

FINAL ENVIRONMENTAL ASSESSMENT
for
DILLON VERMICULITE
APPLICATION FOR OPERATING PERMIT

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CHAPTER I - INTRODUCTION

This environmental analysis evaluates the effects of a proposed mine expansion in southwestern Montana and provides a basis for public comment.

A. Proposed Action

Dillon Vermiculite LLC's (DV) has been operating the Elk Creek Mine, a small open pit vermiculite mine located approximately 13 miles (23 road miles) southeast of Dillon, Montana, under a Small Miner Exclusion Statement (SMES) administered by the Montana Department of Environmental Quality (MDEQ). In October 1996, DV submitted an application to the department and the Bureau of Land Management (BLM) for an operating permit to allow for the expansion of the Elk Gulch Mine beyond the limits imposed under SMES rules. If MDEQ and the BLM approve the proposed action, mining would continue for 4 years. Only federal lands would be affected by DV's proposed operation.

DV's proposed expansion would enlarge the open pit, waste rock dump, facilities area, existing haul/access roads, and temporary soil stockpiles. Two new facilities would be built, a mine haul road along the open pit and one or more water production wells near Moose Creek.

Under the proposed action, the mine would expand by 70 acres to include 75 acres within the permit boundary. Disturbances associated with mining activities would expand from 4.1 acres under the SMES to 35 acres. Operations would take place year round, processing approximately 60,000 tons of ore per year.

The proposed action reclamation plan would be more thorough and complete than the current SMES reclamation plan. It would provide for reclamation of the waste rock dump, open pit, facilities area, and haul/access roads. All roads that the BLM does not want to remain after the close of operations would be reclaimed.

B. Purpose and Need for Action

The purpose of DV's proposal is to allow it to continue and expand its mining and processing of vermiculite, which it does to earn a profit.

The purpose of this environmental assessment (EA) is to disclose the environmental consequences of the proposed action, to ensure that MDEQ and BLM make an informed decision regarding the proposal, and to provide a basis for public review.

C. Project Location and History

The Elk Creek mine is located approximately 13 miles southeast of Dillon, Beaverhead County, Montana, in Sections 2 and 11, Township 9 South, Range 7 West. (Figure 1). The mine is situated in the south-central Ruby Mountains on a divide that separates the Sweetwater Basin from the Blacktail Deer Creek valley.

Annabergite, a nickel arsenide, was discovered in 1942 by the USGS in an outcrop adjacent of the mine site. Exploration for nickel continued in the area until the late 1970's when a fertilizer company (Dekalb) realized that they were drilling through vermiculite. In the 1990's, two mining companies each drilled the deposit and produced ore reserve estimates and mine designs, but nothing was permitted. Since then several companies have owned the mineral rights to the deposit and produced vermiculite sporadically under an SMES. The present owners were the first to submit an application for an operating permit.

D. Land Status

DV has unpatented claims in portions of Section 35, Township 8 South, Range 7 West; Section 31, Township 8 South, Range 6 West; and Sections 1-3, 11 and 12, Township 9 South, Range 7 West. The permit area, encompassing 75 acres, resides entirely on BLM lands in Sections 2 and 11, Township 9 South, Range 7 West.

E. Public Involvement and Scoping

MDEQ and BLM used public participation and scoping to identify environmental issues related to a proposed action. Public participation was invited on DV's proposal when MDEQ published a public notice of application in the Montana Standard (October 31, November 7 and 14, 1996) and in the Tribune Examiner (October 30, November 6, and 13, 1996) newspapers. A second request for public comment was published in the Montana Standard (January 31, February 3 and 7, 1999) and the Tribune Examiner (February 3, 1999) newspapers. Other means of soliciting public input were used including mailed scoping documents, questionnaires, and letters to interested persons. Despite these efforts, no public comments were received regarding the proposed plan.

Agency scoping by an interdisciplinary team of specialists from MDEQ and BLM raised numerous questions that the company was required to answer. As a result of this process three key issues were identified for evaluation in this environmental assessment. A summary of key issues are presented below.

Under MEPA and NEPA, issues and alternatives are developed based on both public and agency input gathered during the scoping process. These issues are then

tracked through the environmental analysis phase of the document. Using this information, the agencies prepared this EA that will be mailed to residents in the area of the mine and concerned individuals and groups.

Of primary concern to this analysis are the key issues. The key issues are the focus and reason for this analysis. The key issues identified by the internal review process and scoping are:

- (1) Would there be any significant air quality effects from increased vehicle traffic on mine access roads or from mill operations?
- (2) Would the proposed action cause a health risk from asbestiform minerals which may be present in this type of ore deposit?
- (3) Would mine traffic on the access road that crosses Sweetwater Creek cause sediment to enter the creek and thus affect the fishery?

