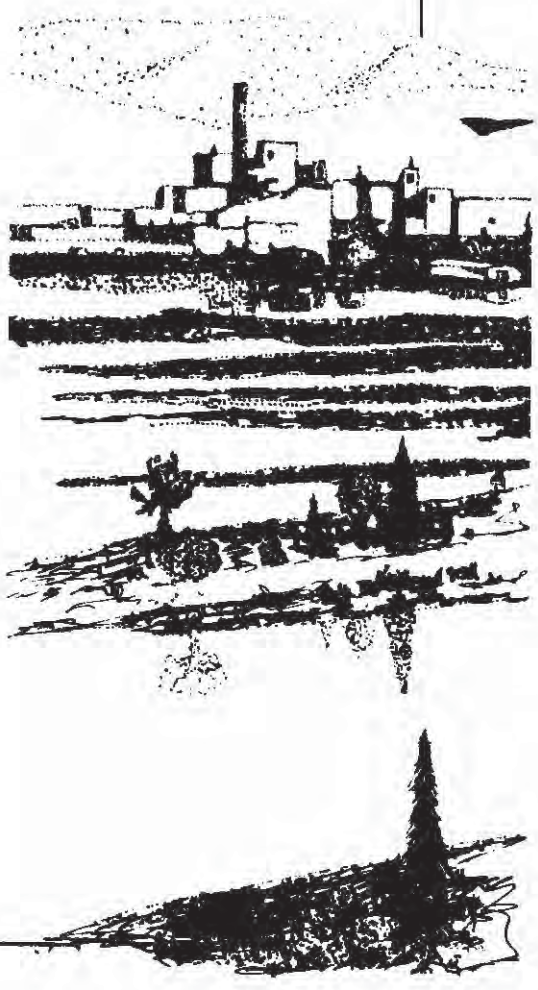
Champion International
Frenchtown Mill
Discharge Permit
MT-0000035

Final EIS



Montana
Department of Health
and
Environmental Sciences

Montana Department of Health

and

Environmental Sciences

Final Environmental Impact Statement

Champion International
Frenchtown Mill
(Stone Container Corporation)
Missoula County

August, 1986

In accordance with the Montana Environmental Policy Act, Section 75-1-101, et. seq., MCA, and the Water Quality Act, Section 75-5-101, et. seq., MCA, and ARM 16.20.901, et. seq., and 16.20.601, et. seq., the following EIS was prepared by the DHES, Environmental Sciences Division, concerning a request for the renewal of Montana Pollutant Discharge Elimination System (MPDES) Permit Number MT-0000035 for the Champion International Frenchtown Mill near Frenchtown, Montana.

TABLE OF CONTENTS

INTRODUCTION

In the draft environmental impact statement (DEIS) it was noted that Stone Container Corporation of Chicago, Illinois, proposed purchasing the Frenchtown Mill from Champion International. The sale was approved by Stone Container's stockholders and the mill changed ownership on February 27, 1986. Even though the mill is now referred to as the Stone Container Corporation's Missoula Mill, for a sense of continuity and public recognition, the mill is still referred to as "Champion International" or "Champion" in this final environmental impact statement (FEIS). Until the Montana Environmental Policy Act (MEPA) process is completed, the Department of Health and Environmental Sciences (DHES) will continue to refer to the mill by its former name.

The FEIS incorporates by reference all the material in the DEIS (issued 12/26/85), the material in the DHES Data Report Volumes I and II and the DEIS Addendum (issued 3/17/86). The FEIS is not intended to stand on its own but rather should be reviewed in conjunction with the material incorporated by reference.

The DEIS and Addendum were mailed to 402 persons and organizations. Copies of the draft, data report and Addendum also were sent to public libraries along the Clark Fork River from Missoula to Sandpoint, Idaho, and to libraries outside the Clark Fork Basin in Coeur D'Alene, Idaho, and Spokane, Washington.

Chronology

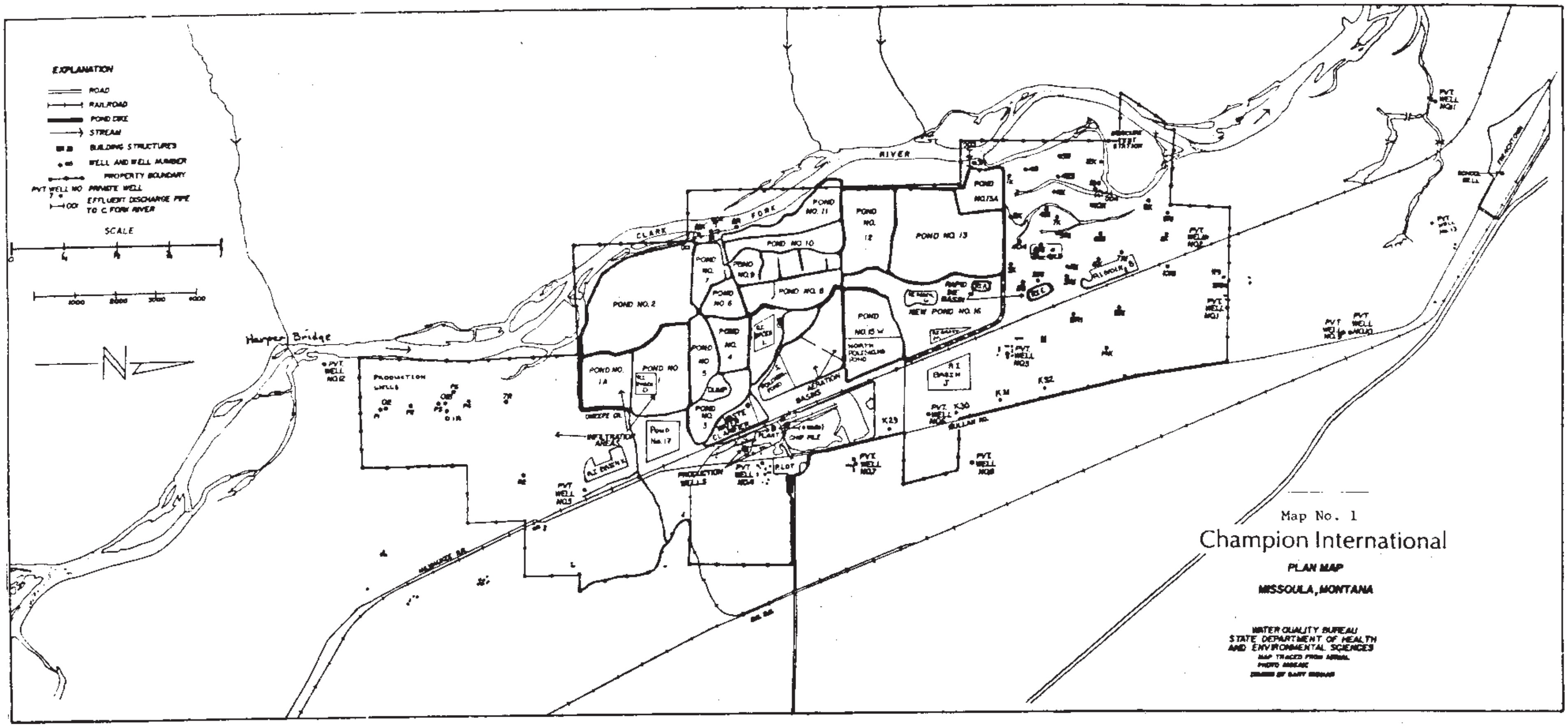
Champion International's Frenchtown Mill, 15 miles west of Missoula near Frenchtown on the Clark Fork River (Map No. 1), began operation in 1957. No wastewater treatment was provided during the first year of operation. A fish kill occurred that summer, and treatment ponds were constructed soon after. Some of the wastewater seeped from the ponds into the river, and the rest was stored and discharged directly into the river during high spring flows.

The DHES has had stream water quality standards since 1958, and a wastewater discharge permit program since 1968.

The mill was issued a discharge permit in 1968. Prior to that, the DHES and Champion negotiated on when to discharge wastewater.

Permits that were issued to Champion between 1968 and 1984 allowed direct discharges to the Clark Fork only in the spring. The amount was initially based on the toxicity of the effluent as determined by static bioassays, with a safety factor then applied. After aeration was installed in 1974, toxicity was greatly reduced and meeting the instream standard for color became the primary limitation to discharging.

