Final

McLAREN PIT RESPONSE ACTION
ENGINEERING EVALUATION/COST ANALYSIS
NEW WORLD MINING DISTRICT
RESPONSE AND RESTORATION PROJECT

Prepared For:

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Northern Region
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EXECUTIVE SUMMARY

This document is the Final Engineering Evaluation and Cost Analysis (EE/CA) for the McLaren Pit Response Action, New World Mining District Response and Restoration Project. Maxim Technologies, Inc. (Maxim) prepared a Draft McLaren Pit Response Action EE/CA for the United States Department of Agriculture Forest Service (USDA-FS) and released the Draft EE/CA to the public for comment on July 27, 2001.

Written comments on the Draft EE/CA were received from the Greater Yellowstone Coalition and the Center for Science in Public Participation. Written comments on a previous internal review draft of the McLaren Pit EE/CA were received from the EPA, Montana DEQ, and Department of Interior National Park Service. Agency comments were considered and modifications were incorporated into the Draft EE/CA that was released to the public for comment.

Of the public comments received, both parties that provided written comments supported the selection of the preferred alternative as it was presented in the Draft EE/CA. There were no substantive comments that were received on the Draft EE/CA that compel a revision and re-release of the document. Therefore, this executive summary will serve as the Final EE/CA for the proposed Response Action at the McLaren Pit. The Draft EE/CA, which contains the detailed analysis of alternatives and supporting documentation, is incorporated by reference in this Final EE/CA. Comments received on the internal review draft and the public draft of the EE/CA are included in Appendix A to this document along with a response to each written comment received.

One additional comment was received from the Montana Department of Environmental Quality (MDEQ) on the Draft EE/CA. The MDEQ raised a concern on the statement of uncertainty in the Draft EE/CA that discusses the estimated reduction in loading to surface water in Daisy Creek if the alternatives considered were implemented. A clarification to the precision of the loading estimate is provided herein on page E-5.

The McLaren Pit Response Action EE/CA presents an engineering evaluation and cost analysis of response alternatives for response and restoration work proposed for the McLaren Pit and mine waste sources in the headwaters of Daisy Creek. The McLaren Pit is located in the New World Mining District (District), which is located in Park County, north of Cooke City, Montana. The primary environmental issues at the pit and headwaters of Daisy Creek are associated with impacts from historic mining and more recent mineral exploration activities. Human health and environmental issues are related to elevated levels of base-metal contaminants present in mine waste piles, open pits, acidic water discharging from mine openings, and transported and contaminated sediments.

The District is located at an elevation that ranges from 2,400 meters (7,900 feet) to over 3,200 meters (10,400 feet) above sea level and is snow-covered for much of the year. The District covers an area of about 100 square kilometers (40 square miles) with historic mining disturbances affecting about 20 hectares (50 acres). The topography of the District is mountainous, with the dominant topographic features created by glacial erosion. The headwaters of Daisy Creek are located at or near tree line.

The EE/CA was developed using the "non-time-critical removal" process that is outlined in the *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*, as amended in 1986, and the updated National Oil and Hazardous Substances Pollution Contingency Plan. The USDA-FS has identified the McLaren Pit Response Action to address the immediate threat to human health and the environment posed by open–pit mine workings and associated mine waste used to backfill the pit.

Outlying waste rock located near the portal of a mine adit at the northwest end of the McLaren Pit and wastes dozed over the hillside to the west of the pit are also identified for targets for this response action.

Response activities at the McLaren Pit represent the second response action proposed during this multi-year project. The McLaren Pit is the highest ranked mine waste source area in the District and accounts for the majority of the waste located on District Property. Two other nearby sources, the McLaren Pit Spoils and the McLaren Multicolored Dump, are ranked number 9 and number 17, respectively, in the priority listing of mine waste sites. These three waste rock source areas (Table ES-1) account for 154,911 cubic meters (202,616 cubic yards) or about 67% of the District's total waste rock on public lands.

Existing surface water, groundwater, and in-stream sediment data were reviewed and summarized to plan response activities and evaluate risks to human health and the aquatic environment. In addition, material samples collected from numerous waste rock dumps and pit backfill materials in the vicinity of the McLaren Pit were analyzed for heavy metals and acid-base characteristics. Heavy metals associated with these waste rock sources can affect human health through inhalation or ingestion. Metals may also be toxic to plant growth, preventing reestablishment of plant cover on the waste rock. Sediment containing heavy metals can erode from the waste rock, impacting surrounding land, and potentially enter surface water drainages. Water percolating through the waste rock can carry heavy metals into groundwater, which, in some areas, discharges to surface water. Percolation of water through waste rock lowers the pH, which promotes the solubility of most metals.

TABLE ES-1
Mine Dumps and Source Areas Included in McLaren Pit Response Action
New World Mining District Response and Restoration Project
McLaren Pit Response Action EE/CA

Waste Dump Name And Designation	Area hectares (acres)	Volume cubic meters (cubic yards)
McLaren Pit Waste Rock (DCSI-96-2)	3.35 (8.3)	136,495 (178,529)
McLaren Multicolor Dump (DCSI-96-1)	0.24 (0.6)	2,360 (3,087)
McLaren Spoils (mine wastes below the county road)	1.21 (2.98)	16,056 (21,000)
TOTALS	**4.8 (11.9)**	**154,911 (202,616)**

A comparison of waste rock, water, and in-stream sediment data with background concentrations and regulatory standards indicates seven metals are contaminants of concern at this site: arsenic, aluminum, cadmium, copper, iron, lead, and zinc. A human health risk evaluation based on *Risk-Based Cleanup Guidelines for Abandoned Mine Sites* (Tetra Tech, 1996) found that average arsenic concentrations in the selected waste rock dumps exceed human health guidelines based on a recreational use scenario. A comparison of metals levels to literature guidelines and state aquatic water quality standards indicates that aluminum, copper, iron, and zinc pose risk to organisms in the aquatic environment. In addition, arsenic, cadmium, and copper occur at phytotoxic levels in the McLaren waste dumps and mine backfill material.

The objectives of the McLaren Pit Response Action are:

- Minimize phytotoxicity resulting from high concentrations of copper and low pH in mine wastes present in the McLaren Pit area
- Prevent soluble metal contaminants or metals contaminated solid materials in the wastes from migrating into adjacent surface water courses, to the extent practicable.
- Reduce or eliminate concentrated runoff and discharges that generate sediment and/or metals contamination to adjacent surface water and groundwater, to the extent practicable.
- Prevent potential exposure through the food chain to metal contaminants from acid discharges, waste rock and mineralized bedrock to the extent practicable.
- Prevent or limit future releases and mitigate the environmental effect of past releases of hazardous substances, pollutants or contaminants.
- Identify in a preliminary fashion the applicable or relevant and appropriate requirements (ARARs) for response actions and evaluate how each alternative complies with ARARs.
- Take into consideration the desirability of preserving the existing undeveloped character of the District and surrounding area when selecting response and restoration actions.

Cleanup goals were identified for metals posing risk at the site. Groundwater and surface water goals are the State of Montana water quality standards. Solid media goals are based on in-stream sediment and soil guidelines found in the literature.