The BLM and MDEQ published and mailed a draft EA to approximately 35 people and public agencies for a 30-day comment period. Comments were received and incorporated into this final version.

F. Agency Responsibilities

Several federal, state, and local government agencies have authority or responsibilities which they may be required to exercise in evaluating or permitting an action such as that proposed by DV.

1. Montana Department of Environmental Quality

a. Metal Mine Reclamation Act (MMRA)

The purpose of the MMRA is to ensure that the usefulness, productivity, and scenic value of lands and surface waters involved in mining and exploration receive the greatest reasonable degree of protection and reclamation to beneficial use. The act and its regulations (ARM 17.24.101 et seq.) set forth the steps to be taken and the reclamation measures that must be required in the issuance of an operating permit for the applicant's proposed mine expansion. The act applies to private, federal and state lands within Montana.

Under the provisions of MMRA, the Director of MDEQ must decide whether to approve DV's application as proposed, approve with a modified mining or reclamation plan, or deny the permit. The Director may deny a permit only when it can be demonstrated that water or air statues cannot be complied with or the reclamation plan

as proposed is not feasible (82-4-351, MCA). A permit can also be denied if an applicant has forfeited bond (82-4-360, MCA) or failed to reclaim an operation (82-4-361(6), MCA). DV has not forfeited any bonds under the MMRA and has not failed in its reclamation obligations.

b. Montana Environmental Policy Act (MEPA)

MDEQ rules (ARM 17.24.101 et seq.) implementing the Montana Environmental Policy Act (MEPA) (Title 75, Chapter 1, MCA) require preparation of an environmental analysis. The Department has determined that an Environmental Assessment (EA) is appropriate for this project. This EA has several purposes:

- i. It serves to ensure that the agency uses the natural and social sciences in the environmental design arts in planning and decision-making;
- ii. It assists in the evaluation of reasonable alternatives and the development of conditions, stipulations or modifications to be made a part of a proposed action;
- iii. It determines the need to prepare an EIS through an initial evaluation and determination of the significance of impacts associated with a proposed action;
- iv. It ensures the fullest appropriate opportunity for public review and comment on proposed actions, including alternatives and planned mitigation, where the residual impacts do not warrant an EIS; and
- v. It examines and documents the effects of a proposed action on the quality of the human environment, and provides the basis for public review and comment.

MEPA is a State law which directs MDEQ to disclose effects of state actions on state, federal, and private lands to the public and officials making decisions concerning the proposal. The MEPA process begins when DV proposed to amend its current mining plan of operations. The agency coordinated with the BLM and sought public input to help identify environmental issues and concerns through the process called 'scoping.'

c. Air Quality

The Air Quality Bureau of MDEQ administers the Clean Air Act of Montana (Title 75, Chapter 2, MCA). Any proposed project with potential to emit more than 25 tons per year of any pollutant must obtain an air quality permit before construction. The applicant must apply best available control technology (BACT) to each emission source. The applicant must also demonstrate that the project would not violate state or federal ambient air quality standards.

DV has submitted an application for an Air Quality Permit to MDEQ. MDEQ has yet to decide if a permit is necessary. DV is required to comply with all air quality standards and thus, will acquire either an Air Quality Permit or exclusion statement (if less than 25 tons per year) before mining can occur.

d. Water Quality

The MDEQ is also responsible for administration of the Montana Water Quality Act (Title 75, Chapter 5, MCA), classifying surface waters, establishing surface water quality standards, and administering permit programs to control the discharge of pollutants into state waters.

A Montana Pollutant Discharge Elimination System (MPDES) permit or Montana Groundwater Pollution Control system (MGWPCS) permit is required before any discharge to surface water or groundwater may occur. Depending on the type of activity, The MPDES permits are either (1) general or (2) individual. Mining operations fall under the general permit, whereas industrial or municipal discharges require an individual permit.

Part of the MPDES general permit is controlling storm water discharge. The intent of storm water permit is to minimize or eliminate waste discharge (includes sediments, metals, petroleum products, ect) via storm water runoff from mining operations. To comply with the permit, mining operations must:

1. Submit an application for coverage under the General Discharge Permit;
2. Prepare a Storm Water Pollution Prevention Plan (SWPPP);
3. Implement Best Management Practices (BMPs) and other provisions of the SWPPP;
4. Monitor storm water discharge from the facility; and,
5. Submit monitoring reports to assess storm water discharge quality and to verify BMP effectiveness.

The Elk Gulch Creek mine is a zero discharge facility. Thus, they do not need an MGWPCS permit. DV has submitted to MDEQ an application for a MPDES-General Permit for storm water discharge. The permit has not yet been issued but is required before mining can occur.