In 1983, Champion applied for a permit which would allow it to directly discharge a portion of the wastewater into the river throughout the year, instead of only during high flows in the spring. This resulted in public concern, mostly over the lack of scientific information available to support discharging on a year-round basis. In a response to the concerns, the DHES


EXPLANATION
ROAD
RAILROAD
POND DIKE
STREAM
BUILDING STRUCTURES
WELL AND WELL NUMBER
PROPERTY BOUNDARY
PVT WELL NO PRIVATE WELL
EFFLUENT DISCHARGE PIPE TO C FORK RIVER
SCALE
1000
2000
3000
4000
Harper Bridge
CLARK FORK RIVER
PRODUCTION WELLS
POND NO. 2
POND NO. 1A
POND NO. 1
POND No. 17
POND NO. 3
POND NO. 4
POND NO. 5
POND NO. 6
POND NO. 7
POND NO. 8
POND NO. 9
POND NO. 10
POND NO. 11
POND NO. 12
POND NO. 13
POND NO. 13A
POND NO. 15 W
NORTH POLISHING POND
NEW POND NO. 16
RAPID INF. BASIN
AERATION BASINS
INFILTRATION AREAS
PLANT
CHIP PILE
PLOT
R.I. BASIN J
K23
K30
K32
PVT WELL NO. 12
PVT WELL NO. 5
PVT WELL NO. 4
PVT WELL NO. 7
PVT WELL NO. 6
PVT WELL NO. 3
PVT WELL NO. 1
SCHOOL WELL
MILWAUKEE RR
BULLAN RD.
Map No. 1
Champion International
PLAN MAP
MISSOULA, MONTANA
WATER QUALITY BUREAU
STATE DEPARTMENT OF HEALTH
AND ENVIRONMENTAL SCIENCES

began a number of scientific studies to determine the effects of discharging throughout the year during the term of a two-year permit, which was issued in April 1984.

The DHES received a letter from Champion International on September 16, 1985, requesting the renewal of the permit.

The DHES analyzed the information collected during the two-year study period and issued a DEIS December 26, 1985. The draft recommended renewing the permit for a five-year period. A public hearing was held January 28, 1986, in Missoula to allow interested persons and groups to comment on the DEIS.

Based on comments received at the public hearing and during the public review period, the DHES made a decision to write an Addendum to the DEIS. The Addendum enabled the department to enlarge upon some aspects in the draft and provide clarification on issues raised during the review process. The Addendum was released for public comment on March 17, 1986, and another public meeting was held in Missoula on April 71, 1986, to discuss that document.

The present permit expired midnight, March 31, 1986. Due to the decision to prepare an Addendum to the DEIS, the DHES administratively extended the renewal date of the permit. All conditions and limits of the existing permit apply throughout the administrative extension.

A final DHES decision on the proposed action will not be made until 15 days have expired from the date of transmittal of this FEIS to the Governor, Environmental Quality Council, other agencies, organizations and individuals.

RECOMMENDATION

The DHES recommends the issuance of a nondegradation-based waste discharge permit that contains final effluent limits similar to those in effect in 1982, the year the non-degradation rule became effective. The permit would require submittal of a compliance schedule which would ensure that final effluent limits are met by 1991. Interim effluent limits would be established to ensure that current treatment levels are maintained until the end of the compliance schedule period.

Typically the Water Quality Act's nondegradation policy apples to a new facility or a facility that is expanding (e.g., adding on another wing). In such cases, the new or expanding facility must provide the degree of wastewater treatment necessary to maintain the receiving stream at its existing high quality. However, if the new or expanded facility sees little environmental benefit from the costs of maintaining existing water quality, then the law authorizes the facility to approach the Board of Health and Environmental Sciences (BOH) which may allow a certain amount of degradation of high quality waters if justified by reasons of social or economic development and if present or future beneficial uses of the receiving stream are preserved.

In the case of Champion International, the case is somewhat unique because it is not a new facility, nor is it expanding by adding on a new wing or a new operation. Champion's discharge to the river is increasing because of the gradual loss of pollutant removal efficiency in its rapid infiltration basins. (The mill has tried to make up for this loss by increasing the overall efficiency of other on-site treatment components but has not quite offset the loss of efficiency of the infiltration basins.) Therefore, because the chief reason for Champion's need to have its permit terms liberalized is the reduced efficiency of its rapid infiltration basins, the DHES is placed in the position of determining whether an increase in wastewater discharged to the river is justified by the potential expense associated with refurbishing or replacing the rapid infiltration basins which, by law, is the responsibility of the BOH. The extensive public comment focused the DHES' attention on the issue of whether the nondegradation section of the Water Quality Act (75-5-303) gives the DHES the authority to allow any increase in a permittee's discharge when that increase is due to a reduction in the level of on-site treatment.

Taking a conservative view, the DHES perceives the law as giving such a balancing function only to the BOH, the policy-making and quasi-judicial branch of the agency. (See Section 75-5-303(2).) It is the BOH's duty to weigh the competing values of pollution control costs vs. the benefits of maintaining high water quality. Since only the BOH can authorize a source not to maintain the level of wastewater control necessary to maintain existing water quality, the DHES sees itself as legally prohibited from authorizing any increase in wastewater levels beyond those being discharged as of December 17, 1982, the effective date of the BOH's nondegradation rules. Consequently, the DHES now sees itself as legally required to issue a permit requiring Champion to return to its discharge levels of 1982.

Issuance of the "1982" permit does not in any way prevent Champion from using the BOH's rules to submit to the BOH a request and justification for discharge limits beyond those of 1982. And, if such a request is filed, the

BOH's rules require the DHES to submit to the BOH a recommendation on whether the permit limits requested by Champion are acceptable from a water quality standpoint. If Champion does file a petition to the BOH and requests limits that in the DHES' view will not interfere with present or anticipated beneficial uses, the the DHES will be in a position to file a favorable recommendation to the Board.

In summary, the DHES has determined that its authority is limited to reissuing a permit restoring the discharge limits in effect in 1982. This recommendation will be reflected in the specific conditions and limitations of a tentative permit developed in accordance with the Montana Pollutant Discharge Elimination System (MPDES) rules. According to those rules, the DHES will make a tentative determination on a permit and shall circulate a public notice to inform interested persons of the proposed discharge and of the tentative permit. The public will be afforded a 30-day comment period and the opportunity to comment on the tentative permit at a public hearing held in the Missoula area. Substantive oral and written comments will be considered before a final permit is issued.

MAJOR CONCLUSIONS

The major conclusions derived from the DEIS and Addendum include:

Nutrients:

Nutrient concentrations decrease downstream along the course of the Clark Fork due to dilution by the Blackfoot, Bitterroot and Flathead rivers. However, discharges from the Missoula Wastewater Treatment Plant (WWTP) and Champion mill add measurably to the load of nutrients carried by the Clark Fork River. Most of the nitrogen and about half of the phosphorus introduced to the river by Champion reach Lake Pend Oreille. In water year 1985, Champion contributed about 6 percent of the phosphorus carried into the lake by the Clark Fork River. (About another 6 percent came from the Missoula WWTP.) The potential exists for water quality degradation and accelerated eutrophication of Lake Pend Oreille resulting from activities in the Clark Fork River drainage. However, a perceived decline in lake water quality cannot be directly or conclusively linked to the Champion discharge given the present information and the absence of a comprehensive limnological investigation of the lake.

Suspended Solids:

It appears unlikely that discharges at the maximum allowable rate for total suspended solids (TSS) would produce a measurable impact on the river or aquatic life.

Dissolved Oxygen (DO):

It is doubtful that the biochemical oxygen demand (BOD) within the Champion discharge results in any significant changes in dissolved oxygen concentrations downstream from the mill.

Color:

Color is presently the most important factor in controlling the rate at which Champion can discharge wastewater. Champion is allowed to increase the color in the river by no more than five color units, the maximum allowable by the Montana Water Quality Standards.

Toxics:

Ammonia and metals in the Champion wastewater discharge do not appear to pose a toxic threat to the Clark Fork. Results from several biological tests indicate that Champion's wastewater did not have a toxic affect on aquatic life.

Algae and Aquatic Plants:

Wastewater disposal under the provisions of the permit appear to have little effect on algae and aquatic plants.

Macroinvertebrates:

The species and distribution of macroinvertebrates found by the researchers indicate the river is not heavily stressed. The DHES and Champion will continue to sample the Clark Fork for macroinvertebrates.

Aesthetics:

The most noticeable problem is the appearance of foam. Although all of the foam cannot be directly attributed to Champion's discharge, the effluent is likely a contributing factor. Additionally, a number of reported aesthetically unpleasant materials thought to be attributable to Champion proved to be organic matter commonly found in nature. Colored water from seepage appears in the mill's mixing zone. Investigations concerning complaints of bad tasting and smelling fish proved inconclusive.

Groundwater:

Some degradation of the shallow aquifer north of the Frenchtown Mill property has occurred. The DHES Montana Groundwater Pollution Control System (MGWPCS) regulations contain groundwater quality standards and prohibit degradation of groundwater quality off Champion property beyond that quality which existed as of October 29, 1982. Although it may be difficult to establish the exact extent of degradation as of 1982, additional subsurface investigations can be carried out to determine the current extent of the problem and whether it is tending to increase. The determination of whether or not degradation is occurring in violation of MGWPCS can then be made. Eventually, an adjustment of groundwater gradients may be necessary to alleviate the problem.