After screening a variety of response technologies and process options, several alternatives were developed for detailed analysis. The alternatives were evaluated for effectiveness, implementability, and cost, and are listed in Table ES-2. In general, waste consolidation, surface water diversion, run-on control, erosion control, and revegetation were included as elements in all the alternatives except for No Action.

The alternatives evaluated present a range of effectiveness. The overall effectiveness of the No Action alternative is poor. Under existing conditions, metals will continue to migrate from the waste dumps at the headwaters of Daisy Creek into surface water and groundwater. While slopes are stable in the McLaren Pit as a result of Crown Butte Mines, Inc.'s (CBMI) reclamation, the unvegetated McLaren Spoils and Multicolor Dump will continue to erode unabated into Daisy Creek tributaries. The McLaren Mine adit discharge will continue to flow through the Multicolor Dump, leaching additional metals into surface water. The declining vegetation condition and cover in the McLaren Pit will likely continue to decline over time as acid conditions in the regraded and amended surface soil worsen, causing a reduction in vegetation cover and vigor.

In terms of reducing contaminant seepage and migration from the McLaren Pit, Alternative 3C is the most effective of the alternatives evaluated. This is because all of the wastes are below a geomembrane liner, protected from infiltrating waters. A soil cap placed over the waste promotes vegetation growth in this alternative. Alternatives 3B and 3D are as effective or only somewhat less effective than Alternative 3C, as most of the wastes are protected under the liner, and the remainder of the waste is completely neutralized, amended, and capped. Alternative 3A is much less effective because the soil cap, although

providing for vegetation reestablishment, does not decrease either the rate of infiltration nor substantially diminish the risk for contaminant migration out of the waste rock.

TABLE ES-2
Response Action Alternatives
New World Mining District Response and Restoration Project
McLaren Pit Response Action EE/CA

Alternative	Response Technology/Process Options
1. No Action	None
2A. In-Situ Treatment of Select Waste with Shallow Amendment	Consolidation of local wastes onto the McLaren Pit, regrading and compaction of waste in-situ, amendment of the upper 30 cm of the regraded surface with lime, addition of nutrients, and revegetation on a waste rock surface.
2B. In-Situ Treatment of Select Waste with Deep Amendment	Consolidation of local wastes onto the McLaren Pit, regrading and compaction of waste in-situ, amendment of consolidated wastes and the upper 0.5 to 1.0 m of the regraded surface, addition of nutrients, and revegetation on a waste rock surface.
2C. In Situ Treatment of All Wastes	Excavation of all unconsolidated waste rock, lime amendment of all waste rock, placing waste back into the pit, compaction, regrading, addition of nutrients, and revegetation on a waste rock surface.
3A. In-Situ Treatment with Soil Cap	Consolidation of wastes onto the McLaren Pit, regrading waste in-situ, shallow amendment of waste rock (upper 30 cm), constructing a soil cover or cap, addition of nutrients and revegetation.
3B. In-Situ Treatment with Geomembrane Cover and Amended Waste Rock Cap	Consolidation of wastes onto the McLaren Pit, regrading waste in-situ, constructing a geomembrane cover with a drain layer and an amended waste rock cap, addition of nutrients, and revegetation on a waste rock surface.
3C. In-Situ Treatment with Geomembrane Cover and Soil Cap	Consolidation of wastes onto the McLaren Pit, regrading waste in-situ, constructing a geomembrane cover with a drain layer and soil cap, addition of nutrients, and revegetation.
3D. In-Situ Treatment with Geomembrane Cover, Composite Waste Rock and Soil Cap	Consolidation of wastes onto the McLaren Pit, regrading waste in-situ, constructing a geomembrane cover with a drain layer and a composite amended waste rock and soil cap, addition of nutrients, and revegetation on a soil surface.
4. Disposal of McLaren Waste Rock in On-Site Repository	Partial removal (80%) of waste rock to the SB-4B repository; closure of the removed wastes with a composite cover, a bottom liner, and a leachate collection system; closure of the pit and remaining waste with Alternative 2 or 3.

The overall effectiveness of Alternative 2C, a totally amended waste rock cover, may be as effective as 3B in controlling contaminant migration out of the McLaren wastes. This is true, not because it eliminates seepage, but rather because the seepage should be near neutrality and will not contain significant metals concentrations. Alternatives 2B and 2A are progressively less effective because smaller volumes of waste material are amended, the seepage rate remains about the same as existing conditions, and non-amended wastes will likely still release contaminants to the environment. From this point of view, with the exception of the benefits of a soil cover, Alternative 3A will probably be little more effective than Alternative 2A.

Alternative 4, removal of 80% of the wastes to the SB-4B repository, is effective from the point of view that the source material in the McLaren area is removed and placed in a proper storage facility. The remaining effectiveness is dependant on Alternatives 2 or 3, which are required to close the remaining wastes in place as a cap over the underlying bedrock deposit.

The greatest risk to human health is exposure to dust and direct contact with wastes that result from recreational uses of the lands underlain by waste rock. Alternatives 3A, 3C, and 3D call for a soil cap on the waste rock, which clearly offers the greatest reduction of risk to human health of all the alternatives evaluated by providing a barrier layer to direct contact with the wastes. The remaining alternatives, except for No Action, include a vegetated surface on the waste rock areas, which reduces the potential for further erosion and migration of contaminants from source areas by stabilizing the wastes. All of the alternatives (except No Action) will reduce human health risks by consolidating the wastes in the McLaren Pit and reducing the surface area of the wastes by 30%.

The greatest risk to the environment comes from degraded surface and groundwater quality and its impact to aquatic life. A 30% reduction in the surface area of waste exposed through consolidation of the outlying wastes in the pit will lessen exposure of the environment to contaminated media. However, none of the alternatives will result in a significant improvement of surface or groundwater quality in the Daisy Creek or Stillwater drainages. None of the alternative actions proposed will achieve compliance with surface water standards. The HELP and load modeling studies suggest that the unconsolidated McLaren Pit wastes only contribute 10-20% of the total load to Daisy Creek. Even a reduction of the full 20% will not bring surface water in Daisy Creek into compliance with established surface water standards.

It should be noted that the uncertainty of predicting loading reductions to Daisy Creek that can be attributed to an alternative may be high. The models used to estimate impacts from mining wastes present at the headwaters of Daisy Creek are based on several derived and/or calculated values. These analyses required calculation of several significant climatic variables, including precipitation and mean daily temperature, and estimation of several other parameters using limited data sets. Although both professional judgment and experience were used in deriving these relationships, results of the modeling should be viewed as general results only.

Failure to meet Montana surface and groundwater standards results principally because waste rock is not the only source of contaminants in the headwaters of Daisy Creek. It has been demonstrated that naturally occurring sulfide minerals in bedrock are a major source of metals and acid rock drainage. There are other sources as well, such as groundwater migration and transported sediment. Cleaning up or preventing seepage from wastes at the headwaters of Daisy Creek does not address the larger sources in the Daisy Creek drainage.