2. Montana Department of Natural Resources and Conservation (DNRC)

DNRC administers two statutes that are applicable to some mining development in Montana. These are the Montana Major Facility Siting Act [Title 75, Chapter 20, MCA (MFSA)] and the Montana Water Use Act [Title 85, Chapter 2, MCA (MWUA)]. The MFSA requires state approval before construction of any major power generation or transmission facilities. A water rights permit is required by the MWUA for any surface water diversion or groundwater withdrawal exceeding 35 gallons per minute (gpm). DV's proposal does not involve any activity regulated by either statute.

3. Bureau of Land Management (BLM)

The BLM is responsible for the evaluation and regulation of mineral activities on public lands managed by BLM. BLM evaluates the activity through the National Environmental Policy Act of 1969 (NEPA), Federal Land Policy and Management Act of 1976 (FLPMA) and, in this case, BLM's Dillon Management Framework Plan of 1979. BLM uses the 43 CFR 3809 regulations in preventing unnecessary or undue degradation of the public lands with respect to mineral activities. Federal regulation 43 CFR 3809.3-1 provides for a joint federal-state regulatory program. Such a program was initiated May 9, 1984, by a memorandum of agreement between the BLM and MDEQ. This agreement allows for joint agency analysis under MEPA and NEPA.

4. State Historic Preservation Office (SHPO)

The SHPO advises MDEQ and BLM when potentially valuable historical, archaeological, or other cultural resources are located within a project area (Montana Antiquities Act Sections 22-3-401 through 22-3-442, MCA, and the National Historic Preservation Act [P.L. 89-665 as amended and re-authorized E.O. 11593]). SHPO specifically identifies measures required to mitigate impacts to cultural sites potentially eligible for nomination to the National Register of Historic Places. Cultural resource inventories have found no cultural resources requiring protection within or adjacent to the mine permit area.

5. Beaverhead and Madison County Weed Board

The County Weed Board administers the County Noxious Weed Control Act (7-22-2101 through 2153, MCA) for any disturbed lands within their jurisdiction. DV is required to submit a weed management plan to the Board for review and approval.

G. Related Future Actions

No other proposed land use activities have been identified in the area surrounding the mine that would result in cumulative effects with this proposed action. However, Mineral Technology Inc. Is hauling talc ore from their Regal Mine on the Sweetwater Road.

CHAPTER II - PROPOSED ACTION AND ALTERNATIVES

This chapter summarizes the proposed plan and alternatives, including the No Action alternative required by NEPA and MEPA. The agencies have also evaluated modifications to the proposed plan.

A. Alternative 1 - No Action

Under the No Action alternative, DV would not obtain an operating permit. DV could, however, continue mining under their SMES until the area disturbed by mining reached 5 acres. After mining, DV could abandon the pit, roads, waste dump, and facilities once reclamation has been completed.

B. Alternative 2 - Proposed Plan

DV has requested an operating permit to expand their mining operation beyond the five-acre limitation imposed by their current SMES. For a complete description of DV proposed plans, see their Application for Operating Permit and Plan of Operations available at:

Montana Department of Environmental Quality
Hard Rock Program
1520 East Sixth Ave
Helena, MT 59620-0901

Bureau of Land Management
Dillon Field Office
1005 Selway Drive
Dillon, MT 59725

1. Plan Summary

DV would continue to mine the property using open pit methods. The pit would be of rectangular shape, approximately 1,200 feet long by 250 feet wide with an average depth of about 60 feet. Ore and waste rock would be mined without blasting using a hydraulic excavator, bulldozer, front-end loader, and 10-ton haul trucks. The ore would be hauled directly to the mill stockpile (located next to the mill building), and waste rock would be stored in a temporary dump, then backfilled into the mined-out pit as the operation proceeds. DV plans to mine 280,000 tons of ore and 809,100 tons of waste rock over a period of about four years.

Ore processing involves three major steps: screening, drying, and classifying. Each step would be repeated numerous times during the process for better recovery of the final product. First, the ore would be screened down to 0.5 inch sizes. Then, the

screened ore would be dried from approximately 15% moisture to less than 5% moisture. Finally, the ore would be classified based on size and transferred to separate enclosed storage bins from which it would be loaded into covered trucks for haulage to Barrett's rail loading facility near Dillon.

Existing mine access is via 8.3 miles of two-track road from the Sweetwater Road. DV would upgrade a route (about 6 miles) to meet BLM standards and provide for employee travel, ore haulage, and service vehicle access. The Sweetwater Road is a gravel county road maintained by Beaverhead and Madison counties. Mineral Technology currently hauls talc ore on the Sweetwater Road from the Regal Mine, which is located 7 or 8 miles west of DV's mines.

