonding of this project.

21. What are the detailed plans for remediation of the mine site, tailings pond, roads, etc.? How will a cleanup handle the continued leaching of metals into the ground water? To what extent does ASARCO assume long term liability for future monitoring expenses, operation and maintenance costs, and mitigation of any failures after the closure of the site, and acceptance of remediation? (1991)

Response: Please refer to the plan of operations and associated reports for the details on the specifics of reclamation. Please also see other comments and responses in this section for references to long-term financial and environmental liability.

[1] DEQ preliminary estimates put the reclamation cost at between $21 million and $30 million. The associated water treatment costs could range between $14 and $44 million.

The reclamation plans are described in Chapter 2, Postmining Topography, Reclamation, Revegetation sections in Chapter 2 for alternatives II, III, IV, and V. The plans for long-term water treatment are addressed by requiring the applicant to post a reclamation bond. Part of this bond is for a trust fund to bond the monitoring, operation, maintenance and replacement of the facilities needed to treat water from the operation.

22. ASARCO should be required to have a special bond for the sampling program. (1501)

Response: The department does bond for a sampling and monitoring program as part of its overall bond based on the number of sites sampled, analytical costs, sampling time, and related factors (also see response to 1501-2).

23. ASARCO should be required to set up a bond or trust fund to finance (1) an independent environmental firm to monitor all of the water quality and all other monitoring activities and (2) that this testing and monitoring be carried out for a minimum of one hundred years. Another bond needs to be established to cover the costs of remedial water treatment and/or resettlement costs for individuals should the ground water become contaminated and not fit for human consumption. (1632)

Response: As part of its reclamation plan, DEQ and the U.S. Forest Service require comprehensive Construction Quality Control Plans (CQC) and Construction Quality Assurance Plans (CQA). This usually involves an independent third-party do the monitoring and inspections. The length of time monitoring activities go on is dependent on the success of the reclamation and on the ongoing analysis of data coming form various monitoring points. The reclamation bond would not be released until the agencies are satisfied that the reclamation is successful and environmental compliance is assured, however long that may take. A request for bond release by the company is accompanied by an opportunity for public comment. The agencies bond for what they consider likely scenarios and add extra monies to account for unexpected developments. Water treatment would be bonded for; resettlement cost would not be.

24. The Kootenai Tribe of Idaho has seen the effects of mining activities and how those activities have affected Tribes within, surrounding, or in close proximity to those mines. Who determines the bonding requirement? How much does a bond need to be to be declared "sufficient"? The Tribe believes that there is no bond that could be equal the clean-up costs, mitigation fees, effects to the next generation's generation. The Kootenai Tribe of Idaho is led to believe, by the way the DEIS is written, that ASARCO will determine when improper actions has occurred due to mine activities.

Who determines and sets the value and limit of the bonds that are needed for operation, clean-up, reclamation, and mitigation for the mine? The Tribe believes that value should be set equal to the gross profit value accrued for the total mine life and that estimated amount be bonded up front at the beginning of the mine operation.

Is ASARCO willing to place a bond for the mitigated cultural and religious value that will be destroyed to the Kootenai Tribe of Idaho for that area? (2026)

Response: Mine operations are designed, and have been for over 25 years now, to minimize and avoid impacts (and therefore minimize cleanup costs). Montana and U.S. mining laws are specific about what the bonding requirements are for a lawful mining operation. Specifically, the Metal Mine Reclamation Act (MMRA) requires bonding based on the estimated cost of the reclamation work including water treatment. The state cannot assign a bond based on the gross profit of the operation. U.S. Forest Service regulations for bonding have similar requirements and limitations. The agencies set the bond amount based on these requirements. Compliance is determined by the agencies. Please refer to other comments in this section for details on how the bond is determined.