None of the alternatives reduce the volume of the contaminants but all the alternatives, except No Action, reduce the mobility of contaminants to some degree. Alternatives 2A, 2B, 2C, 3A, 3B, and 3D rely on treatment of wastes with a neutralizing amendment in varying degrees to reduce mobility. Alternatives 3A, 3C, and 3D also use a cover soil to reduce mobility. Alternatives 3B, 3C, and 3D use a geomembrane liner as a part of a composite cover system to reduce mobility. The greatest reduction in mobility through treatment is achieved by Alternative 2C. Reduction in plant toxicity through treatment or soil placement is achieved by all the alternatives, except for No Action.

All the alternatives are implementable, and technically and administratively feasible. Essential project components such as equipment, materials, and construction expertise, although distant from the site, are available. However, there is the potential for incomplete mixing of neutralizing amendments for those

alternatives where mixing is required for the alternative to be effective, especially Alternative 2C. Costs of the various alternatives are summarized in Table ES-3.

None of the alternatives considered in this evaluation will meet Montana's B1 standards for surface water quality in Daisy Creek. However, all the alternatives evaluated provide some measure of mitigation to man-caused mining impacts. Alternative 2A, which involves simple consolidation of outlying wastes, amendment of the upper 30 cm of waste rock on the McLaren site, and revegetation, will do much to reduce the impact of erosion of sediments into Daisy Creek and would reduce the total area of waste rock exposed on the McLaren site.

Given what is known about the source of metals impacts in Daisy Creek, the fact that natural sources contribute a considerable metals load to the creek via groundwater and surface water pathways, and the difficult environmental conditions, eliminating metals impacts from mining related activities will not allow achievement of water quality standards. However, short of water treatment, Alternatives 3B, 3C, and 3D would be the most effective at reducing mining related metals impacts. Each of these sub-alternatives uses a geomembrane liner in different positions in a composite cover system to confine the wastes and reduce the mobility of contaminants.

Of the alternatives considered, Alternative 3C is the preferred alternative because all wastes materials would be protected from contact with surface water below a liner, and would likely achieve the greatest reduction in potential loading to Daisy Creek. Alternative 3C will meet most project ARARs with the exception of surface water and groundwater quality.

TABLE ES-3
Summary Cost Analysis of Response Action Alternatives
New World Mining District Response and Restoration Project
McLaren Pit Response Action EE/CA

Alternative	Cost (millions)
1. No Action	**$ 0.06**
2A. In-Situ Treatment Shallow Amendment	**$ 0.91**
2B. In-Situ Treatment Select Waste with Deep Amendment	**$ 1.38**
2C. In Situ Treatment of All Wastes	**$ 6.26**
3A. In-Situ Treatment with Soil Cap	**$ 1.84**
3B. In-Situ Treatment with Geomembrane Cover and Amended Waste Rock Cap	**$ 4.75**
3C. In-Situ Treatment with Geomembrane Cover and Soil Cap	**$ 4.68**
3D. In-Situ Treatment with Geomembrane Cover and Composite Waste Rock and Soil Cap	**$ 4.26**
4. Disposal of McLaren Waste Rock in On-Site Repository	**$ 11.2 to $ 15.1**

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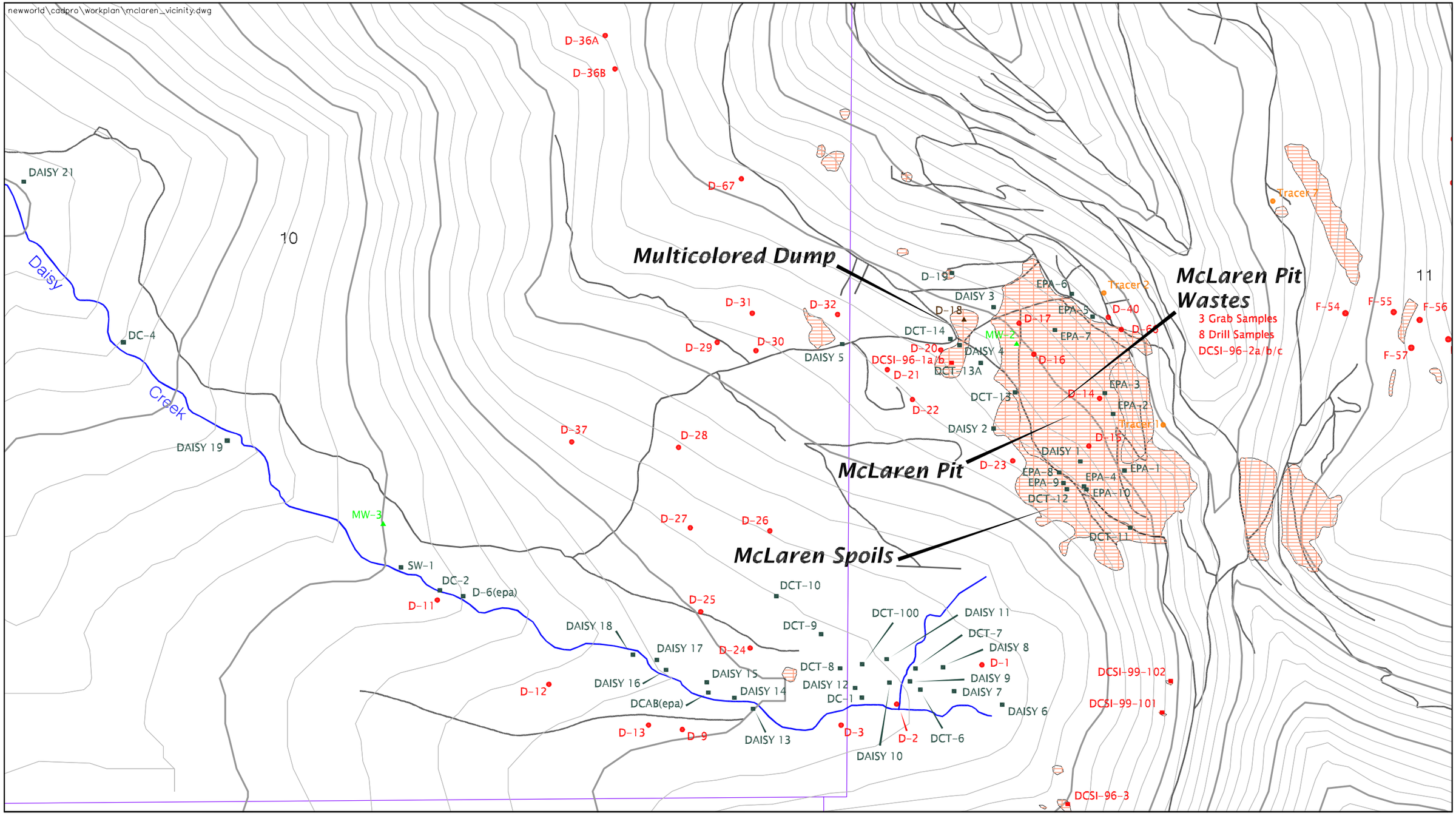

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Data Source: Unimproved roads and surface water sample locations from Gallatin National Forest Interagency Spatial Analysis Center, (October 27, 1999)

Cartographic feature files obtained from Montana State Library, Natural Resource Information System.

Surface water stations shown on this figure include most stations where samples were collected for previous investigations conducted by MDEQ, USDA-FS, EPA and Crown Butte Mining. Omissions of other data sources is not intended. Water quality data is available for many of these stations in the project data base.