DV would restore the disturbed area to a land form and use comparable to what existed before mining. The pit would be backfilled with waste rock and mill waste and would be covered with topsoil. Vegetation would be re-established and noxious weeds controlled. DV would backfill the pit as mining progresses so that 50% of the pit would be reclaimed concurrently with mining. Other disturbance areas (mine roads, stockpile locations, and facilities sites) would be regraded, topsoil placed and seed planted. One small waste dump (original box cut) might remain on the surface. It would be reduced to 3H:1V slope, topsoiled, and seeded. The mill buildings and other structures would be removed at closure. The improved access road from the Sweetwater Road would be left to support grazing operations.

2. Modifications

To minimize potential impacts to cutthroat trout from the access road that crosses Sweetwater Creek, the MDEQ and BLM would require DV to install new arch culverts with flared end sections in the West and Middle Fork of Sweetwater Creek. Details of this requirement are provided in Chapter V (Conclusions and Recommendations).

C. Agency Preferred Alternative.

The agencies' preferred alternative is Alternative 2 with modifications summarized above, as discussed in Chapter IV (Environmental Consequences) and as specified in Chapter V (Conclusions and Recommendations) in order to minimize environmental impacts. This achieves the purpose and need of the Proposed Action while providing the appropriate level of resource protection.

CHAPTER III - AFFECTED ENVIRONMENT

This chapter describes the affected environment as it relates to impacts identified and issues raised.

A. Topography and Geology

The Elk Creek mine site is approximately 13 miles southeast of Dillon, Montana. The property lies within the west-central Ruby Mountains, on the divide that separates the Sweetwater Basin from the Blacktail Creek valley. The topography of the immediate area is dominated by rolling hills separated by gentle valleys. The dominant topographic feature adjacent to the mine site is the Elk Creek Canyon, southwest of the project site.

Structurally, the Ruby Mountains are bounded on the northwest and southeast by range-front normal fault system. Other fault systems have divided the range into structural blocks. The mine property lies within a structural block bounded to the north by the Sweetwater Fault and the south by the Elk Creek Fault.

The rocks of the west-central Ruby Range are Precambrian metamorphic rocks of Archean age. Most of the rocks are quartz-feldspar gneiss. Other lithologies are hornblende gneiss, biotite gneiss, and undifferentiated ultramafic rocks. The ultramafic rocks have been prospected for nickel. Nickel concentrations have been found, but not economic deposits. There also may be copper, cobalt, and/or platinum group minerals.

Vermiculite is found in pods and stringers along the contact between the Cherry Creek gneiss and the ultramafic intrusive. The ore is well above the water table and is thoroughly oxidized; no iron staining or acid leaching is noticeable.

B. Hydrology

1. Groundwater

The Elk Creek mine is located at 7500 feet, on top of a ridge that separates the Sweetwater Basin from the Blacktail Deer Creek valley. At the mine site, four exploration holes and one spring indicate that the water table is at approximately 7300 feet. The water table appears to follow the topography and drops steeply to Elk Gulch (west of the mine) and Moose Creek (southeast of the mine). The proposed pit is 60 feet deep and not expected to intersect groundwater. Few springs exist in the area, except where the water table intersects topography. The closest spring to the site is approximately 800 feet south. There are no registered wells near the mine site. Baseline ground water quality data collected from two exploration holes and two springs revealed alkaline groundwater, with low hardness.

2. Surface water

The Elk Creek mine is located on top of a ridge approximately 500 feet higher in elevation than Elk Gulch Creek and Moose Creek. The mine is located about a quarter of a mile away from each of the creeks. A ridge separates the two drainages causing storm water to drain toward a small tributary of Moose Creek (herein called the East Tributary of Moose Creek). Elk Gulch is perennial and flows at 1 cfs to 4 cfs. Moose Creek is also perennial, and flow at 1 cfs to 10 cfs. The East Tributary of Moose Creek, is ephemeral. Moose Creek and Elk Gulch Creek both join Blacktail Deer Creek 3 to 5 miles southwest of the site. Baseline surface water quality data collected from five different sites revealed alkaline condition, with low hardness.

The access road to the Elk Creek mine crosses the West and Middle Forks of Sweetwater Creek approximately 3.5 miles north of the mine site. The access road also crosses a few ephemeral tributaries to Sweetwater Creek. All crossings are on private lands and are two track roads approximately 15 feet wide. A culvert provides the road the crossing for the West Fork of Sweetwater Creek. No culverts exist where the other smaller ephemeral tributaries cross the road.