25. We strongly urge the state to require bonding that would cover restoration costs in case wilderness waters are drained or otherwise adversely impacted. This bonding should be available for at least 100 years after closure of the mine, since research (i.e., Abel and Lee, 1980) has documented that the room and pillar technique has caused subsidence to occur a century later. However, we also recognize that bonding is not sufficient since potential impacts to wilderness waters may be irrevocable. (1220)

Response: The EIS analysis does not indicates that there is only a very remote possibility that wilderness waters would be drained as a result of mine construction and operations. The applicant has withdrawn its plan to possibly remove pillars at the close of mining activities. Under the company's proposed mine plan, even if some of the underground workings were to collapse due to pillar failure, the agency analysis shows that risks of impacts to the surface are extremely remote. Under the preferred alternative, the analysis shows that surface impacts are effectively precluded (see Chapter 2, Alternative Descriptions). The agencies do not require bonding for unlikely events.

26. Where is the information regarding the issuance of a bond that would safeguard any industrial accident, pollutant spill, clean up? (1337)

Response: DEQ does have the authority to bond for emergency response and clean-up, unobligated monies would be included in the bond calculation to account for unexpected events such as accidents, spills, or other similar occurrences. There would be some overlapping jurisdiction depending on where the event happened (state vs. federal highway, forest service road, Rock Creek or the Clark Fork). The Hard Rock Impact Plan (the agreement between the county and the mining company regarding financial compensation for impacts to local infra-structure due to the mine) can also address this issue. The company, the local government, the state, and the applicable federal agency would work out an agreement on who should cover the management of the spill response, and what kind of financial bond should be held and by whom. The details of the agreement and the bond amount would most likely be part of stipulations associated with the awarding of mining permit.

27. Government agencies must insist the ASARCO pay the full costs of this mine development. Taxpayers should not be expected to pay for the secondary costs, such as dirty water or endangered wildlife. We urge you to make sure the final EIS addresses these serious shortcomings. (1603)

Response: The applicant would pay for the actual mine development (facilities needed), mitigations, reclamation and much of the monitoring. The agencies would have those costs available when reviewing the final plans and facility construction, reviewing monitoring reports, and conducting inspections. The applicant would also submit a bond to ensure the reclamation work they have committed to doing or been required to do is done to the level required in their Operating Permit.

28. This office is particularly concerned with the economic, recreational, and fish and wildlife resources that depend on these water resources. We believe that cost figures should be provided for the reclamation as required by the National Environmental Policy Act in order that the decision makers and the public be adequately informed. (1427)

Response: The range for reclamation bonding is included in Chapter 1, under Agency Responsibilities for DEQ. The estimate is between 21 and 30 million dollars for Alternatives II-V. Additional bonding for water treatment is estimated at approximately 14 to 44 million dollars. The final reclamation bond is not calculated until after a decision has been made to permit a mine; however, those calculations would be available for public review.

29. The $150 million US taxpayer expenditure (meaning out of the pockets of each individual US taxpayer) is not believed to include the current nor past efforts at dealing with these problems. Meanwhile, Bunker Hill, believed to have been the largest operator in the Silver Valley, became insolvent - incapable of paying. Who, what persons in or out of government have carefully examined the possibility of another Silver Valley taking place right in our

backyard and what plans exist to prevent a recurrence? What has the EPA said about all of this? Where is their work product and who (what person) did this work and what were their thoughts to prevent another Silver Valley? (1729)

Response: EPA is a cooperative agency on this EIS and has provided numerous comments indented to guide the production of this document and to ensure that the mine operating, reclamation, and closure plans do not result in another Silver Valley. EPA's comments and responses to the draft and supplemental EISs are included in these responses to comments.