Airborne Hydrogen Sulfide from Wastewater Ponds:

Several ponds in the Champion wastewater treatment system have been identified as producing high concentrations of hydrogen sulfide. Violations are subject to provisions of the Montana Clean Air Act.

The company has been working with the Air Quality Bureau, DHES to resolve these problems.

MPDES Permitting Procedures:

This section describes the laws and regulations that are the basis for Montana Pollutant Discharge Elimination System (MPDES) permits--more commonly referred to as discharge permits. It also tells how the DHES administratively processes permit applications.

Nondegradation:

See response to Comment 16 and Recommendation.

Mixing Zone:

The mixing zone fluctuates depending on river flow and the amount of wastewater discharged, seeped and infiltrated. Mixing occurs between the mill

and Huson. Due to its fluctuating nature, the mixing zone is difficult to determine; however, DHES studies are being planned to more accurately define it.

Water Quality Monitoring:

This section discusses past, present and future water quality monitoring. Concerning the future monitoring, the DHES outlines six particular areas of interest and lists them in order of importance.

Fisheries:

The text portion of the Department of Fish, Wildlife and Parks (DFWP) fisheries report, which was included verbatim in Volume II of the DHES' Data Report and issued in conjunction with the DEIS, is reprinted, and includes some comments by the DHES. The DFWP report suggests Champion effluent affects intergravel water quality for more than 25 miles downstream. It also says it will take a minimum of five years to produce a reliable assessment of the impacts. The fisheries section also enlarges upon a rainbow trout chronic toxicity bioassay done by the Environmental Protection Agency (EPA) and mentioned in the DEIS; discusses the impact of hydroelectric facilities on the fishery below the confluence of the Flathead River; and presents the results of fisheries studies done by the National Council of the Paper Industry for Air and Stream Improvement (ncasi).

Economics:

Interest in assessing the economic benefits derived from the recreational use of the lower Clark Fork River is becoming more widespread. Some work has taken place, but no definitive study has been done to date. One of the key elements in providing greater future potential for recreational use and tourism in the lower Clark Fork Basin is to maintain or improve water quality in the river.

Alternatives:

DHES alternatives apply to permit decisions, not treatment alternatives. The alternatives include:

Alternative 1 - Deny issuing a permit.

Alternative 2 - Renew the existing permit for five years with existing conditions and limitations.

Alternative 3 - Renew the permit for five years, and require a study of nutrients and foam sources within the plant, followed by the development of a contingency plan to reduce both parameters in the discharge, if necessary.

Alternative 4 - Renew the permit for five years, with tighter controls on TSS and biochemical oxygen demand (BOD) in the discharge.

Alternative 5 - The Clark Fork Coalition Citizens' Alternative included the following major proposals: a five-year permit, a review of certain parameters and conditions after two years, a return to discharge conditions prior to the 1984 permit plus additional permit conditions, and for Champion to submit a plan within 1 1/2 years to enhance waste treatment and management (Addendum, Pp. 40-43).

Alternative 6 - Issue a permit with conditions and limitations which reflect the nondegradation section of the Montana Water Quality Act (75-5-303). The permit would contain final effluent limits similar to those in effect in 1982, the year the nondegradation rules were adopted. The following is an assessment of this alternative:

A) Summary of impacts--There would be no direct discharge except during the spring high flow period when river flow exceeds 4000 cfs. During the remainder of the year the Clark Fork River would receive treated wastewater through seepage only. The amount of total suspended solids that could be discharged would be reduced to 2,000,000 pounds per year. Nutrient loading to the river would be reduced to levels approximately equivalent to pre-1983 levels. Champion would be required to develop an alternate disposal system for a portion of their treated effluent.

B) Benefits--The direct discharge of wastewater to the Clark Fork River would be reduced. Such reduction would reduce the potential for any deleterious effects on aquatic life and reduce the potential for eutrophication of the lower river and Lake Pend Oreille.

C) Costs--Champion would be required to develop an alternate method of wastewater disposal for a portion of their treated effluent. Physical, technological and financial limitations may make development of such an alternate method of wastewater disposal extremely difficult and costly.

D) Discussion--The water quality information currently available indicates no adverse impact on current or anticipated beneficial use of the river even though some change may have occurred due to the discharge of treated wastewater. The increased discharge due to a reduction in the level of on-site treatment does however constitute a change which can only be authorized by the Board of Health and Environmental Sciences (BOH). Selection of this alternative would likely result in an appeal of the DHES imposed conditions and limitations to the BOH.

SUBSTANTIVE COMMENTS AND RESPONSES

Both the DEIS and the Addendum prompted a wide range of response from reviewers. The comments ranged from "we like the decision" or "we don't like the decision" to detailed comments on specific issues. At both the January and March public hearings, proponents and opponents were well represented and given ample opportunities to testify and file written remarks. Additionally, the DHES received many written comments--both pro and con--in the form of letters and transcripts.

Due to the sheer volume of the responses, the DHES cannot answer each comment point-by-point, however the substantive comments from various sources tended to precipitate into frequently asked questions. A pattern soon developed, resulting in the following substantive questions which were asked by a variety of persons and organizations. (See Appendix A for the names and addresses of these persons and organizations.) These questions included:

Comment 1:

The Idaho Department of Fish and Game, Washington Water Power Company and the U.S. Army Corps of Engineers recently spent over $3 million to construct the Cabinet Gorge hatchery on the Clark Fork River in Idaho to aid in the restoration of the Lake Pend Oreille fishery. These agencies are justifiably concerned that potential water quality degradation problems do not impact the fishery of the lake.

Response:

Two and one-half years of monitoring and special studies conducted by the DHES and other agencies, under guidance from the Champion Technical Advisory Committee and other experts, have failed to yield scientific evidence of a linkage between the discharge and seepage of treated wastewater from the Champion International paper mill near Missoula and alleged water quality degradation in Lake Pend Oreille some 200 miles downstream. Nutrient contributions from the Champion mill may increase productivity of the lake by as much as 6 percent. However calculations indicate that the lake is firmly oligotrophic (nutrient-poor) and capable of assimilating considerably more nutrients without experiencing a shift to more tolerant and less desirable fish species.

The most likely effect of current nutrient releases from the Champion mill is a slight increase in production of the fish and associated aquatic life that now occupy the lake. (See also the response to Comment No. 16 and Recommendation.)

Comment 2:

The principal attraction of the Sandpoint area is Lake Pend Oreille. A large area surrounding the lake derives revenues either directly or indirectly from the water-based recreation provided by the Clark Fork River and Lake Pend Oreille and through the sale of water front properties. It is perceived by many that Lake Pend Oreille is the ultimate settling pond for the Frenchtown mill effluent. That fact, together with the constant publicity about Champion's wastewater discharge into the Clark Fork River, is affecting the value and marketability of properties along the Clark Fork and Pend Oreille Rivers and Lake Pend Oreille. Retail activity and the tourist industry are

liable to suffer comparable setbacks if the Champion discharge isn't eliminated or improved.

Response:

The perceived degradation of water quality in Lake Pend Oreille and the Pend Oreille River in Idaho cannot be linked (by any scientific test yet applied) to the discharge and seepage of treated wastewater from the Champion paper mill near Missoula. (See response to Comment No. 1.) Nearly 200 miles of river and three run-of-the-river reservoirs separate the Champion mill from Lake Pend Oreille. Experience with lakes in Montana has been that shoreline development, if not properly controlled, can result in localized shoreline degradation of water quality, but that wholesale changes in trophic status result from multiple activities in the drainage basin. Since there have been no measured changes in Lake Pend Oreille's water quality and trophic status since the 1950s, it's unlikely that nutrient inputs from the watershed, including those from the Clark Fork River, are having a significant effect. However, an intensive nutrient loading and limnological study is needed to more closely assess the susceptibility of Lake Pend Oreille to cultural eutrophication from nutrients carried by the Clark Fork River and those originating elsewhere in the lake's watershed. The beneficial uses of the lower Clark Fork River in Montana, which are recognized in the Montana Surface Water Quality Standards, cannot be compromised. (See response to Comment No. 16 and Recommendation.)

Comment 3:

With the saturation of the treatment system at the Champion Frenchtown Mill, pressure mounted for increased discharge of mill wastes directly into the Clark Fork River. In 1984, the DHES granted Champion an expanded discharge permit for two years. Many hoped that the treatment system at the mill would be replaced in those two years, and that by 1986 the waste discharge would be reduced. However, two years later Champion is requesting and the DHES is recommending a five-year renewal of the expanded discharge permit. Champion International has never made any long-term, responsible plans to remedy its waste disposal problems. Allowing them an additional five years of direct discharge discourages rather than encourages the corporation to explore alternative methods to dispose of its effluent.