C. Soils

The Elk Creek mine is located on an upland sagebrush/grassland divide. The landform is gentle on top of the ridge to moderately steep (4H:1V) off the crest. The soils have been interpreted by the Natural Resource Conservation Service (NRCS) as the Barbarella series, Poin series, and Oro Fino series, that formed from weathered gneiss and schist bedrock. Typically these soils have a coarse sandy surface layer. The subsoil is a gravelly sandy clay loam underlain by weathered bedrock. Soils found on the steeper slopes are generally thin, and have a high coarse fragment content. Soils in flatter areas are well developed and are 2 to 4 feet deep.

Laboratory analyses show that the soils possess no significant chemical limitation to their use for reclamation. This is corroborated by the presence of healthy stands of vegetation throughout the project area.

D. Range and Vegetation

The area surrounding the mine site is dominated by big sagebrush, Idaho fescue, and bluebunch wheatgrass. Douglass-fir is found along Elk Creek and a few limber pines occur on the wind-blown ridges. No threatened or endangered plant species have been found. The range condition of the grazing allotments is considered fair with a carrying capacity of 1 AUM (Animal Unit Month) per 17-22 acres. There are no noxious weeds in the area.

E. Wildlife and Fisheries

A variety of big game habitat is available in the vicinity of the proposed mine operation. Crucial mule deer winter habitat occurs at lower elevations to the south, east, and west of the mine site, with primary use occurring between Moose Creek and Timber Creek. Dispersed fall and spring deer use occurs onsite. Elk numbers are increasing in the Sweetwater Hills and seasonal use, primarily during the winter, occurs throughout the area. As with mule deer use, actual occupancy by elk of habitat surrounding the proposed mine site depends on snow depths and forage availability, and is considered to be minor. Timber stands on the north slopes of the Sweetwater Hills provide fall elk security cover. Moose occur throughout the area, and utilize riparian habitat in most drainages tributary to Blacktail Creek on the south, and to Sweetwater Creek on the north.

Blue grouse and sage grouse are resident in the area yearlong. Blue grouse typically are found along ridge-tops and associated with timber stands. Sage grouse inhabit sagebrush areas. Winter use has been identified between Elk Gulch and Little Elk Gulch to the south. Important brood-rearing habitat is available for both species in wet meadows and spring areas immediately adjacent to the mine site.

A wide variety of raptors, neotropical birds, and small mammals occur in the Elk Gulch area, although no specific, unique habitats are recognized near the proposed mine site. A major golden eagle migration corridor exists further to the east through the Rock Creek/upper Moose Creek area.

Transient bald eagle, peregrine falcon, grey wolf and grizzly bear have all been located within five miles of the proposed mine site within the past 12 months. None of these occurrences were associated with recognized occupied habitat. Habitat for several species of special interest or concern (MDFWP 3/98) is available in the general vicinity of the mine site, but it is unknown if any of this habitat is occupied. These species include: pygmy rabbit, black-tailed jackrabbit, Northern goshawk, ferruginous hawk, long-billed curlew, great grey owl, and loggerhead shrike.

Two streams occur adjacent to the proposed vermiculite mine site. These are Elk Gulch Creek to the west, and Moose Creek to the east. Elk Gulch was sampled in 1992 by Montana Department of Fish Wildlife and Parks and found to contain brook trout with good aquatic habitat and riparian conditions. Moose creek has not had fishery or aquatic habitat surveys conducted, although observations indicate it contains brook trout. Both streams lie just over a quarter-mile from the mine site.

From the Sweetwater road, the proposed access road crosses both the West and Middle Forks of Sweetwater Creek, which support a resident population of native westslope cutthroat trout, a species that has been petitioned for listing under the Endangered Species Act. The status of the cutthroat trout in Sweetwater Creek is uncertain. A sample collected for genetic analysis at the juncture of the West and Middle Forks in 1994 was determined to exhibit characteristics of 100% pure westslope

cutthroat trout with a shared variant with rainbow trout at a single gene locus. While this determination does not entirely preclude the possibility of hybridization with rainbow trout within the population, it does not preclude the possibility that numerous, if not all, of the individuals within the population are pure westslope cutthroat. Additional genetic samples would be necessary to determine that generic status more precisely.

Westslope cutthroat trout populations have been found to be extremely sensitive to sedimentation. The primary source of sediment problems in streams supporting cutthroat trout is often roads located within a drainage.

F. Air Quality

There are no air quality monitoring stations near the mine site. It is assumed that the air quality is similar to background levels in western Montana. The mine site is in a Class 2 attainment area. The nearest Class 1 attainment area is Yellowstone National Park, approximately 100 miles south east of the proposed mine site.

G. Land Use

The DV claims are all on BLM lands. These lands are currently used primarily for livestock grazing.