30. What figures has ASARCO presented as a basis for bonding to maintain pumping systems and repair of possible impoundments for the many years that will be necessary to keep the Clark Fork and downstream waters free of pollution? (1655)

We want the DEIS to provide an estimate of the costs of cleaning up the River if the tailings impoundment fails, the costs of cleaning up the ground water and people's wells if the tailings pumpback system fails, the costs of maintaining both water treatment systems for the mine water discharge and the tailings pumpback system for at least 50 years after mine closure…We would like these cost estimates revealed and an up front, cash bond required from ASARCO for the full TOTAL of these costs. (1916)(1923)

What reclamation and bonding requirements are necessary. (1196)

It is stated on page H?3 that ground water quality sampling and analysis would continue at least until bond release. We draw your attention to the possibility that sampling of the tailings impoundment seepage may continue for decades, thus, requiring retention of the bond for decades. The program may be able to be scaled back at that time. (1214)

The likelihood of successful reclamation of this mine site must be determined, and ASARCO must be held financially responsible for complete costs associated with reclamation. Typically the bonds required to initiate mine operations are completely inadequate to ensure any kind of maintenance of a mine site, let alone restoration (Bob Burm, EPA, pers. comm. 1994). If the no action alternative is not selected, and the proposed Rock Creek mine is permitted to operate, an adequate bond must be collected prior to commencement of mine construction. Legally, the DSL.. and USFS have the legal authorization to require any bond deemed necessary to ensure adequate reclamation is accomplished (Alan McQuillan, Department of Forestry, University of Montana, pers. comm. 1994). This insurance must be collected. (1223)

ASARCO must post a reclamation bond to reclaim the mine, mill, and tailings site, providing figures of costs of maintaining and operating water treatment systems for at least 50 years after the mine closes. (1529)

Then, the company should be required to post a bond sufficient to cover all potential damages, and the bond should be adjusted frequently to keep pace with inflation or other increases in potential costs. (1740)

Response: The reclamation bond and trust fund for the water treatment plant addresses the unknowns raised in the comments. The Agencies have modified the company's proposed reclamation plan in Chapter II, Alternatives III, IV, and V, Reclamation sections, such that if the mine is permitted, the data needed would be collected throughout mine life to refine estimates of water quantity and quality.

31. We note that it would be more protective to continue to operate the seepage collection system until the water collected from the underdrains and perimeter trench drains met water quality criteria. Will cooperating agencies have an opportunity for review of the ground water collection system? Who will operate the seepage collection system until the seepage met all water quality criteria and standards after mine closure? Will the cost of this operation and the necessary monitoring be included within the bond? Will the bond be sufficient for operation of the seepage collection system by an "outside" operator? (1214)

Response: Cooperating agencies would have an opportunity to review the ground water collection system design for whichever tailings facility was approved, if the project is permitted. The applicant would be responsible for operating the seepage collection system until water quality criteria were met.

The Agencies customarily bond for the operation of a water treatment system and all environmental monitoring. The estimate assumes that a third party contractor, and not Agency personnel will be operating the seepage capture and treatment operation. The Agencies have actual cost data for the operation and maintenance of water treatment facilities operated by contractors at other mine sites in the State. The estimate for the Rock Creek project will draw heavily from this data. Bonding for water treatment usually assumes a minimum 100 year operating time, and a discounted cash flow analysis is performed when deriving the estimate. Both inflation and an assumed constant rate of return are factored into the estimate.

32. Page 2-71 "the Agencies would require long-term monitoring, maintenance, and possible long term post-closure water treatment." We would like to see some discussion of the sufficiency of the post-closure trust fund to provide for contingencies such as long term water treatment, post-closure adit/mine discharges/seeps, contaminated impoundment seepage escaping the capture wells, etc. (1214)

Response: The applicant would be required to post a bond that would adequately cover long-term water treatment, post-closure discharges, and contaminated impoundment seepage. For example, the perimeter seepage collection system at the tailings impoundment would need to be operated and maintained and ground water would be monitored for several decades. If necessary, a trust fund, a form of a reclamation bond, could be established that could provide long-term funding of these activities. The fund would be required to cover costs to the agencies.

33. Will ASARCO responsibly pay its own costs of disposal, or will it externalize those costs to all of us downstream by degrading the water resources and aquatic habitats we all hold in common? (1740)

Response: The applicant will be required to meet the effluent limitations in the MPDES permit at its own expense.