Response:

Champion has examined alternative waste treatment technologies as was discussed in the Weston Report section of the DEIS addendum. Champion has investigated new rapid infiltration sites and also irrigation as a disposal method for some of its effluent. These investigations showed that adequate land area was not available with enough land application capacity to eliminate a significant portion of the direct discharge. Therefore, an extended period of direct discharge beyond spring high-flow periods in the river will probably be costly to eliminate.

Champion will still be forced to modify its waste treatment of the direct-discharged water in order to meet the final conditions of the MPDES permit and assure compliance with water quality standards. The permit conditions to require compliance with the law will be the major determining factor in the company's decision in selecting a method of waste disposal.

Comment 4:

A major omission in the DEIS and Addendum was the failure to discuss cumulative and long-term effects. Do the pollutants that are discharged in the paper mill effluent accumulate in the river so that their impacts on water quality increase with time? Is granting a permit to discharge with the conditions that are proposed possibly exposing the river to a kind of creeping degradation wherein no significant change can be detected in the short run, but which will in the long run, produce serious adverse impacts? What kinds of changes in the river's ecosystem can be expected as the result of various alternative actions over the next twenty-five or fifty years?

Response:

Most of the materials discharged by Champion in its treated wastewater are biodegradable and of natural origin. The DHES is not aware of any chemicals in the wastewater that are persistent in the environment and that would pose a long-term threat to aquatic resources. However the DHES is intensifying its investigation into this matter. Long-term effects on the river's ecosystem are best determined by long-term monitoring. The mill has been operating at its present location for 30 years, part of that time with less wastewater treatment than what is provided today. Before the mill was constructed and each year since, biological samples have been collected from the river upstream and downstream of the mill outfall. These samples have shown no significant long-term changes in water quality or in the integrity of the river's biological community during the first 30 years of mill operation. Based on these findings, which have been confirmed by other studies conducted during the past 2-1/2 years, the DHES does not anticipate any long-term changes in river biology under the terms of the proposed discharge permit. Water quality and biological monitoring of the river will continue as resources allow. Final conditions of the permit will insure that degradation will not occur.

Comment 5:

What is the capacity of the Clark Fork River for assimilating pollutants of the kind that are discharged in the paper mill effluent? How much additional assimilative capacity will remain after the permit is granted or any other alternative action is taken? If the assimilative capacity of the river is now being approached so that there is little if any margin for assimilating additional pollutants, how is Missoula to handle additional growth with the increasing demands on its sewage disposal system?

Response:

The capacity of the river to assimilate pollution varies with the contaminant in question, the reach of river, river flow, water temperature and other factors. For example, the river's capacity to assimilate biodegradable organic matter (without exceeding the instream standard for dissolved oxygen) is reached during periods of low flows and high temperatures in the mixing zone of the Champion mill. Generally, the assimilative capacity is reached when a contaminant begins to interfere with one or more of the river's beneficial uses, that is, when a criterion for protecting a use is exceeded. The proposed permit is designed so that the river's assimilative capacity would not be exceeded during critical times of the year. Also final permit conditions require a return to 1982 conditions in the discharge. If the total

load of a contaminant discharged by two or more permittees to the same reach of river exceeds that reach's assimilative capacity, then a lower total allowable load would have to be set which the river could assimilate. The total load would be apportioned to the different dischargers in a process called waste load allocation.

Comment 6:

If Champion's rapid infiltration basins continue to become plugged, as seems inevitable, so that they are less and less effective, will the company need to increase the amount of effluent to be discharged into the river in years to come? What provisions are being made against the likelihood of a request for a very much larger discharge of effluent in the future?

Response:

Champion has been told that this expansion of its permit to year-round discharge is the maximum that can be allowed, even on an interim basis. Champion has told the DHES that the remaining capacity in its rapid infiltration system is already down to 10 percent or less of its total effluent treatment, so remaining capacity is negligible and further plugging will not result in any significant increase in direct discharge. Final permit limitations require a return to 1982 conditions.

Comment 7:

Complaints of brown foam, tea-colored water, smelly water and off-flavor fish are considered examples of degradation of the Clark Fork River by area residents. All of the above insults to the river's integrity have increased dramatically since Champion initiated its year-round discharge.

Response:

The 1984-1985 water quality studies conducted by the DHES and others included investigations of aesthetics-related problems in the Clark Fork River below the Champion mill. Of the above-mentioned complaints, only river foam was considered to be a potential problem downstream of Champion's mixing zone. Although probably related to the Champion wastewater discharge, a connection was not proven (see Data Report, Vol. II, pp 5-56.). As a result, further study of the causes of river foam was outlined in the Addendum. In addition, the proposed discharge permit calls for additional fish taste-testing and inplant study of wastewater foam sources and control measures. Documented fish tainting problems or excessive river foam for which Champion can be shown to be responsible would be grounds for corrective action. See the response to Comment 6 also.

Comment 8:

The DEIS and Addendum include insufficient information either to determine if the present permit limits are adequate or to make recommendations for the conditions in the new permit, especially for nutrients, TSS, dissolved oxygen, foam and toxics.

Response:

The proposed permit limits and conditions are based upon the best information and judgment of DHES staff that water quality standards, nondegradation

policy, and the Water Quality Act will be complied with. It has been acknowledged that foam and toxics are questions without firm answers at this time. The proposed permit requires the permittee to do further studies on foaming agents and report to the department. Final permit limitations require a return to 1982 conditions. Additionally, stream monitoring will continue. Any further conclusive information that is discovered will be addressed in modified conditions in the MPDES permit, as required.

Comment 9:

The time available for the studies that have been completed was very short. Add the fact that baseline data against which to evaluate the new data are completely lacking, and it becomes obvious that the results of the studies completed at this time are not sufficient for a definitive evaluation of the impacts of any single source of pollution. The studies cannot be used as the DHES has attempted to use them to prove that the mill's effluent does not and will not degrade the river.

Response:

In 1984, during the public review of the Champion permit renewal process, there was overwhelming concern that Champion be given only a temporary, two-year permit while a water quality study was done on the river and an EIS was written. The two-year study term was agreed upon at that time.

It is acknowledged that two years is not enough time to answer all questions and observe all possible or critical river conditions. However, the river has been observed closely enough for a two-year period to learn much concerning the effects of the Champion discharge. Short-term effects, at least, have been shown to be minimal under observed river conditions. (See Comment No. 4 regarding long-term effects.)

It appears that continued mill discharge will not cause severe changes in the river. Additional conditions will be added to the permit to adhere to a "nondegradation" approach. Monitoring will continue. If subtle undesirable effects are shown, permit conditions will be modified to address them.

Comment 10:

Champion should fund any and all instream monitoring associated with its increased discharge.

Response:

The Clark Fork Drainage is impacted by a variety of point and non-point source discharges. Some of the impacts are totally unrelated to the Missoula mill (heavy metals), other impacts are related to many sources including the Missoula mill (nutrients). The DHES does not feel that Champion should be required to fund instream monitoring that involves other waste sources. Champion will be required to conduct several studies intended to assess its impact on the river. Such studies include fish flavor analysis, in-plant nutrient reduction and foaming agent assessment. Champion has agreed to the continuation of the annual invertebrate instream surveys as performed by the Institute of Paper Chemistry.

In addition, Champion is required, by permit to conduct a variety of tests monitoring its discharge and the Clark Fork River to document the impact of the discharge. Champion is also funding the collection of streamflow measurements at the U.S. Geologic Survey (USGS) gaging station below Missoula.

The Water Quality Bureau intends to continue monitoring cumulative impacts to the river as available resources allow.

Comment 11:

What portion of Champion's nutrient loading to the Clark Fork River is contributed by seepage from wastewater storage ponds and rapid infiltration basins?

Response:

In 1984-1985, approximately 56 percent of Champion's wastewater was infiltrated and percolated into the shallow groundwater aquifer, while about 44 percent was direct discharged to the river. This compared to a 1980-1985 average of about 65 percent infiltrated and percolated and 35 percent direct discharged. The decrease in the first category reflects the decline in efficiency of the rapid infiltration basins.

The nutrient concentrations in Champion's direct discharge can be compared with those measured in samples of the shallow groundwater immediately adjacent to the wastewater ponds and rapid infiltration basins. However, because of fluctuating nutrient application rates, unknown travel times for groundwater seepage and large differences in seepage path length depending upon the location of storage ponds and rapid infiltration basins, estimates of actual nutrient removal by infiltration and seepage are rough at best. In 1984 to early 1986, total nitrogen and total phosphorus in the direct discharge averaged 11.83 mg/l and 2.82 mg/l, respectively, while concentrations in the shallow groundwater averaged 3.47 mg/l and 0.78 mg/l, respectively (Champion self-monitoring data). Thus, it appears that about 71 percent of the total nitrogen and 72 percent of the total phosphorus in the treated wastewater was removed through infiltration and percolation.

Combining this information (and assuming that all of the wastewater infiltrated and percolated into the ground eventually reaches the river), the DHES can then estimate that about 73 percent of the nitrogen and 74 percent of the phosphorus loading to the river from the mill in 1984 to early 1986 was a result of direct discharge. The remaining 27 percent of the nitrogen and 26 percent of the phosphorus load reached the river via seepage.