- Section Line
- Unimproved Road
- National Forest Boundary
- Mine Dumps
- Adit
- Monitoring Well
- Stream
- Spring, Seep, Or Other
- Tracer Station
- Waste Dump Sample Location

Vicinity Map
McLaren Pit
Response and Restoration Project
Cooke City, Montana
FIGURE 3

APPENDIX A

RESPONSE TO COMMENTS RECEIVED ON THE DRAFT McLAREN PIT RESPONSE ACTION ENGINEERING EVALUATION/COST ANALYSIS

July 2001

New World Mining District Response and Restoration Project

Response to Significant Comments
McLaren Pit Response Action Engineering Evaluation/Cost Analysis

Introduction

The following table presents the USDA Forest Service's response to comments received on the McLaren Pit Response Action Engineering Evaluation/Cost Analysis (EE/CA). Comments were received on two drafts of the EE/CA. The first draft, an internal review draft, was released in April 2001 to the New World Mining District Response and Restoration Project agency cooperators: the Department of Interior, represented by the National Park Service; the Environmental Protection Agency (EPA), represented by Region 8; and the Montana Department of Environmental Quality. Comments on the internal review draft were received in May and June 2001. These comments were considered, and most of the comments directly addressed in the subsequent public release of the draft EE/CA that was issued in July 2001.

Two organizations provided comments on the public draft document: The Greater Yellowstone Coalition and the Center for Science in Public Participation. Since the comments received from these two organizations supported the information presented in the draft EE/CA, and because significant changes to the draft EE/CA would not be required as a result of these comments, the following response to significant comments represents substantiation of information presented in the public draft. The table presents the entire comment received from each organization, with the comment presented in the left-hand side of the table, and the associated response presented in the right hand side of the table. The letters to the left of each comment/response are only used to index and track the comment and associated response. Comments received from the EPA on the internal review draft were primarily editorial, were fully incorporated into the public draft, and do not have need of an associated response.

Department of Environmental Quality Comments	*Response*
Department of Environmental Quality Comments Internal Review Draft – McLaren Pit Response Action EE/CA, April 2001 The Department of Environmental Quality has reviewed the draft EE/CA for the McLaren Pit Response Action and would like to offer the following comments and concerns to the Forest Service.	
A DEQ believes that the model used in the EE/CA understates the contaminant contribution of the McLaren Pit to the metals load in Daisy Creek. The draft EE/CA notes that the HELP model and the model for geochemical mass loading to Daisy Creek were constructed using several synthetic or derived values and that results should be viewed as general results only. The draft EE/CA offers numerous disclaimers for the data generated by the model, but then adopts its conclusions. The range of variation possible utilizing the synthetic input parameters is unknown and therefore the amount of reduction of contaminants to Daisy Creek is also unknown. One example demonstrates that there may be a significant difference between measured values and derived values. Table 3-10 shows a summary of constituent loads to groundwater. The Table compares modeled load using data with the load calculated by Nimick as part of his Daisy Creek investigation. The differences are nearly double. If Nimick's calculations are used as a correction factor applied to the modeled results, the McLaren Pit seepage could actually account for 40% or more of the direct inputs to Daisy Creek (rather than the 10-20% calculated from the model). Given the range of variation for other measured parameters compared to derived values, and when considering the contribution from groundwater that originates in McLaren Pit, there may be reason to conclude the McLaren Pit contaminant contribution in Daisy Creek may be even higher.	A The USDA Forest Service acknowledges that the models used to predict loading from the McLaren Pit wastes to Daisy Creek contain uncertainty. These uncertainties are explained both in the text of the EE/CA and in the appendices that contain the supporting models. However, as explained in the reports placed in the EE/CA appendices that describe the detailed modeling results, there are several lines of evidence that suggest the modeling results are within a reasonable range of actual, but difficult to measure, parameters. Because the modeling results, along with the US Geological Survey results on Daisy Creek loading, are the best tools available to make estimates of the contributions to loading from the pit, the USDA Forest Service has adopted the results as a tool in the evaluation of the alternatives. The US Geological Survey results in Daisy Creek below the 5,000 foot monitoring station are more clear than the modeled loading results. Geochemical relationships present in the USGS data indicate that chemical equilibrium processes are active in the stream as metals in solution attempt to come into equilibrium with precipitated solid phases. Concentrations of contaminants in Daisy Creek below 5,000 feet are likely controlled by equilibrium reactions and not by the cumulative load of upstream contaminant sources. Therefore, removing some of the metal load point sources from the headwaters of Daisy Creek may have little effect on water quality in the lower reaches of Daisy Creek at distances greater then 5,000 feet downstream. With a reduction of 50% in copper concentrations, aquatic standards in Daisy Creek will not be met. Reductions of up to 95% would be required to meet aquatic standards in Daisy Creek and the Stillwater River.

	Department of Environmental Quality Comments		*Response*
B	The Daisy Creek Load Evaluation notes that other point and non-point sources account for contaminant load to Daisy Creek in addition to the load from the McLaren Pit. Some of these other sources are assumed to be groundwater inputs. DEQ believes that any groundwater that is contaminated by leachate through McLaren Mine waste should be accounted for as part of the load from the McLaren Mine. The calculation of chemical mass loading to Daisy Creek by the model does not account for the leaching of chemical contaminants from the mine waste to groundwater that later reports to Daisy Creek as part of the contaminant load. The model does not attempt to calculate the reduction in contamination to groundwater that will result if the various alternatives are applied to the mine waste at McLaren mine though it is assumed that the different response alternatives will have a greater or lesser impact on reducing groundwater contamination. Contamination of groundwater by mine waste is a concern of DEQ and reduction in contamination that reports to groundwater should be part of the selection of a preferred alternative. For that reason, an alternative that combines in situ treatment and capping may be the most appropriate remedy.	B	The model presented in the draft EE/CA accounts for the total load contribution from the McLaren Pit, including leachate generated by infiltration percolating through pit wastes. The model does not account for contaminants present in groundwater that result from contaminated bedrock sources. These contaminants may be in contact with pit wastes during those times when groundwater levels are high and rise above the base of the pit. The USDA Forest Service has installed a monitoring well network in the McLaren pit area that will attempt to better define the interactions between groundwater in the pit wastes, groundwater in shallow alluvium and shallow bedrock downgradient of the pit, and groundwater quality conditions upgradient of the pit. Monitoring water levels and water quality over the next several years in these strategically placed wells will provide the necessary data needed to evaluate these relationships.
C	DEQ agrees that alternative 2C and alternatives 3B through 3D offer the greatest opportunity for controlling the releases from the McLaren Pit. While DEQ agrees that these alternatives may be effective in controlling releases, we have concerns about the cost estimates that have been developed, in particular for alternative 2C. Alternative 2C would involve a total liming of the McLaren pit waste material including excavating the material, mechanically mixing it with lime, and replacing the material into the pit excavation. In order for this process to be effective it would be necessary to use a lime source that contains a mixture of calcium oxide or hydroxide and calcium carbonate. The oxide-hydroxide component is necessary so as to raise the pH up to the 11 range in order to precipitate metals from the soil solution and form less soluble carbonate minerals. DEQ has utilized this technique in the past. The Reclamation Research Unit has developed a large	C	The USDA Forest Service reevaluated the cost estimate prepared for Alternative 2C in the Internal Review Draft, and adjusted the estimated cost to procure, deliver, and mix lime amendment downward by 50%. The original estimated cost was based on the cost of using calcium oxide product rather than lime kiln dust. The revised cost estimate included in the Draft EE/CA reflects this lower cost, assuming a source of lime kiln dust approximately 100 miles distant from the site is used.