34. The S.O.B. at p. 20 states that "seepage from the tailings impoundment may persist for several decades after the closure of the mine." Where are the contingency plans for this? More importantly, this admits that the costs to monitor, treat, and prevent inappropriate discharges must be covered by sufficient financial assurances under the Metal Mine Reclamation Act. While the DEIS mentions this likelihood (i.e., long-term or perpetual water quality financial assurance/bonding), no details are given. MEPA/NEPA require that such details be included in the DEIS at a minimum. For example, since long-term/perpetual water quality treatment is likely, the amount and form of the financial assurance certainly falls under NEPA/MEPA's requirement that the DEIS discuss all "reasonable foreseeable" impacts/events/issues associated with the mine/discharges. (1223)

Response: A separate bond would be required to cover water treatment for as long as needed. The estimated bond amount was increased to between $14 and $44 million and is disclosed in Chapter 1 under Agency Roles and Responsibilities for DEQ. The actual bond amount would not be calculated until and if a decision were made to permit the mine. The only anticipated impact would be from the continued discharge of treated water and its associated load of metals and nutrients would be a longer duration of that discharge. The impacts of the load are discussed in Chapter 4, Hydrology. The applicant would remain responsible for continuing water treatment until the discharge met standards without treatment. The applicant would then need to seal the adits, reclaim the mine portal, dismantle and decommission the water treatment facility, and reclaim the facility site. The water treatment facility bond would cover continued operation of the facility as well as reclamation of the

site should the site be abandoned. The reclamation bond would contain costs to reclaim the mine adits.

35. The Metal Mine Act mandates that a mining/reclamation permit cannot be granted unless the applicant submits a reclamation plan that will "prevent the pollution of air or water and the degradation of adjacent lands." 82?4?336 (8). See also, "Reasons for Denial of Permit." 82?4?351 (1). However, the applicant admits that contaminated water may be released from the site for decades, if not forever. Thus, "reclamation" will never truly occur at the site since contaminated water discharges will continue, with no plan to stop such releases.

If an operator cannot "reclaim" the site (i.e., leave the site with no releases of contaminated water), then it cannot be granted a permit in the first place. For the Rock Creek project, the long-term discharges from the tailings impoundment, the perpetual releases of contaminated water from the mine itself (into the ground water as well as through seeps and springs into the Rock Creek system), as well as potential adit discharges for an indefinite time period, all lead to the fact that the site can never be fully "reclaimed" ? as required by Montana law.

It should be noted that long-term treatment of adit discharges cannot serve to avoid this strict requirement. For example, unless the water treatment system is bonded for in perpetuity, there is no assurance that the treatment will continue. On a side note, the financial assurance needed to cover perpetual treatment (i.e., construction, operation, maintenance, monitoring, eventual retrofitting/reconstruction) would be very large.

On the other hand, if the company's proposal to plug the adits was implemented as planned (to supposedly obviate the need to operate the treatment systems in perpetuity), the seeps and springs discharges that the company admits will occur would also represent an "unreclaimed" condition ? mandating permit rejection.

In addition, the seepage from the waste rock piles into the Rock Creek system, something which will occur under all the mentioned alternatives, is also the type of persistent, post-mining water quality problem that cannot be allowed under the Metal Mining Act. Similarly, the seepage from the tailings impoundment that will reach surface waters (and ground waters) and continue for an indefinite time period also would preclude the DEQ from issuing a mining/reclamation permit.

This overall analysis also applies to the Forest Service's Plan of Operations approval since the Forest Service also cannot approve a Plan that would result in an unreclaimed water quality problem. 36 CFR Part 228.

At a minimum, the DEQ must be assured that all such discharges will not exist after the close of mining (or very shortly thereafter). This finding has not been made in any documents released to date, let alone fully analyzed in the DEIS, draft permit, or other materials.