By comparing average values for the period 1980 to 1985, the DHES estimates that about 65 percent of the nitrogen and 66 percent of the phosphorus loading to the river was by direct discharge while the remaining 35 and 34 percent of the nitrogen and phosphorus loading, respectively, was contributed by seepage.

Note: There are large variations between estimated removal rates in Response 32 and Response 11, which are based upon different years of data and which are influenced by the factors discussed above.

Comment 12:

What portion of Champion's nutrient loading to the Clark Fork River is biologically available (or bioavailable)?

Response:

It is reasonable to assume that all of the nitrogen and phosphorus contributed by the Champion mill to the Clark Fork River/Lake Pend Oreille system will be recycled many times and will eventually become available in one form or another for biological uptake. Thus, in the worst case scenario it is conceivable that all of Champion's nutrient load will be bioavailable over time.

In the short term, only the soluble inorganic forms of nitrogen and phosphorus--nitrate, nitrite and ammonia nitrogen and orthophosphate phosphorus--are readily available for uptake by aquatic plants. According, to Table 6, p. 69 in Volume I of the Data Report, on the average about 50 percent of the phosphorus and 28 percent of the nitrogen concentrations (and hence loads) in the Champion wastewater consist of these immediately usable forms.

Comment 13:

The DHES did not respond to the Technical Advisory Committee's request for information on the TSS and BOD concentrations in the pulp mill's discharge during the summer and fall.

Response:

The information is available in the Data Report, Volume I in the form of both DHES Water Quality Study Data (pp. 25-38, pp. 60-66) and Champion self-monitoring records (pp. 458).

Comment 14:

The TAC feels that the mixing zone work planned by the DHES is a mandatory task that should not be dropped if resources are limited.

Response:

There is a concern that the DHES might not be able to accomplish the instream work necessary to define the mixing zone because of limited funding resources. Accordingly, a condition included in the tentative Champion permit will require the company to perform instream studies as necessary to define the extent of the mixing zone in the river at high and low river flows.

Comment 15:

The DHES did not respond to the TAC's request for an evaluation of the consequences of higher discharge if the effluent color were reduced.

Response:

One point to keep in mind is that there are enough other conditions now attached to the permit which should adequately protect water quality with or without a color limitation.

Further, it is difficult to evaluate the consequences of higher discharge if Champion suddenly and drastically reduced the color of its effluent. If the color of the effluent were dramatically reduced, other parameters such as BOD, TSS and nutrients would most likely be reduced as well.

Comment 16:

The permit is adequate to protect water quality. It should be granted as is.

Response:

When the DEIS and Addendum were written, the department was attempting to properly and fully implement all applicable State laws and regulations. The department's inquiry focused on whether the proposed changes in Champion's wastewater discharge would result in degradation of the Clark Fork River as defined in the Board of Health and Environmental Sciences' (BOH) nondegradation rules (16.20.701 et. seq. ARM) adopted in 1982. The DHES conclusion was that the proposed increase in the mill's discharge would not constitute degradation under the Board's rules. Although the DHES has not retreated from this conclusion, comments focused on interpretation of the non-degradation section of the law itself rather than the rules and the DHES has concluded that it does not have the authority to issue the permit as originally proposed (see Recommendation Section).

Comment 17:

Notice of the hearing was not given sufficiently in advance of the hearing.

Response :

Notice was given 30 days in advance of the hearing to over 300 individuals who had expressed interest and to numerous newspapers including the following: the Missoulian in Missoula, the Mineral Independent in Superior, the Sandpoint Daily Bee in Sandpoint, Idaho, and the The Spokesman-Review and Spokane Chronicle in Spokane.

Comment 18:

DHES should issue a permit which will decrease the nutrients discharged to the Clark Fork River.

Response:

At this time there is no scientific evidence to show that a reduction in nutrient levels in the river is necessary. The recommendation to establish non-degradation limits will, however, result in a reduction of nutrients discharged to the river.

Comment 19:

There should be a coordinated resource management strategy for the entire river.

Response:

The DHES agrees. Attempts are being made by the Governor's Clark Fork River Basin Project to develop and institute such a coordinated strategy.

Comment 20 :

Degradation of the river should be prevented.

Response:

We agree. See response to Comment 16 and Recommendation.

Comment 21:

Discharges to the river should be prohibited when the river temperatures are 65° F or greater.

Response:

The DHES does not feel such a restriction is necessary to protect the stream biota primarily because such temperatures do not normally occur unless the stream flow is so low that the color limitation prevents discharges.

Comment 22:

Champion should be required to replace the rapid infiltration system with an equivalent system.

Response:

DHES' authority is limited to protecting water quality by controlling discharges, not by specifying method of treatment. The scientific evidence that DHES has indicates that the discharge limitations proposed in the permit would protect water quality. However, see response to Comment 16 and Recommendation for discussion of nondegradation.

Comment 23:

The proposed permit will result in a significant increase in the amount of pollutants discharged to the river.

Response:

The proposed permit interim limits could result in an increase in the annual amount of total suspended solids discharged over 1982 levels. However, the annual contribution from the plant would still be less than one percent (1%) of the annual load present in the stream at the point of discharge. The available evidence indicates the increase would have no affect on water quality. Also, final effluent limits will return TSS to 1982 levels. The proposed interim conditions could result in discharges during different times of the year, but again the available evidence indicates that these discharges would have no affect on water quality. Final conditions will return the discharge to springtime only. The proposed discharge could result in an increase in the amount of nutrients discharged to the river. For discussion of this issue, see response to Comment 18. For discussion of nondegradation, see response to Comment 16 and Recommendation.

Comment 24:

The nondegradation rules are not consistent with the law.

Response:

See response to Comments 16 and 25 as well as the Recommendation.

Comment 25:

The DHES is apparently requiring that a measurable change occur instream before the DHES applies the concept of nondegradation. This is contrary to the intent of the nondegradation law.

Response:

The DHES agrees that the purpose of the nondegradation law and rules is to prevent measurable water quality changes from occurring. The DEIS and Addendum did not discuss the reasoning on this issue although the DHES felt it was complying with the letter and intent of the nondegradation rules. Because of public input the DHES has reassessed its legal interpretation of the nondegradation section of the Water Quality Act (see response to Comment 16 and Recommendation).

Comment 26: The pulp mill should prove its discharge will not harm the river.

Response:

First, the DHES, not the permittee, is charged with determining whether proposed discharges are consistent with requirements of the Water Quality Act. Second, both federal and state discharge permit programs allow for modification of permits in the face of subsequent information showing a discharge is harming a river.

Comment 27:

There should be public review of the effects of the discharge on the river in two years.

Response:

The effects of discharges are evaluated by the DHES through permittee self-monitoring and department compliance monitoring and instream surveys. If the instream surveys, self-monitoring or the compliance monitoring show that there is an impact instream, a permit may be modified at any time after the required public notice and review.

Comment 28:

At the time of the facility's expansion in 1974, a condition of no increase in the discharge of pollutants was imposed; why isn't that prohibition being enforced?

Response:

This condition was not a legal requirement but rather a commitment by the company which owned the mill at that time. The present owner, Stone Container Corporation, is of the opinion that it is substantially complying with this condition on an annual basis by improving other facets of their treatment process as the rapid infiltration basins become less effective. Final permit limitations do require no increases beyond 1982 levels.

Comment 29:

The river will take decades to recover.

Response:

There is no scientific evidence to suggest that the mill's discharge is adversely affecting the quality or use of the river. Thus, recovery of the river is not an issue. In addition, while streams could take decades or longer to recover from inputs of persistent pesticides or heavy metals, rivers generally recover in a few years after the cessation of organic discharges from point sources. The pulp mill discharge is not a significant source of pesticides or metals.

Comment 30:

There are visible effects downstream of the discharge now.

Response:

At this time there is no scientific evidence to link the reported effects to the pulp mill discharge. The DHES is continuing its monitoring efforts in an attempt to determine if the reported effects downstream are caused by the pulp mill discharge.

Comment 31:

Champion should pay for phosphorus removal elsewhere to compensate for the degradation which has occurred as a result of its discharge.

Response:

The DHES recommends that nutrient levels be reduced to levels approximately equivalent to 1982 discharges. If nutrient discharges are identified as a source of pollution, the DHES will require further reduction at the source.

Comment 32:

Because the rapid infiltration basins reduce phosphorus concentration by about 80 percent they or an equivalent system should be retained.

Response:

The DHES estimates that the current phosphorus removal efficiency in the rapid infiltration system is about 20 percent. We expect the amount of phosphorus removal may decrease with time as the soil adsorption sites are filled. If and when evidence is developed indicating that deleterious levels are being approached in the river or Lake Pend Oreille, then all sources of phosphorus will be reduced. Also see response 34.