	Department of Environmental Quality Comments	*Response*
	body of information about this technique at Montana State University. On past projects of this nature, DEQ has utilized lime kiln dust from sources around the state including Montana Limestone Company in Warren, Montana. The lime kiln dust at Warren contains the desirable lime species (CaO, CaOH, CaCO3). This material is located approximately 100 miles east of the New World Mining District. DEQ has purchased this material in the past for $6 per ton. We have paid an average of $0.14 ton/mile to have this lime kiln dust delivered to locations around the state. The historic cost of mixing mine waste with lime utilizing a pug mill and placement of the waste utilizing heavy equipment was approximately $4.76/CY. Excavation, lime mixing and placement utilizing heavy equipment including paddle wheel scrapers, dozers, and excavators have cost $3.10/CY. DEQ realizes that the logistics of mobilizing equipment, and hauling lime to the isolated New World District are complex and that a premium would likely be required over what DEQ has historically spent to perform similar work elsewhere. The USFS will have to determine if alternative 2C will be the most desirable alternative in terms of protecting human health and the environment, meeting ARARs, and satisfying the other evaluation criteria. It seems unlikely that the actual cost for this will be as high as the estimated cost in the draft EE/CA. Consequently, DEQ believes that alternative selection should not be based on the cost estimate for alternative 2C as presented in the draft EE/CA.	
D	The draft EE/CA indicates that even under a cap non-amended wastes will likely be in contact with groundwater during periods of high flows. Since the EE/CA does not speak to groundwater contaminated by leachate from the McLaren Pit (which then reports to Daisy Creek), the USFS may want to consider combining alternative 2C with one of the alternative 3 capping alternatives (3B through 3D). Amending all the wastes under the cap would be the most protective alternative. As a more complete remedy, a capping / treatment alternative would counteract any tendency for material under the cap to leach under saturated	D Other alternatives considered in the EE/CA included full treatment of the wastes with a lime amendment, and removal to a repository site in the Soda Butte Creek drainage. Both of these alternatives were considerably more costly to implement than the proposed alternative, and yet neither were thought to enable a Response Action that could meet Montana's B-1 standards in Daisy Creek. During the decision making process, consideration was given to forming a combination of alternatives considered in the EE/CA, particularly treating all the wastes and then capping the treated wastes using Alternative 3C. This combined alternative would

Department of Environmental Quality Comments	*Response*
conditions. Capping the treated waste materials may also eliminate the need to retreat the waste at some later time.	provide some additional benefit to the Response Action by allowing a certain factor of safety in the event the cap alone did not prevent the wastes beneath the cap from becoming saturated by either vertical or lateral flow through the wastes. In addition, if the cap ever failed due to wear or puncture, the amended wastes would have a much lower propensity to leach metal contaminants than non-treated wastes. The USDA Forest Service decided not to select a combined alternative involving treatment of the wastes for several reasons. Wholly treating the wastes on-site would involve several logistical and constructablity difficulties that would likely add several years to the construction schedule. Logistical problems would include hauling and staging a large quantity of lime amendment in a secure location and manner that keeps the amendment dry and prevents the public from exposure to the amendment. Excavating the waste rock in the pit to a depth of as much as 20 feet would also be required, and stockpiling that waste so that it can be mixed and placed back in the pit offers some construction sequencing issues. Intermediate construction controls would also be required to secure the site for winter shutdown during the several winters that the pit would be open during the amendment process. These logistical and construction difficulties, along with an estimated additional cost of $4.3 million to treat the wastes, can not be justified in light of the anticipated small benefit to water quality that might be gained by treating the waste. It is the opinion of the USDA Forest Service that, if post removal monitoring indicates the Response Action is not performing to the level expected, the preferred Alternative 3C will not inhibit the implementation of additional removal efforts. Additional efforts that would be linked to improving the isolation of mining-related wastes may involve constructing groundwater cutoff walls upgradient of the pit or constructing reactive barrier walls downgradient of the pit, as well as other potential alternatives that target reducing metal contaminants present in surface water and groundwater that result from man-induced impacts.

	Department of Environmental Quality Comments		*Response*
E	The statement is made in a couple of sections of the draft EE/CA that a portion of the impacts to Daisy Creek, and the impacts to groundwater near McLaren Mine can be attributed to natural acid rock drainage. DEQ has not seen positive scientific proof that natural causes account for any of the contamination to Daisy Creek, or groundwater in the vicinity of the McLaren. The draft EE/CA contains statements acknowledging that groundwater has not been investigated sufficiently in the vicinity of the McLaren Pit to identify specific sources of contamination and their relative contributions.	E	Additional information regarding natural acid rock drainage was included in the draft EE/CA in Section 3.6. The references cited include two peer reviewed papers on the subject. The USDA Forest Service, along with others familiar with the natural ferricrete deposits in the New World Mining District (including the USGS) have stated numerous times and in numerous venues that natural acid rock drainage impacts District waters.
F	The draft EE/CA also states that transported and deposited wastes derived from McLaren Pit will be left in the floodplain of Daisy Creek. USFS should consider steps that eliminate all the adverse impacts of historic mining activities before trying to make the case that any applicable standard is unattainable due to natural conditions. Removal of stream sediments, removal of wastes from the floodplain, even stream relocation may be necessary components of a future response in order to sufficiently change the contaminate levels in Daisy Creek to meet applicable standards.	F	The draft EE/CA in Section 5.1 (Scope of the Response Action) explicitly states that sediments are not being addressed under this response action because the McLaren Mine adit discharge and elevated levels of contaminants in other natural discharges will continue to contaminate sediment in Daisy Creek and the upper portion of the Stillwater River. Only when all discharge sources are controlled in the headwaters of Daisy Creek will a sediment response action be considered and evaluated.
G	The draft EE/CA makes some strides in trying to narrowly scope the action. But, the scoping is not reflected in the ARARs discussion (where certain requirements may be "scoped out").	G	The USDA Forest Service did use the scoping process to eliminate ARARs that did not apply to the Response Action. If some of the State of Montana ARARs are not applicable or relevant and appropriate, these will be removed from the ARARs discussion that will be documented in the Action Memorandum for the McLaren Pit Response Action.
H	The standard for iron in surface water and groundwater is enforceable as a human health based standard. The standard is based on the extent that iron contamination interferes with the beneficial use of water. Iron concentrations higher that 300 micrograms/liter are not allowed unless there is site specific data that demonstrates that beneficial uses are not impacted. See WQB-7.	H	The standard for iron was changed in the draft EE/CA as a result of this comment.