If such a finding cannot be made, and the project record indicates that is the case here, then the mining/reclamation permit must be rejected as a matter of law. (1223)

Response: A separate bond would be required to cover water treatment for as long as needed. The estimated amount was increased to between $14 and $44 million and is disclosed in Chapter 1 under Agency Roles and Responsibilities for DEQ. The actual bond amount would not be calculated until and if a decision were made to permit the mine. The mine adits would not be sealed until drainage could meet discharge limits without treatment. If the water were to return to background levels before the adits were closed and any water remaining in the mine workings later reached the surface through cracks and fractures already existing, there would be no violation because ground water of similar quality would have used those routes to reach the surface anyway over time had the mine not been built. It is, however, impossible to accurately determine how much water, if any, would reach the surface and where it might surface. Some general concepts of ground water flow have been included in Chapter 4, but cannot be confirmed until additional hydrogeologic monitoring is done

from within the evaluation adit and mine workings as described in Appendix K. The volume might be increased initially somewhat until the volume of water in the mine workings stabilized, but then the volume of any water from the mine reaching the surface should also level off at rates that cannot be calculated or estimated. Contaminants in runoff from waste rock piles (at the evaluation adit under all alternatives, at the mine portal under Alternatives II and III, or through the mill pad under Alternatives IV and V) would primarily be limited to nitrates from blasting residues and would be gone within a couple of years after placement. The waste rock is not anticipated to generate acid drainage, but additional monitoring and contingency plans for this unlikely situation would be required as described in Appendix K under Alternative V. No long-term water quality problems have been identified with runoff from waste rock. Capture of seepage beneath the tailings facility under Alternatives II-IV would not stop until the ground water in the pumpback system met pre-mining conditions. If discharges that could be identified as coming from the mine of mine facilities continue in some fashion after the site has been reclaimed by all other standards and the discharges complied with non-degradation-based water quality standards, then the site would be considered fully reclaimed.

MISC-1602 Health and Safety

1. Page 2-21. What security plan will be implemented for the explosives? Given this mine's proximity to the Militia of Montana's headquarters, I would expect exceptional personnel hiring screening and top notch explosives security. What would ASARCO's liability be if some explosives were stolen and used in a bombing elsewhere? (1196)(1246)

Response: The use of explosives at the Rock Creek Mine project would be regulated by one or more of the following agencies: U.S. Department of Transportation (DOT), U.S. Mining Safety and Health Administration (MSHA) and/or Alcohol, Tobacco and Firearms (ATF). During construction, explosives would be stored in an approved bunker at their construction site. Once production begins, all explosives materials would be stored underground in an approved storage facility. Access to either facility would be strictly regulated and detailed inventory records maintained. During production, the plant facility would be fenced and a 24-hour guard would be on duty. The transportation of the explosives to the mill site would be the responsibility of the carrier. The question of liability should there be a theft would need to be made at that time based on how well the company was securing the explosives.

2. Pollution prevention is essential for disease prevention, so why has this issue not been addressed in the draft Environmental Impact Statement? Has the impact this proposed mine will have on human health been fully studied? The draft EIS does not mention any concern for human health resulting from dust created from the tailings pond? (1674)(1982)

Response: The alternatives and specifically the preferred alternative is designed to minimize the chances of pollution, be it to the air or water, which would affect humans or wildlife species. The comment specifically mentions dust and its affect on human health. Mitigations would be in place to minimize the occurrence of dust. The biggest potential originator of dust would be the tailings facility. Please see Chapter 4, Air Quality, which addresses wind erosion on the tailings facility.

3. APPENDIX F: Toxicity of Process Reagents: This section is totally inadequate. It should be one of the most clearly documented sections in the DEIS. It only mentions whether reagents appear to be toxic or not and presents the barest outline of potential effects to humans. The public has a right to know details about how these chemicals may affect the environment, fish, mammals, birds, amphibians--at least an accurate summary of all available data on toxicity and a thorough analysis of likely scenarios involving use of the chemicals. How can the DEIS be evaluated without this information? Of special concern is the thickening reagent Am Cy Superfloc S-5595 because this substance "would go to the tailings impoundment as a highly decomposed hydrocarbon." The amount of information in the DEIS concerning this substance and its "hydrocarbon" breakdown products is grossly inadequate. It is likely that not all Superfloc will decompose before it arrives at the tailings impoundment. What is its half life? It is also likely that at least some of its breakdown products have toxicities of their own. What are these products?