Comment 33:

Algae growth increases proportionately with phosphorus concentration increases.

Response:

Many factors determine the amount of algae on a river bed, including

nutrients, temperature, light, current velocity and substrate. While this comment may be true generally, the available scientific data indicate that currently the amount of algae present is the same above and below Stone's discharge even though the facility does discharge phosphorus to the stream. Whether this is due to lack of precision in the measurements or to other factors should be revealed as monitoring continues in the vicinity of the pulp mill.

Comment 34:

The phosphorus concentrations below the facility are above the problem threshold for algae growth 36 percent of the time.

Response:

There are several methods of estimating problem thresholds and all of them are relatively imprecise. Two methods were used in the DEIS and Addendum. One method indicated exceedance of the problem threshold 36 percent of the time. The other indicated no exceedance of problem threshold levels. In addition, actual measurements of phytoplankton standing crop in downstream reservoirs indicated that algal abundance is well below problem levels. Measurements of standing crop of attached algae (periphyton) will be made this summer and fall and compared with guidelines to protect aesthetics and aquatic life.

Comment 35:

The proposed discharge will lower the dissolved oxygen concentration in the river.

Response:

The Department has been unable to measure any decline in the dissolved oxygen concentration caused by the present discharge. Moreover, on a theoretical basis, the Department is of the opinion that the proposed discharge will not have a measurable effect on instream dissolved oxygen. The application of nondegradation to dissolved oxygen is covered in the response to Comment 16, 25 and Recommendation.

Comment 36:

The studies done on the river are not and cannot be conclusive so application of nondegradation is very important.

Response:

The DHES agrees. The nondegradation rules that were adopted by the Board of Health and Environmental Sciences have been applied to Stone's proposed increase and there is no basis to anticipate a worsening of water quality in the Clark Fork below the pulp mill. As noted above, if adverse impacts are anticipated or observed, the facility's permit will be made more stringent. However, see response to Comment 16 for our present position.

Comment 37:

The impacts of increased phosphorus loads on Lake Pend Oreille should be predicted.

Response:

Normally all of the constituents needed for the growth of algae in lakes are present in surplus amounts except for nitrogen or phosphorus. In Lake Pend Oreille phosphorus is apparently much less abundant compared to what is needed by algae than is nitrogen, thus the amount of phosphorus is at least potentially limiting the growth of algae in the lake.

Lake shore residents feel there is more algae in the lake now than there was in the past. They also feel this increase is due to an increase in the amount of nutrients discharged to the river upstream from the lake. Limited studies by various Idaho agencies do not substantiate that an increase in planktonic or floating algae has occurred. This may be due to the limited nature of the studies or there may actually have been no increase in planktonic algae. It is possible that there has been an increase in the abundance of attached algae along the shoreline. There apparently have been no studies concerning the amount of attached algae present in the lake. Growth of attached algae is generally related to local inputs of nutrients from sources such as septic tanks.

Prediction of the planktonic algae growth in a lake resulting from increased phosphorus inputs is based on the relationship between planktonic algae growth and phosphorus loads that have been measured in many lakes throughout the world. This relationship is usually expressed in terms of annual "areal" phosphorus loading, which incorporates lake area, average depth phosphorus input and resulting chlorophyll a concentration or secchi depth. Chlorophyll a is the primary substance responsible for the "greenness" of algae, thus it is a measure of the algae present. Secchi depth is the depth at which a black and white disk can be seen from the surface and is also a measure of the amount of algae present.

The solid lines in Figure 1 are the expected relationships. The points labeled PO show where lake Pend Oreille fits according to this relationship. Apparently the relationship between phosphorus and algae growth in Lake Pend Oreille is the same as in most other lakes. Thus, it is theoretically possible to predict the effect on algae growth that will result from an increase in phosphorus loads. However, as can be seen from Figure 1 the mean inlake chlorophyll a value reported does not agree with the reported secchi depth. Furthermore, the reported inlake phosphorus concentration of 5.9 micrograms per liter (ug/l) does not agree with the predicted inlake phosphorus concentration of 3.2 ug/l. Assuming the secchi depth is correct (it is the simplest measurement), then the inlake chlorophyll concentration of 0.32 ug/l is lower than it should be (0.8ug/l) based on the calculated inlake phosphorus concentration and the calculated inlake phosphorus concentration is lower than the measured inlake concentration of 5.9 ug/l. Because these differences are considerably greater than the possible phosphorus increase of 6 percent

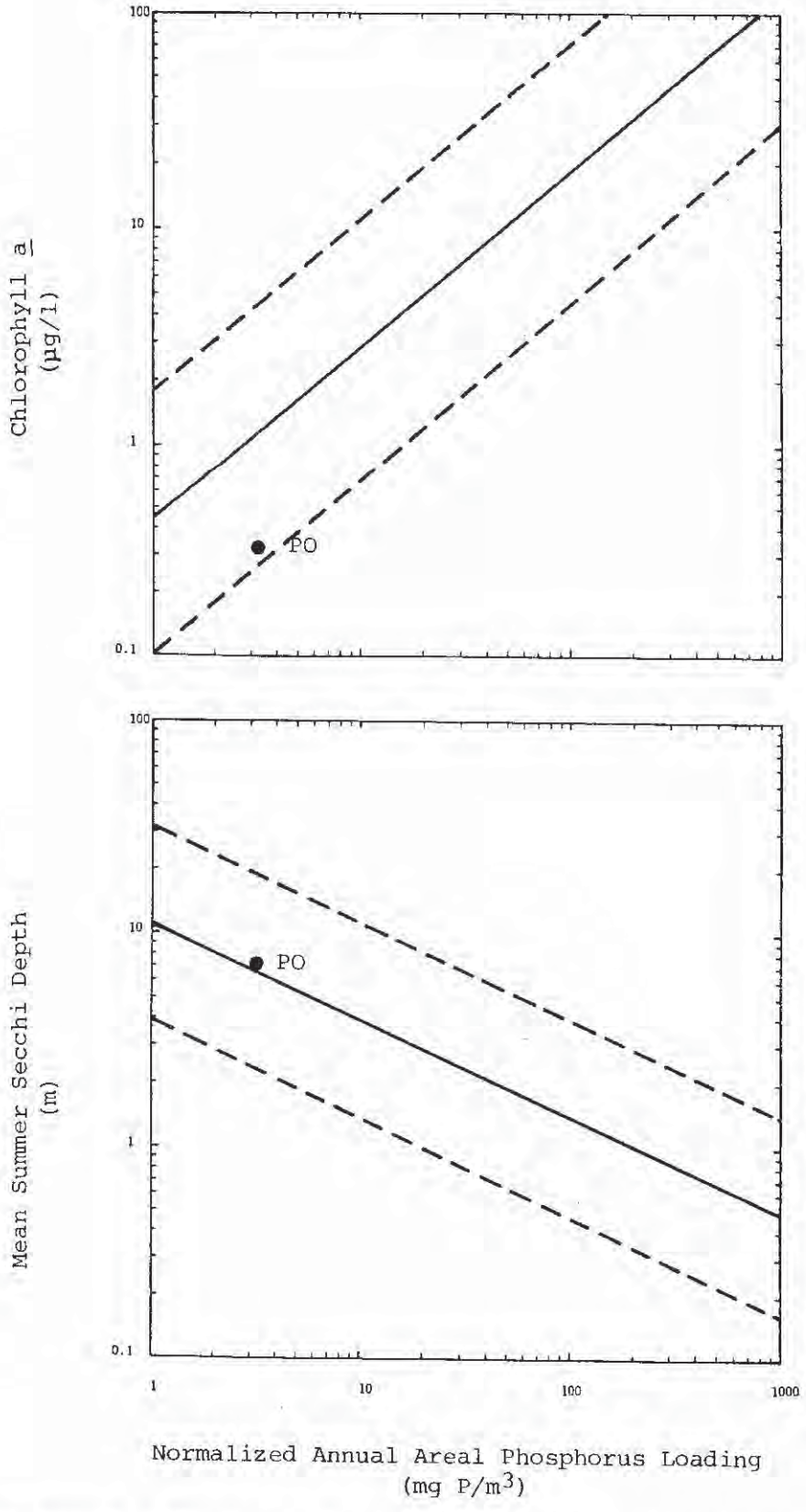


Figure 1. Phosphorus load - eutrophication - related water quality response relationship for U.S. waterbodies. (After Jones, R.A. and Lee, G.F., "Recent Advances in Assessing Impact of Phosphorus Loads on Eutrophication - Related Water Quality", Water Res. Vol. 16, pp. 503-515, 1982.)

(Reference Major Conclusions: nutrients), it is not worthwhile to predict the increase in algae abundance that might result from the 6 percent phosphorus increase.

Although, the present algal density is very low, and it is unlikely that a 6 percent increase would affect any beneficial use, the inlake phosphorus and chlorophyll concentrations and the phosphorus loads coming into the lake should be more carefully determined.