	Department of Environmental Quality Comments		*Response*
I	DEQ utilizes risk-based cleanup standards to identify the contaminants of concern, evaluate how much to clean up and determine when the cleanup is complete. The draft EE/CA uses a streamlined risk assessment to identify contaminants of concern, but it is unclear what standards are being set for the cleanup. The fact sheet from the recent public meeting says the USFS groundwater and surface water goals are the State of Montana water quality standards. Solid media goals are based on in-stream sediment and soil guidelines found in the literature. The draft EE/CA discusses these points but never ties them into actual targets for the response.	I	The draft EE/CA uses a streamlined risk evaluation that follows EPA guidance for non-time-critical removal actions. The goals that are set in Section 5.0 of the EE/CA are based on both human health and ecological standards that have been used on other, similar, abandoned mine sites in Montana, as well as applicable water quality standards. These risk based goals are evaluated in the detailed analysis of alternatives under the headings "Removal Action Objectives" and Overall Protection of Human Health and the Environment". The targets for the response action for surface water and groundwater are WQB-7 standards. Cleanup guidelines for waste dumps consolidated in the pit are the Human Health guidelines listed in Table 5-3 of the EE/CA. Reclamation guidelines and phytotoxicity guidelines will be used for topsoil and fill material needed to construct the preferred alternative.
J	The draft EE/CA says in a number of places that water quality standards will not be met. It would not be appropriate to select a remedy that clearly does not meet ARARs. However, it is not clear from the information presented in the EE/CA whether ARARs will be met or not. Temporary water quality standards have been adopted; these are the water quality standards that apply in the near term. One of the purposes of adopting temporary standards is to allow the USFS to take steps that will incrementally improve water quality. For purposes of selecting the remedy, it would be useful to see a discussion of how this response complies with temporary standards and how the result of this response will move us from the temporary standards to meeting applicable standards when the temporary standards expire.	J	Temporary water quality standards are currently being met in Daisy Creek under existing conditions. A statement to this end was written into the draft EE/CA in Section 7.0 where ARARs are discussed for each of the alternatives evaluated. For each of the alternatives, a statement was also made on how the alternative will effect water quality improvements in Daisy Creek and then how ultimately the alternative will perform in meeting B-1 standards. It is clear in the discussions presented in the draft EE/CA that B-1 standards will not be met under any of the alternatives considered.
K	Non-degradation analysis does not generally apply to the treatment or encapsulation in place of a waste source with existing groundwater contamination under it. Non-degradation analysis applies to any activity of man resulting in a new or increased source which may cause degradation, so it would not apply to any degradation caused by natural sources. The analysis applies on a parameter-by-parameter basis. If non-deg applies.	K	The USDA Forest Service agrees that non-degradation does not apply to treatment or encapsulation in place. Non-degradation requirements were removed from the list of ARARs in the draft EE/CA.

	Department of Environmental Quality Comments		*Response*
	then no action can be taken which increases the contamination in the receiving water above standards. The discussion of non-degradation in the EE/CA needs to fully analyze the criteria set out in ARM §§ 17.30.705, 17.30.708, 17.30.715 and 17.30.716, before concluding that non-degradation cannot be met. Again, it would be inappropriate to select a response when ARARs cannot be met.		
L	While hazardous waste ARARs do not apply to mine waste, solid waste ARARs do apply. Mine and mill wastes are not excluded from regulation under the Montana Solid Waste Management Act. The exclusion cited in the draft EE/CA is for operating (and permitted) mine facilities.	L	The Federal solid waste regulations (40 CFR Part 258) are not applicable because, under 40 CFR § 258.1(c), these criteria are only for new disposal units. This removal action will only consolidate mining wastes, primarily overburden material, in an in-situ waste pile, and not create a new solid waste unit. In addition, the siting and location regulations are not relevant and appropriate because no siting of a new unit is taking place. Nevertheless, certain solid waste regulations concerning covering waste piles and runon/runoff controls have been determined to be relevant and appropriate in the handling of these wastes. The State regulations concerning final cover requirements, runon/runoff controls, and monitoring that are more specific than the Federal regulations are applicable to the Response Action. To some extent these regulations are superceded by State mine reclamation regulations, which are more specific. Implementing Alternative 3C for this Response Action at the McLaren Pit will comply with the requirements for final cover, runon/runoff controls, and monitoring.

	National Park Service Comments		*Response*
A	Overall, the EE/CA appeared to do a good job at meeting the purpose and objective and covering the pertinent issues related to selection of a remedial alternative for the McLaren Pit (i.e. screen, develop and evaluate potential response alternatives).	A	Comment acknowledged.

	National Park Service Comments		*Response*
B	Although the NPS sees considerable technical merit to the argument made by USDA Forest Service and its Contractor Maxim Technologies that "natural sources contribute a considerable metals load do the creek via groundwater and surface water pathways", there are other considerations relating to various contaminant sources and transport and movement of metal COC's in making this argument that were not discussed in this document. NPS believes that based on the data presented, the limited contaminant loading to Daisy Creek attributed to McLaren Pit (10 to 20% range) cannot be stated conclusively or without considerable qualification. For example:	B	The USDA Forest Service agrees that the data presented in the EE/CA does not definitively resolve the actual metals contribution of the McLaren pit wastes to Daisy Creek. See also the response to DEQ comment A.
C	1. The ability of sulfides to generate acid mine drainage and metal loadings to surface and groundwater has a lot to do with the total exposed surface area of the sulfides to an oxygenated atmosphere. Conditions for maximizing acid generation and metal loading of subsurface waters is greatly enhanced by fluxuating water table in a mass of pulverized or finer ground waste rock such as that found only in the McLaren Pit and the nearby McLaren Spoils and Multicolored Dump. The exposed surface area of sulfide minerals (e.g. pyrite) offering favorable areas for acid generation in a mass of waste rock would be expected to be equal to or possibly greater than the much larger areas of fractured country rock of low effective porosity that are ore or sulfide bearing and are also characterized by conditions of alternating oxygenation and saturation as the water table fluctuates. In the latter case, redox reactions generating acid occur most readily to sulfides exposed along the walls of the factures. Given the limited groundwater information surrounding McLaren Pit, it is difficult to assess if the metals loading to Daisy Creek via the groundwater pathway from the Pit may in fact be significant. This question went largely un-addressed to the modeling discussion due to a lack of site data in this area.	C	The USDA Forest Service agrees with this statement in general. The natural bedrock sulfide deposits are highly fractured, have seven times more pyrite minerals than the pit wastes, and are subject to extensive wetting and drying cycles resulting from the fluctuation of over 60 feet in water level rise and fall annually. The USDA Forest Service has installed a monitoring well network in the McLaren pit area that will attempt to better define the interactions between groundwater in the pit wastes, groundwater in shallow alluvium and shallow bedrock downgradient of the pit, and groundwater quality conditions upgradient of the pit. Monitoring water levels and water quality over the next several years in these strategically placed wells will provide the necessary data needed to evaluate these relationships.
D	2. Maxim indicates that elimination of impacts from unconsolidated McLaren wastes may provide as much as 10-20% decrease in contaminant concentration in the upper 5,000 feet of	D	The 10 to 20% reduction in loading from the McLaren pit would be produced by cutting off the source-pathway mechanism, not precipitation and absorption. Precipitation and absorption are