What are their toxicities? Detailed analyses of the fate of these compounds must be addressed for the sake of public health and potential environmental (ground and surface water) degradation.

ASARCO has not laid out a clear HAZMAT response and storage plan. Extremely caustic and toxic material will be utilized at this site. If a HAZMAT incident occurred, many people, land, and wildlife would be greatly impacted by this occurrence. The area does not have the capabilities to handle any Hazardous Materials or substances what-so-ever.

The Kootenai Tribe of Idaho would like to know what types and amounts of fuels and materials, that are considered hazardous, that are proposed for use at this facility. The Tribe believes that the ``Description of Reagents" listing

was weak at best for describing all chemicals to be used at the site. Xanthate is known toxinogen, especially to the aquatic communities. If any spill of this reagent occurred, especially during a spawning period, all communities involved would be killed. That could place extreme danger to the bull and cutthroat trout communities that are currently threatened as is. (1288)(1337)(2026)

Response: The intent of Appendix I - Description of Reagents - is to list the predominant chemicals that would be used in the milling process with summary descriptions of their use, toxicity, spill clean-up procedures and quantities to be used. The toxicity are given for concentrate forms, not diluted forms in which they would be actually used. The main risk would be to those workers who handle the chemicals as part of their job. The mill design would be such that should there be a spill, it would not get out of the immediate area. There is a discussion in Chapter 4, Aquatics, on the possible reagent impacts to aquatic resources. Material Safety Data Sheets, though not part of the EIS, are available at the Montana DEQ and the Kootenai National Forest offices for review should more information be wanted. The applicant has prepared a Spill Prevention, Control and Contingency Plan which is in their project file. For additional information see the Rock Creek Mine Operating Permit Application, Volume 2.

4. Page D-34, Question 26, long-term worker care. An in-depth analysis of long-term worker care may be beyond the scope of an EIS, but it is appropriate for the EIS to identify how an employee's long-term health may be affected by working in similar types of underground mines, and to identify the entities potentially responsible for providing health care, their funding sources, the types of care available and the circumstances under which it would be provided. The DEIS should address the implicit issue of why this question is raised with respect to the proposed Rock Creek project. If the question reflects apprehensions about the project, those apprehensions are part of the social impact of the project and the answers may be part of the economic impacts of the project. If information pertinent to the question is available, it should be presented and analyzed with respect to its probable relevance to the ASARCO Rock Creek Project.

Draft EIS, Pages D-51 through D-54. Another set of issues directly related to social and economic well-being and quality of life which has been raised consistently since the earliest scoping meeting is essentially disregarded by the EIS: mine health and safety issues, working conditions, and the perceived work environment. Contrary to the assertion that what occurs in the mine is not part of the ``natural environment'' and, therefore, need not be addressed in the EIS, what happens in the mine (or what is expected to occur) affects the social and economic well-being of individuals and of the community, and cannot appropriately be artificially segregated, or dismissed, from the overall social and economic impact analysis. Barring catastrophe, the people who work in the mine come out of the mine. What happens, or fails to happen, to them in the mine affects them, their families, their friends and the community in which they all live. (1992)

The safety of mine workers should be addressed as a social impact, including potential health effects from carbon monoxide, dust, etc. (1637)

Response: Issues concerning worker health and safety are outside the scope of an EIS. The National and Montana Environmental Policy Acts (NEPA and MEPA) rules require agencies to consider potential impacts to the natural and physical environment and the relationship of people to that environment. An underground mine is not the natural environment of people. In addition, neither NEPA nor the Part 228 mining regulations provide direct authority for including worker safety and health in the EIS or in the operating plan/permit process. The same is true of MEPA and other corresponding Montana laws.