APPENDIX A

Jo Fix
421 Speedway
E Missoula, MT 59802

Carrie House
P.O. Box 8593
Missoula, MT 59807

Caryl Williams
P.O. Box 7381
Missoula, MT 59801

Chris E. Nelson
1438 Harrison
Missoula, MT 59802

Bill Boseman
Clark Fork Coalition
Box 2955
Missoula, MT 59806

Mike Bader
University of Montana
545 S 1st W
Missoula, MT 59801

Dan Packer
2230 1/2 Fairview
Missoula, MT 59801

James L. Jensen
101 A. Craighead
Missoula, MT 59801

A. George Miller
Missoula Saws Inc, Moat Wood Products
2301 Grant
Missoula, MT 59801

Nick Pazderic
294 E. Front St
Missoula, MT 59801

Jake Kreilick
228 S 3rd
Missoula, MT 59801

David J. Graff
1845 S. Ninth St. W
Missoula, MT 59801

Roger Johnson
Pyramid Mountain Lumber Inc
Drawer J
Seeley Lake, MT 59868

William R. Snodgrass
442 Kensington
Missoula, MT 59801

Patricia Lawson
932 Monroe
Missoula, MT 59802

Howard Johnson
Clark Fork River Project
Governor's Office
427 Holter
Helena, MT 59601

Ron Kazmierezak
Kaz Co
Rout 1, Box 19
Thompson Falls, MT 59873

Michael Sol, Five Valleys Audubon
221 West Broadway
Missoula, MT 59802

John C. Lilburn
P.O. Box 7381
Missoula, MT 59807

R.A. Solberg
243 Dixon Ave
Missoula, MT 59801

Sam Burgess
Clark Fork Coalition
P.O. Box 864
Superior, MT 59872

John S. Horton
835 Rollins
Missoula, MT 59801

Charles K. Stevenson
1801 S. 4th West
Missoula, MT 59801

Jack Poulson
National Wildlife Federation
Natural Resource Clinic
University of Montana, School of Law
Missoula, MT 59812

Ron Scharfe
9440 Woodwind TR
Missoula, MT 59802

Dan Harvey
334 Woodford
Missoula, MT 59801

Jeri Fisher
1285 Lena Lane
Missoula, MT 59801

BC Shaw
Star Route, Box 147-A
Bonner, MT 59823

Alice E. Burgess
P.O. Box 864
Superior, MT 59872

Alice H. Austin
5 Valleys Audubon Chapter
4741 Sundown Road
Missoula, MT 59801

Bob Yetter
University of Montana
708 Lolo
Missoula, MT 59801

Carl Mann
234 Ridge Way
Lolo, MT 59847

John Host
9750 Butler Creek Road
Missoula, MT 59801

Bob Wuttke
101 Ironwood Place
Missoula, MT 59801

James A. Stratton
2631 Lester
Missoula, MT 59801

Fred J. Bischoff
332 E Central
Missoula, MT 59801

Briggs H. Austin
4741 Sundown Road
Missoula, MT 59801

Dexter M. Roberts
12050 Bench Road
Missoula, MT 5801

Monty Morawec
436 Hastings
Missoula, MT 59801

Dwight W. Young
906 Stephens
Missoula, MT 59801

Daniel J. Funsch
932 Monroe
Missoula, MT 59802

Ron Erickson
3250 Pattee Canyon
Missoula, MT 59801

Byron Weber
2917 S 7th W
Missoula, MT 59801

William H. Bright
630 Big Flat Road
Missoula, MT 59801

David Calahan
Missoula Economic Development Corp
690 Big Flat Road
Missoula, MT 59801

Keith L. Olson
Montana Logging Association
P.O. Box 1716
Kalispell, MT 59903

Scott E. Wagener
Stone Container Corporation
2400 Old Fort Rd #223
Missoula, MT 59801

Lynda Douglas
Mineral County Planning
Box 281
Superior, MT 59872

William F. Headapohl
120 Ben Hogan
Missoula, MT 59801

Heather Todd
821-1/2 Hazel
Missoula, MT 59801

Nancy N. Erickson
3250 Pattee Canyon Road
Missoula, MT 59803

Richard G. Reid
Inland Forest Resource Council
110 E Broadway #320
Missoula, MT 59801

Grant Wiegert
402 S 5th East
Missoula, MT 59801

Robert L. French
Box 178
Paradise, MT 59856

Robert H. Brewer
101 Greenwood Lane
Missoula, MT 59803

Kevin Wagner
Trout Unlimited
820 Whitaker Drive
Missoula, MT 59801

Lloyd Berg
1314 S 3rd
Bozeman, MT 59715

David Owen
Missoula Chamber of Commerce
P.O. Box 7577
Missoula, MT 59807

Toni Lee Timmers
1327 Arthur Ave
Missoula, MT 59801

Mike Micone
WETA
1714 9th
Helena, MT 59601

Dr. John J. Craighead
Executive Director
Wildlife-Wildlands Institute
5200 Upper Miller Creek Road
Missoula, MT 59803

Vivian Brooke
President
Missoula League of Women Voters
P.O. Box 8196
Missoula, MT 59807

L.V.S. Millar
405 S 6th E
Missoula, MT 59801

Elaine Bild
Missoula City-County Health Dept
301 W. Alder
Missoula, MT 59801

Roger C. Lund
Marion I. Lund
1600 Ponder Point Loop
Sandpoint, ID 83864

Dan LaCrosse
336 S 5th E Apt 4
Missoula, MT 59801

Daniel T. Potts
General Manager
Stone Container Corp
Drawer D
Missoula, MT 59806

Larry Weeks
Stone Container Corp
Drawer D
Missoula, MT 59806

Lee W. Stokes, PhD
Administrator
State of Idaho
Dept of Health and Welfare
Division of Environmenta
Statehouse
Boise, ID 83270

Tony Moore
Ric Hargraves
2046 Saulter Lane
Missoula, MT 59801

Barbara Evans
Chairman
Missoula Board of County Commissioners
Courthouse
Missoula, MT 59802

Timothy J Hall
NCASI
P.O. Box 1364
Lewiston, ID 83501

Kris Moser
Regional Supervisor
Idaho Fish and Game
Region 1
2320 Government Way
Coeur d'Alene, ID 83814

Peggy M. Brownlee
15700 Old Highway 93 S
Florence, MT 59833

Raymond L. Prill
President
West Slope Chapter
Trout Unlimited
P.O. Box 9186
Missoula, MT 59807

Dave Rades
Institute of Paper Chemistry
P.O. Box 1039
Appleton, WI 54912

Thomas France
Jack Poulson
National Wildlife Federation
Northern Rockies Natural Resource Center
240 N Higgins
Missoula, MT 59801

Mary K. Noonan, Chairman
Edwin T. Sansom
Charles E. Rock
Mineral Co. Board of Commissioners
P.O. Box 517
Superior, MT 59872

Hugh Zackheim
EQC
Capitol Building
Helena, MT 59601

Allen Koleff
Stone Container Corp.
3805 Presidential Parkway
Atlanta, GA 30340

ERA Syringa Realty, Inc
201 N 1st Ave
Sandpoint, ID 83864

Val Balison
Box 21
Superior, MT 59872

Edward L. Foxx, MD
Condon, MT 59826

Daniel E. Waggoner
Manager
Safeco Title Insurance Co of Idaho
112 N Fourth Ave
P.O. Box 758
Sandpoint, ID 83864

Barbara Wright
University of Montana
Missoula, MT 59812

James Allen
Box 86
Frenchtown, MT 59834

Judith A. Woolley
Box 640
Plains, MT 59859

M. Joan Hess-Homeier, PhD
925 Lilac
Missoula, MT 59802

Linda Wehling
115 Deer Creek Road
Missoula, MT 59802

Eric Norris
Box 86
Frenchtown, MT 59834

David L. Center
1012 Billings
Helena, MT 59601

Norman W. and Jeanette Davis
11100 Bench Road
Missoula, MT 59802

Barry Swidler
425 East Sussex
Missoula, MT 59801

Carl Dede
303 S 3rd W #4
Missoula, MT 59801

Gary Kohler, General Manager
Village Red Lion Motor Inn
100 Madison
Missoula, MT 59802

William R. Magnus
424 Woodworth Ave
Missoula, MT 59801

David E. Parker
Vice President
Bonner County Shoreline Property
Owners and Taxpayers Protective Assoc
Box 1065
Sandpoint, ID 83864

Virginia H. Vincent
907 Kern St
Missoula, MT 59801

Larry S. Banister
Executive Vice President
First Security Bank of Missoula
1704 Dearborn Ave
P.O. Box 4506
Missoula, MT 59801