	National Park Service Comments		*Response*
	the Daisy Creek drainage. They attribute this to precipitation and adsorption of metal contaminants and suggest there would be no improvement to downstream water quality in terms of dissolved contaminants from a McLaren Pit source. This may be an accurate characterization of the water quality based on chemical equilibria and the preferential partitioning of base metals to sediments. However, there was no discussion of the remobilization of those adsorbed metals through desorption or physical transport of the contaminated sediments to downstream areas during periods of high flow. Nor was there any discussion as to what impacts such movement could have to both the sediments and water quality in downstream areas. It would seem that the influx of metal laden sediment would have some effect on the chemical equilibria and therefore chemical concentrations of dissolved metals in the downstream waters not to mention impacts to benthic aquatic life.		occurring in the streambed below 5,000 feet, and these mineral phases are fairly stable. Since the scope of the removal was limited to cutting off the source-pathway mechanism in the pit wastes, no discussion of transport mechanisms in Daisy Creek were included in the EE/CA. Following implementation and monitoring of the removal action, these other mechanisms of contaminant release may become more important in terms of water quality achievement. The USDA Forest Service will consider the implications of these mechanisms for potential future response actions in the drainage.
E	Also, with the exception of ferricrete (Fe & Al), there has been no previous mention of the other forms of chemical precipitates anticipated to remove metals from surface water. It cannot be ascertained if other metals of concern in surface water that exceed MDEQ standards are being removed by precipitation. No analyses of ferricrete were provided to indicate other metals of concern in surface water (Cd, Cu, Pb, and Zn) substitute in a substantial amount in the crystal structure or are co-precipitated and are thus removed in this manner.	E	An analysis of ferricrete was included in the draft EE/CA as a result of this comment. Aluminum, copper, and iron are the principal metals bound into ferricrete based on total concentrations measured in numerous samples collected in the District.
F	This would seem to suggest that all/nearly all metals going into solution in the waters passing through the McLaren Pit, eventually make it down the mountain in one form or another. Only an effort to stop this redox process from occurring at the source would seem to be a means of preventing this process from impacting downstream areas in one form or another. If the water table continues to fluctuate within the rock waste after a cap is added, metal laden groundwater will likely continue to impact Daisy Creek from the McLaren Pit via fracture flow through the bedrock.	F	The USDA Forest Service recognizes that the wastes need to be dry to effectively eliminate leachate from leaving the pit. The preferred alternative is expected to effect this result, although if groundwater is found to saturate the wastes below the liner, cutoff of lateral flows may be required before the goals and objectives of the alternative are met. Therefore, through monitoring of the effectiveness of the capping system, the USDA Forest Service will address any future response actions that may need to be taken in the event these goals and objectives are not met.

	National Park Service Comments		*Response*
G	3. There is no discussion of anticipated groundwater recharge from areas up the mountain to the north and east in the direction of the McLaren Pit Highway. Lateral groundwater recharge to the McLaren Pit Waste Rock from melting of a presumed yearly snow pack in this upgradient area could generate considerable recharge to fractured bedrock and induce lateral flow through any waste rock filling the pit. The introduction to the Help Model states that the purpose of the investigation was to determine if the potentiometric surface changes in the pit were the result of groundwater inflow or the direct result of infiltration. Although it was generally concluded that infiltration could be largely responsible for the observed changes in the potentiometric surface, the conclusion was highly qualified and stated very qualitatively. It would seem that a water budget analysis for the area upslope from the pit addressing recharge to groundwater and any surface runoff to the pit area may have been an important additional consideration and complementary to the Help Modeling effort in determining contributions to changes in the potentiometric surface under the pit. Some presentation in graphical form of the conceptual problem of pit recharge using a hydrostratigraphic x-section from the headwaters of Daisy Creek through McLaren Pit and up the mountain to the approximate location of the groundwater divide beneath the peak could have better illustrated the strengths and/or weakness of the help model results.	G	The utility of a water balance model to augment the HELP modeling is acknowledged. This approach was discussed at several technical meetings prior to the development of the HELP modeling and loading analysis approach that was presented in the draft EE/CA. Some of the problems presented by the water balance method, as discussed by the technical team, included the small size of the drainage basin upgradient of the pit wastes, the presence of steep, bedrock exposed slopes in the majority of the drainage area upgradient of the pit, and the lack of data on snow pack characteristics in the upgradient area. Since the uncertainty associated with each of these factors was not less than that associated with the HELP modeling approach, a water balance calculation was not made. The USDA Forest Service appreciates, though, the technical value of the comment made.
H	In summary, it is difficult for NPS to support the more limited treatment alternatives (more limited waste amendments) and seemingly less protective alternatives reflected in alternatives 2A, 2B or 3A, without more conclusive information as to the total metals contribution of McLaren Pit to Daisy Creek that includes both the surface water and groundwater component. However, NPS recognizes the cost differential between alternatives is substantial and the benefits realized by the more costly alternatives could ultimately be small should the several assumptions made by USFS/Maxim in arriving at their assessment be correct. Given the finite amount of money available for cleanup in the District, NPS is most concerned that remediation dollars be spent to address the more significant	H	The USDA Forest Service appreciates this comment and has selected the preferred alternative, Alternative 3C (capping the wastes in-place), with these types of considerations included in the alternative selection process.

	National Park Service Comments		*Response*
	impacts to the environment equitably in all drainages. Based on the most recent work by Maxim on behalf of the USFS in the District, they are probably best situated to make decisions based on technical merit as to where the most benefit is realized given the available resources, notwithstanding the previous modified hazard ranking system (AMISS) used to initially rank the sites in the district.		
I	The Executive Summary (page E-1) states that "The USDA-FS has identified the McLaren Pit Response Action to address the immediate threat to human health and the environment posed by acid mine drainage from historic underground and open-pit mine workings and associated mine waste used to backfill the pit." Based on the analysis presented in the McLaren Pit EE/CA, none of the alternatives will remedy the threat posed to the environment. Since protectiveness of aquatic resources is not anticipated to be achieved, the residual aquatic resource injury should be addressed in accordance with the Consent Decree Removal Action Objective: Natural resources lost as a result of, or injured or destroyed by, releases or threats or release of hazardous substances, pollutants or contaminants that are released to District Property (page 45).	I	Comment acknowledged.
J	On page E-5, the Executive Summary states that "It has been demonstrated that the naturally occurring bedrock ore deposit is a major source of metals and acid rock drainage. There are other sources as well, such as groundwater migration and transported sediment, and, therefore, cleaning up or preventing seepage from wastes at the headwaters of Daisy Creek does not address the larger sources in the Daisy Creek drainage." However, "Groundwater has not been investigated sufficiently in the vicinity of the McLaren Pit to identify the exact sources of an relative amount of contamination for any particular source (similar statement of page 86, paragraph 7). However, groundwater quality is known to be impacted down gradient from the Pit and the degree to which it is in contact with groundwater during periods of high water tables and during periods of high infiltration	J	This change was made in the draft EE/CA as a result of this comment.