The U.S. Department of Labor, Mine Safety and Health Administration (MSHA), and the Montana Department of Labor and Industry, Safety Bureau, regulate worker safety and health at mines. The Federal Mine Safety and Health Act of 1977 applies to the project and includes provisions for

inspections, training, penalties for noncompliance, worker health and safety standards, ventilation and air quality inside underground mines, and approval of diesel-powered equipment for noncoal mines (30 USC, 801 et seq.; 30 CFR parts 32 and 57). Corresponding Montana laws/regulations are MCA 50-72-101 et seq. and ARM 24.30.1301. The laws and regulations were developed with public input and are not subject to change through this EIS process.

Sterling would be required by MSHA to meet its regulatory requirements designed to protect worker health and safety during mine construction and operation.

Electric haul trucks are proposed for underground use in Alternative V, thus minimizing the concern expressed by some regarding underground air quality. Worker health should not be compromised.

5. The transportation of mined materials is also a great concern. These materials are the concentrated form of all the metals. The transportation of these materials will be along Rock Cr. itself. If a spill occurred, many thing could happen. The first being that large amounts of diesel could be spilled directly into Rock Cr. The second is that a point source could be created for heavy metal contamination into Rock Cr. and into the Clark Fork from failure to remove all materials. Just the fact that materials are spilled into or adjacent to Rock Cr. is of grave concern.

The Tribe is greatly concerned about the pipeline transportation of the waste slurry to the tailings pond. The proposal has this pipeline running directly adjacent to Rock Cr. This is of great concern because the chances of floods, rock-slides, snow slides, and other events that could take place, may increase the chance that a break in the pipeline to occur. If a breakage as described occurred, extremely large amounts of waste materials would end up in Rock Cr. and destroy that system. (2026)

Response: There is no way to eliminate all risks. Under Alternative V, the concentrate would be transported from the mill to the rail load-out in a buried 3" pipeline. The material would be in a sandy/paste state; thus, should a spill occur in route, the concentrate would not migrate far from the spill site. The ore waste would be transported in a slurry mix via a buried pipeline from the mill to the tailings disposal facility (see Chapter 2, Alternative Descriptions). The pipelines would be double-walled with leak detection sensors. Emergency dump ponds and valves would be present to minimize the affect of a pipe break. Though the routes parallel Rock Creek, for most of the distance there is a vegetative buffer between the road and the creek which would help minimize the potential of spilled material reaching the creek. The applicant's Spill Prevention, Control and Contingency Plan would address the method of clean-up should such a spill occur.

6. The tailings impoundment site is of greatest concern to the Tribe. These sites consistently become the dumping grounds for all unwanted materials. Whatever is not wanted to be hauled away to a certified landfill, it will end up in the tailings impoundment. (2026)

Response: Sterling could not unilaterally decide to dump whatever they want in the tailings disposal facility. Most waste other than rock and tailings would have to be hauled to an approved disposal site. If Sterling wanted to place something other than tailings in the disposal facility, they would have to propose it to the Montana DEQ for approval. The tailings disposal facility would not take the place of an approved landfill.

7. Will the vent adit be exhaust, intake, or both. Assuming the vent is only for intake, where are the data to show that sufficient fresh air will be maintained in the adit? (1288)

Response: The ventilation adit would be for the intake of air. The ventilation adit is being proposed in case Mine Safety and Health Administration (MSHA) requires additional ventilation some time in the future. Electric haul trucks would be used underground under Alternative V instead of the diesel

trucks proposed under Alternatives II to IV in the draft EIS and low-emission diesel engines would be used on other equipment. Under Alternative V, there would be fewer diesel fumes to vent, but there is no certainty that MSHA would not require additional ventilation, so the air-intake ventilation adit is carried forward as part of the mine plan. See Chapter 2, Alternative II, Mine Plan.

8. Finally, there is no discussion of potential threats to worker safety caused by underground storage. How will mine workings be designed to assure that mine water stored in the underground reservoir is not released to areas of active mining, potentially causing injury and/or death of mine workers? (1223)

Response: The reservoir would be located in a low spot in the mine, from which water could not flow without pumping into other mine areas.