Ted Hess-Homeier
925 Lilac
Missoula, MT 59802

John L. Wozniak, CLU
2000 Russell
P.O. Box 4207
Missoula, MT 59806

H.J. Wilson
2122 A Raymond Ave
Missoula, MT 59802

James Weatherly, P.E.
President
Sorenson and Co
P.O. Box 3418
2500 Murphy
Missoula, MT - 59806

Allan Mathews, President
Mineral County Economic Development Corp
Alberton Chapter
Box 171
Alberton, MT 59820

Lester Madsen
1600 Gerald Avenue
Missoula, MT 59801

Elwin Bennington
Box 1039
Polson, MT 59860

Mary S. Beer
801 N 3rd St
Hamilton, MT 59840

Burt Calkins
202 Snell Hill Road
Hope, ID 83836

Karl Long
416 S Ella St
Sandpoint, ID 83864

John A. Ulrich
Chairman
Montana East SideForest Practices Committee

Mark F. Rotar, MD
Professional Village South
700 West Kent
Missoula, MT 59801

Jean Brooks
1401 Cooper St
Missoula, MT 59802

Joe A. Moreland
District Chief
U.S. Geological Survey
Federal Buidling; Drawer 10076
301 S. Park
Helena, MT 59626-0076

James D. Daniel
133 Sentinel
Missoula, MT 59801

Nick Kaufman
2305 Quail
Missoula, MT 59802

Jeff R. Schroeder
1021 Cherry
Missoula, MT 59802

John O. Frakie
3539 South Third West
Missoula, MT 59801

Red MacDonald, Associate Broker
Sommerfeld Realty
101 North First Ave.
Sandpoint, ID 83864

Peter KH Wightman
Box 26
Clark Fork, ID 83811

Mrs. George Franks
Box 3
Plains, MT 59859

Mike Easton
Vice President for University Relation
University of Montana
Missoula, MT 59812

T. Millar Bryce
Owenr
Flodin Lumber and Manufacturing Co
Plains, MT 59859

Jim Stokes
Box 54
Paradise, MT 59856

Brandon Lever
415 Miller Hall
University of Montana
Missoula, MT 59812

Terry W. Gonzales, Manager
First American Title Co
P.O. Box 802
401 Church Street
Sandpoint, ID 83864

E.R. Jarvis
President
Missoula Chamber of Commerce
Van Buren and Front
Missoula, MT 59801

Thomas A. Minnick
2012 Joan Way
Sacramenton, CA 95825

Steven G. Lazar
312 Lavina St
Sandpoint, ID 93964

Herbert DeVries
Rout 1, Box 34F
Polson, MT 59860

Wendy Fitzgerald
1970 Alvina Drive
Missoula, MT 59802

Billie Lambert
P.O. Box 64
Noxon, MT 59853

Dusty Owens
P.O. Box 706
Hamilton, MT 59840

Rose Chaney
Kaniksu Realty
121 N. First Avenue
Sandpoint, ID 83864

Martin R. Studer
400 W. Artemos
Missoula, MT 59801

Martin J. Ambrose
P.O. Box 132
St. Regis, MT 59866

Carolyn Hathaway, Chairperson
Missoula Water Quality Advisory Group
1502 Aspen Drive
rissoula, MT 59802

Dale Hoth
Darby, MT 59829

R. Toomey
210 S. 5th W
Missoula, MT 59801

Mrs. Lawrence Kieholz
700 Red Fir Road
Dope, ID 83836

M.A. McAdams
P.O. Box 373
Superior, MT 59872

Tori Heppe
278 Highway 200 E
Plains, MT 59859

Dave Reynolds, Vice President
Mary Jane Setterfield, Secretary/Treasurer
Hope-Clark Fork-Trestle Creek
Chamber of Commerce
P.O. Box 515
Clark Fork ID 83811

C. Micahel Falter, PhD
Green Monarch Coalition
736 Homestead Place
Moscow, ID 83843

William F and Cora E Exley
20707 10th Ave. S
Seattle, WA 98148

Wendell Stephens
Paradise Valley Ranch Co
Box 188
Paradise, MT 59856

R.L. Teske
20040 NE 196th
Woodinville, WA 98072

Barbara J. Ross
W.D. Ross
W.C. Ross
P.O. Box 125
St. Regis, MT 59866

John R. Swanson
P.O. Box 6554
Minneapolis, MN 55406

Ron Garman
9638 Rapid Lightning Road
Sandpoint, ID 83864

Roger W. Burwell
Vice President
Panhandle Environmental League
2478 Wooded Acres
Sagle, ID 83860

Terry Meyer
1110 1/2 Jackson
Missoula, MT 59802

Jim Greene
Co-President
Five Valleys Audubon Scoeity
P.O. Box 8425
Missoula, MT 59807

Robert E. Stephens
Helena Stephens
Mr & Mrs. Cliff Stephens
Judith A. Stephens
Plains, MT 59856

Judy Hutchins
Board of Directors
Panhandle Environmental League
P.O. Box 963
Sandpoint, ID 83864

Ed Javorka
990 Loch Maree Drive
Hayden Lake, ID 93935

Ted Navratil
6230 Highway 2
Sandpoint, ID 83864

Mary Jo Ludwig
Box 101
Florence, MT 59833

James W. Flynn
Director
Dept of Fish, Wildlife and Parks
1420 East Sixth Ave
Helena, MT 59601

Robert P. McKeon
Paula Rane McKeon
9515 Rapid Lightning Creek Rd
Sandpoint, ID 93964

Josie Merithew
9638 Rapid Lightning Road
Sandpoint, ID 93964

James E. White
P.O. Box 158
Clark Fork ID 83811

Judy Smith
224 Crosby
Missoula, MT 59801

Al Gray
Sales Associates
Rainbow Realty
108 N. Third Ave
Sandpoint, ID 83864

Gail Miller
Newsletter Editor
Five Valleys Audubon Society
Box 8425
Missoula, MT 59807

Mike Beckwith
Idaho Division of Environment
Water Quality Bureau
2110 Ironwood Parkway
Coeur d'Alene ID 83814

Linda Smith
545 Woodford
Missoula, MT 59801

W.R. Thomas
2513 Briggs
Missoula, MT 59803

Chris Kronberg
Joe Glassy
Missoula Chapter
Montana Environmental Information Center
Box 4251
Missoula, MT 59806

Fred Roach
Plains Clark Fork River Watchers
Box 905
Plains, MT 59859

Oliver R. Beach
Pend Oreille County Commissioners
Box 27
Cusick, WA 99119

Bonnie Reishus
President
Lower Clark Fork River Watchers
Box 114
Noxon, MT 59853

Curtis Horton
1848 Ernest
Missoula, MT 59801

Nep Lynch
Montana Wood Products Association
100 Fairway
Missoula, MT 59801

Jim Tolman
Mineral County Economic Development
Investment Corporation
Sawmill Gulch Road
Alberton, MT 59820

Burt Calkins
202 Snell Hill Road
Hope, ID 83836

James H. Carlson, RS
City-County Health Dept
301 W. Alder
Missoula, MT 59801

Warren Bickford
Montana Power Company
3005 Ottawa St.
Butte, MT 59701

Russell Tuckerman
221 East Alder
Missoula, MT 59801

Lum Owens
Owens, Inc
2313 Highway 2 East
Kalisepll, MT 59901

Jane Fritz
Fritz & Jensen Associates
Promotions, Productions, Public Relations
Box 1644
Sandpoint, ID 83864

Peter Neilsen
Clark Fork Coalition
Box 7593
Missoula, MT 59807

Jim Curtis
Bitterroot-Mission Group Sierra Club
Box 7315
Missoula, MT 59801

Mike Kadas
825 Cooley
Missoula, MT 59802

Roland L. Redmond
2131 Missoula Ave
Missoula, MT 59802

Vicki Watson
MEIC
Botany/Environmental Studies
University of Montana
Missoula, MT 59812

Mrs. Ronald C. McConnell
209 Burlington Ave
Missoula, MT 59801

Donald McGee
Stone Container Corporation
1730 West Central
Missoula, MT 59801

Greg Munther
Trout Unlimited
134 River Pines Road
Missoula, MT 59801

Doug Crandall
Box 1033
Livingston, MT 59047

David Kicklighter
Flathead Lake Biological Station
University of Montana
Bigfork, MT 59911

Tim Williamson
Clark Fork River Watchers
726 Clark Creek Road
Plains, MT 59859

Janet McMillan
League of Women voters of Missoula
2817 Juneau Drive
Missoula, MT 59801

Martha H. Newell
Box 7235
Missoula, MT 59807

Mike DeMarco
Panhandle Environmental League
P.O. Box 1021
Sandpoint, ID 83864

Tucker Hill
Montana Wood Products Association
P.O. Box 923
Helena, MT 59624

Ellsworth Brown, President
Bonner County Shoreline Property Owners
P.O. Box 1065
Sandpoint, ID 83864

575 copies of this public document were published at an estimated cost of 96¢ per copy, for a total cost of $552.00, which includes $552.00 for printing and $.00 for distribution.