H. Aesthetics

1. Visual Quality

The US Forest Service includes the East side Dillon area in the 'Broad Valley Rockies' landscape character type with widely spaced mountain ranges separated by broad valleys that occupy up to 50 percent of the area. The valleys range from 2 to 15 miles wide and reach 100 miles in length. This provides a sweeping panorama to the viewer on the valley floor.

As an observer moves from the valley floor, low-lying hills, buttes, and stream cut terraces provide a transition to the mountain ranges. The mountains typically appear massive and round-topped as do the connecting ridges within a given range. Elevations of valley floors vary from 3,000 to 6,500 feet while the mountains vary from 6,500 to 9,500 feet.

The mine site is located on top of a ridge in a remote location overlooking the Blacktail Deer Creek valley. The mine pit and mill building would be visible, until reclamation is completed. A portion of the natural ridge line would be disturbed during

operations, but after the operation had ceased and reclamation accomplished, the ridge line would not have been noticeably altered from mining.

2. Noise

The Elk Creek mine is on a ridge in a remote location several miles from any public dwelling. Operating noise is not expected to be apparent more than 1/2 mile from the project.

I. Socioeconomic Conditions

The mine would provide 15 full time year-round jobs, and four seasonal equipment operator positions. DV estimates a maximum of 14 round trips per day of vermiculite haul trucks (10-wheel road worthy trucks covered with a canvas tarp), plus, service trucks, and employee vehicles would be traveling to and from the mine daily. Vehicular traffic on the Sweetwater County road would increase noticeably due to additional traffic from DV coupled with the traffic from Mineral Technology's nearby Regal mine.

J. Cultural Resources

A Class III cultural resource inventory has been conducted on the proposed mine permit area. One inventory was conducted by the BLM in 1990 (BLM Report No. 90-MT-070-076-08) and another in 1998 (BLM Report No. 98-MT-070-076-52). Neither inventory found significant cultural resources or historic properties within or adjacent to the mine permit boundary.

K. Recreation

Recreation use of the immediate area where the mine site is located is low due to the lack of surface water, lack of trees, and gentle topography combined with the fact that vegetation is mostly sagebrush, rabbit brush, and grass.

CHAPTER IV - ENVIRONMENTAL CONSEQUENCES

This chapter identifies direct, indirect, short and long term, adverse, unavoidable, and cumulative impacts resulting from the proposed plan and its alternatives as they relate to issues identified in Chapter 1.

The MDEQ and BLM analyses indicate that, because of the small size of the project, there would not be significant impacts to, topography, hydrology-groundwater, geology, soils, range and vegetation, land use, aesthetics, or cultural resources. These resources have been omitted from the discussion below.

Based on the impacts from the proposed action to water quality and fisheries, the agencies modified the proposed plan. The effect of this modification was summarized in Chapter III, and are discussed under Hydrology and under Wildlife and Fisheries below. There would be no effect on the other resource areas.

A. Hydrology-Surface water

1. No Action Alternative

Under the No Action alternative, DV would not obtain an operating permit, but could continue mining under their SMES until 5 acres of mine disturbance is reached. Because the size and scope of this activity would be essentially unchanged from operations which have already occurred at this site no change in short- or long-term impacts to surface water would be expected. Sediments would continue to enter the creek from the access road.

2. Proposed Action

(a) as proposed

The expanded mine boundary will have no effect on surface water due to the fact the mine is a quarter of a mile away from Elk Creek and Moose Creek. However, sediment loading to Sweetwater Creek would result from increased vehicle use of the access road. Therefore, the agencies have established the permit modifications summarized below. DV would still have to comply with the MPDES permit by implementing 'Best Management Practices' (BMPs) and other provisions of the storm water permit (SWPPP).

(b) as modified

In effort to mitigate effects to Sweetwater Creek due to potential additional sedimentation, the agencies would require DV to: (1) carry out 'Best Management Practices' (BMPs) and other provisions of the SWPPP, and (2) install a new arch or "squashed" culvert with flared end sections in the West Fork of Sweetwater Creek. This

would help to minimize the potential for sediments to enter the creek and also stabilize the access road crossing.

B. Wildlife and Fisheries

1. No Action Alternative

The existing activities would be essentially unchanged from operations which have already occurred at this site. Therefore, no changes in short or long-term impacts to wildlife and fisheries are expected under this alternative.

2. Proposed Action

(a) as proposed

Expanded mine operations above Elk Gulch would have minor impacts on wildlife. Seasonal displacement and disturbance would occur but mining activity would be outside critical use areas for all species. Minor, and generally dispersed, mule deer and elk use in the pit area would habituate to the localized disturbance. Road construction or upgrading through wet meadow areas would slightly reduce available habitat for sage grouse and blue grouse brooding, along with minor displacement of birds due to human activity.

Vehicle traffic to the mine along the proposed access route would cause additional disturbance and displacement of wildlife. However, this route does not pass through any critical use areas, and the minor amounts of mine traffic would allow mobile wildlife species to habituate or disperse into adjoining suitable habitat. Alternate access routes from the south would traverse crucial deer winter habitat with serious adverse impacts.

Increased vehicle traffic on the Sweetwater County Road and mine access road would put more sediment into Sweetwater Creek. This would have a long term potentially negative impact on the fisheries in general, and on cutthroat trout in particular.

(b) as modified

There are Westslope Cutthroat Trout in Sweetwater Creek and the improvement of the crossings will temporarily have a negative impact on the fish and the creek due to an increase in sedimentation during the construction process and a short time thereafter. The squashed style culvert with flared ends will allow for

easier passage for the trout and provide for reduced water velocity and turbulence, thereby reducing the potential for erosion of the toe of the slope on the downstream side of the crossing. Jute cloth with seeding is to be used around the culverts and the fill. A silt fence or filter fabric is to be used along the toe of the fill to also help prevent erosion of the fill near the culvert. DV must also utilize the "Best Management Practices" developed for these types of actions and the provisions of the SWPPP to ensure minimal sedimentation of the affected streams. The fisheries in Moose Creek and Elk Gulch, should not be impacted because upland vegetation provides a buffer between the road and the creeks.

Mining operations would have no affect on any endangered or threatened species of wildlife, nor as proposed and modified would it affect the distribution or productivity of any sensitive species, except as noted above.

The proposed action with cutthroat trout modifications would increase access and human use of the area. When considered with existing mining, livestock management, timber harvest, and recreation uses, the cumulative effect would be to reduce the suitability of available habitat for some species. However, at anticipated levels of both human activity and wildlife use, this reduction would not be significant.

C. Air Quality

1. No Action Alternative

Any continuation of activity under this alternative would be essentially unchanged from operations which have already occurred at this site, so no significant change in air quality impacts would be expected.

2. Proposed Action

a. Operating Emissions

If the operation emits greater than 25 tons of dust or particulate per year, DV would have to get an Air Quality Permit. The Air Quality permit would limit the amount of emissions and require the company to apply Best Available Control Technology to each emission source.

b. Road Dust

Under the Proposed Action, the mine would be accessed via about 22 miles of unpaved road - 16 miles of which would be the county-maintained Sweetwater Road. During production, DV estimates a maximum of 14 round trips per day of vermiculite

haul trucks (10-wheel road worthy trucks covered with a canvas tarp), plus, service trucks, and employee vehicles would be traveling to and from the mine daily. During dry surface conditions, dust would be entrained in the atmosphere by this traffic.

The traffic volume associated with the proposed action would represent an increase in the use of the county road. (Mineral Technology, Inc. uses the Sweetwater Road to access and haul talc ore from their Regal Mine, a far larger operation than the proposed action.) Should dust generation on the county road reach problematic levels, DV and Mineral Technology Inc would have to work with the County to determine what suppression measures would be utilized. The traffic levels expected on the non-county portion of the access route occur commonly on other roads in the area which are constructed and maintained to the same BLM standard. The dust generated does not constitute a problem given the remote location of these routes.

c. Asbestiform Minerals

Vermiculite ore and waste rock often contain asbestos or asbestiform fibers. Analyses performed on 1992 drill core samples taken from the area directly north of the proposed DV permit area showed detectable amounts of actinolite in one sample, and anthrophyllite in another (Page 14A [revised 4-20-98, Appendix C and Appendix F] of the DV Permit Application). The levels detected were well below those that require regulatory control - one percent as an asbestos containing material.

For this environmental assessment MDEQ and BLM required additional sample analyses, including samples drawn from the ultramafic zone which borders the ore deposit and was expected to contain the highest levels of asbestiform fibers. Polarized light microscopy analyses of duplicate samples sent to two separate labs showed low but detectable amounts of amphibole (actinolite/tremolite) and serpentine (chrysotile) asbestiform fibers. All values were below 0.75 percent. Transition electron microscopy results from both labs indicated less than 0.1 weight percent of all asbestiform fibers.

Based on these results the agencies concluded that a human health risk assessment would not be warranted. This conclusion is supported by comparable asbestos analyses and an extensive human health risk assessment performed for the Western Vermiculite Project (Western Vermiculite Project EIS, 1993, Page 7). To provide an extra measure of assurance of the validity of this conclusion, DV has agreed to perform periodic sampling and analyses for asbestiform fibers during mine operations. Also the ore trucks will utilize tarps to cover the ore in order to minimize any 'blow-out' of particles while the trucks are traveling to the railroad loading facility.

D. Socio-Economic

1. No Action Alternative

Any continuation of activity under this alternative would be essentially unchanged from operations which have already occurred at this site, so no significant change in socio-economic would be expected.

2. Proposed Action

The size and short duration (approximately 4 years) of the project would not significantly effect area employment or population. There will be an increase in traffic on the Sweetwater County Road by ore trucks. The additional traffic coupled with Mineral Technology trucks hauling from their Regal Mine will result in a need for more maintenance of the roads and possibly some precautionary signing to advise homeowners/landowners in that area as well as the general public to watch out for truck traffic. Widening of the road in some areas which pose a hazard for two-way traffic may have to be considered. DV's proposed use of Kentucky Avenue for their haul trucks should be coordinated with Beaverhead County and Dillon City officials in order to determine the safest and most feasible haul route to be utilized by the trucks.

The increased vehicle traffic could potentially cause a greater dust problem. To alleviate this problem, additional road maintenance and dust abatement possibilities should be considered after proper coordination with the Beaverhead and Madison County Commissioners.

CHAPTER V - CONCLUSIONS AND RECOMMENDATIONS

The Proposed Action would not cause any potentially significant long-term impacts or irretrievable commitments of resources. Short-term impacts to wildlife from increased access and human activity would not significantly affect any crucial habitat or any endangered, threatened, or sensitive species.

The access road to the mine site would be upgraded with new culverts and the installation of those culverts would have to comply with the SWPPP to prevent siltation and sedimentation to Sweetwater Creek and its tributaries. The crossings for the West and Middle Forks of Sweetwater Creek are to utilize a "squash" culvert with flared ends. Jute cloth with seeding is to be used around the ends of the culvert and the fill. A silt fence or filter fabric is to be used along the toe of the fill to help prevent erosion of the fill near the culvert. DV must also utilize the "Best Management Practices" developed for these types of actions and the provisions of the SWPPP to assure minimal sedimentation of the affected streams.

Emissions impacts to the ambient air from mine operations would be minimal and within the limits set under the Clean Air Act of Montana. Use of unpaved access routes is not expected to create an air quality problem. DV must continue to monitor the amount of asbestos material in the ore to be hauled in order to ensure minimal effects for the long term. The additional truck traffic will require additional maintenance of the Sweetwater County Road and possibly some precautionary signing as well as widening of the road in some locations which may be hazardous for two-way traffic. The County Road may have to be plowed whenever snow accumulations require. In regards to any action to be taken on the county road, a stipulation is to be utilized in DV's authorization which will require DV to contact Beaverhead and Madison County in order to coordinate and address any concerns identified in this Environmental Assessment, i.e., the possible need for signs on hazardous curves and alerting users of the county road regarding increased truck traffic, the need to review DV's proposed use of Kentucky Avenue for haul trucks, possible dust abatement, and the plowing of snow off of the county road.

The attached measures for mitigating potential impacts of the Elk Creek Mine have been incorporated in the Proposed Action in the course of permit application review by the agencies and public comment. No additional required measures have been identified.

In accordance with the requirements of MCA 77-1-210(1)(b)(iv)(D), the agency preferred alternative was evaluated to determine if there were any alternatives that would reduce, minimize, or eliminate restrictions or regulation on the use of private property. It was determined that the preferred alternative would allow the applicant to

exercise the rights associated with its mining claims, while imposing only those restrictions required under law to protect the public lands on which the claims are located and the public health and safety.

The small size of the project and the fact that no potentially significant impacts of the proposed action were identified during agency review of the permit application, scoping, or the development of this environmental assessment indicate that an Environmental Impact Statement is not needed in this case.

Based upon the MDEQ and BLM analysis, the Proposed Action, as modified, is the preferred alternative. It achieves the needs of the company while providing an appropriate level of protection to the resources.

CHAPTER VI - CONSULTATION AND COORDINATION

A. Public Agency Involvement

Scoping was conducted as described in Chapter 1. This document has been distributed to approximately 30 interested persons and agencies for review and comment. The State Historical Preservation Office was contacted to provide guidance on cultural resources and the agencies utilized additional information from the state's Natural Resource Inventory system.

B. List of Preparers

| | |
|------------------|------------------------------|
| Charles Freshman | Coordination and Engineering |
| Tom Ring | Reviewer |
| Bob Barry | MEPA |
| Laura Kuzel | Geology/Geochemistry |
| Bob Winegar | Reviewer |
| Russ Sorensen | NEPA |
| Robert Gunderson | Geology |
| Jim Roscoe | Wildlife |

CHAPTER VII - REFERENCES

Dillon Vermiculite, Application for Operating Permit,