	National Park Service Comments		*Response*
	or percolation through wastes, although a portion of elevated levels of metals in groundwater has been shown to be caused by natural causes." A similar statement is also made on page 100, paragraph 1. These "demonstrated" and "shown" assertions need to be documented. If transported sediments are contaminant sources, the McLaren Pit EE/CA should also address sediment cleanup (or note that sediments will be addressed in future EE/CAs).		
K	Page 22, last paragraph. Based on Table 3-6, the listed metals are significantly above background levels. "May be" should be replaced with "are".	K	This change was made in the draft EE/CA as a result of this comment.
L	Page 27, 3.6.4 UNCERTAINTY. Since the analysis has been used on several derived and/or calculated values, the results should be viewed as general results only. Yet, these results were then used to determine loading to Daisy Creek. How much uncertainty is there around the 10-20 percent load allocation from McLaren Pit seepage? This error range is critical. If the range is large enough, a combination alternative of amending and geomembrane capping should perhaps be added to the alternatives analysis.	L	The USDA Forest Service acknowledges that the models used to predict loading from the McLaren Pit wastes to Daisy Creek contain uncertainty. These uncertainties are explained both in the text of the EE/CA and in the Appendices that contain the supporting models. However, as explained in the reports that describe the detailed modeling results, there are several lines of evidence that suggest the modeling results are within a reasonable range of actual, but difficult to measure, parameters. Because the modeling results, along with the US Geological Survey results on Daisy Creek loading, are the best tools available to make estimates of the contributions to loading from the pit, the USDA Forest Service has adopted the results as a tool in the evaluation of the alternatives. During the decision making process, consideration was given to forming a combination of alternatives considered in the EE/CA, particularly treating all the wastes and then capping the treated wastes using Alternative 3C. This combined alternative would provide some additional benefit to the Response Action by allowing a certain factor of safety in the event the cap alone did not prevent the wastes beneath the cap from becoming saturated by either vertical or lateral flow through the wastes. In addition, if the cap ever failed due to wear or puncture, the amended wastes would have a much lower propensity to leach metal contaminants

	National Park Service Comments		*Response*
			than non-treated wastes. The USDA Forest Service decided not to select a combined alternative involving treatment of the wastes for several reasons. Wholly treating the wastes on-site would involve several logistical and constructablity difficulties that would likely add several years to the construction schedule. Logistical problems would include hauling and staging a large quantity of lime amendment in a secure location and manner that keeps the amendment dry and prevents the public from exposure to the amendment. Excavating the waste rock in the pit to a depth of as much as 20 feet would also be required, and stockpiling that waste so that it can be mixed and placed back in the pit offers some construction sequencing issues. Intermediate construction controls would also be required to secure the site for winter shutdown during the several winters that the pit would be open during the amendment process. These logistical and construction difficulties, along with an estimated additional cost of $4.3 million to treat the wastes, can not be justified in light of the anticipated small benefit to water quality that might be gained by treating the waste.
M	Page 35, paragraph 5. Exposure of animals and birds to hazardous substances through ingestion of surface water should be included in the exposure assessment.	M	While the USDA Forest Service recognizes that other terrestrial animals may be exposed to COCs, the streamlined risk evaluation focuses only on those groups of ecological receptors that may be affected through prolonged direct contact with contaminated surface water or mining wastes. Birds, large mammals, and small mammals are likely to have only transitory contact, which is much more difficult to assess unless a more formal risk assessment is done under CERCLA's remedial process, rather than the risk evaluation done under the removal process.
N	Page 41, 4.2.1. CONTAMINANTS OF CONCERN. Cadmium is listed as a COC, but is not included in Table 4-4. The guideline for cadmium should be included.	N	This change was made in the draft EE/CA as a result of this comment.

	National Park Service Comments		*Response*
O	Page 41, paragraph 5. Although no standards are currently available to evaluate exposure of a "wetland", the methodologies certainly have been developed to assess exposure of wetland flora and fauna to contaminants.	O	While the USDA Forest Service recognizes that wetland exposures could be quantified, under the CERCLA removal process the risk evaluation is done in a more qualitative manner using existing data. There are no existing data to assess wetland exposures.
P	Page 41, paragraph 6. Direct ingestion of sediment should be included in the exposure pathway list.	P	This change was made in the draft EE/CA as a result of this comment.
Q	Page 44, paragraph 2. Again, cadmium should be addressed.	Q	This change was made in the draft EE/CA as a result of this comment.
R	Page 47, Table 5-2. Cadmium should be included.	R	This change was made in the draft EE/CA as a result of this comment.
S	Page 48, Table 5-3. The Table does not include pH. Since pH is a major factor controlling metals availability, are there not reclamation and phytotoxicity guidelines?	S	This change was made in the draft EE/CA as a result of this comment.
T	Page 68, 7.1 EVALUATION CRITERIA. The balancing criteria, state acceptance and public acceptance, should also be mentioned.	T	State and community acceptance are addressed in the Action Memorandum for the preferred alternative.
U	Page 76, Overall Protection of Human Health and the Environment. Would Alternative 2 be protective of the environment? The environment protectiveness requires discussion.	U	A statement to this effect was made in the draft EE/CA as a result of this comment.
V	Page 85, Overall Protection of Human Health and the Environment. Would Alternative 3 be protective of the environment? As with Alternative 2, the environmental protectiveness requires discussion.	V	A statement to this effect was made in the draft EE/CA as a result of this comment.
W	Page 92, Overall Protection of Human Health and the Environment. Would Alternative 4 be protective of the	W	A statement to this effect was made in the draft EE/CA as a result of this comment.

	National Park Service Comments		*Response*
	environment? As with Alternatives 2 and 3, the environmental protectiveness requires discussion.		
X	Page 101, paragraph 7. The statement: "There would be no impacts in the short-term from the no action alternative." This statement is misleading. Although there would be no construction-related impacts, the impacts from hazardous substance releases would certainly continue in the short- and long-term.	X	This paragraph was modified in the draft EE/CA as a result of this comment.
Y	Page 103, 8.4 PREFERRED ALTERATIVE. The first paragraph states that "the alternatives evaluated will most likely have little or no effect on downstream contaminant concentrations in Daisy Creek below 5,000 feet, where dilution is expected to reduce concentrations below standards." However, according to Table 8-2, the standards are presently being exceeded downstream. If the alternatives will have no effect downstream, one would infer that the standards will continue to be exceeded. This paragraph should be clarified.	Y	This paragraph was modified in the draft EE/CA as a result of this comment.
Z	Page 103, paragraph 4. Again, the statement that "natural sources contribute a considerable metals load to Daisy Creek via groundwater and surface water pathways" is made. Yet in various other sections "groundwater has not been investigated sufficiently to identify the exact sources and relative amount of contamination for any particular source". If natural sources are such a major contributor, the basis for that conclusion requires documentation.	Z	The basis for natural sources being a major contributor of metals was added to the draft EE/CA.
AA	In summary, residual injury, model uncertainty, and sediment cleanup, in addition to our specific comments, should be further addressed in the EE/CA. I appreciate the opportunity to review and comment on the McLaren Pit EE/CA. If you have any questions or would like to discuss these comments, please contact Bill Olsen at 406-449-5225 extension 214.	AA	These changes were made in the draft EE/CA as a result of this comment.

	Greater Yellowstone Coalition Comments		*Response*
A	The following comments on the Draft McLaren Pit Response Action EE/CA are presented on behalf of the Greater Yellowstone Coalition. We support the preferred Alternative 3C for the reason stated in the Draft EE/CA: "...that all waste materials would be protected from contact with surface water below a liner and would most likely achieve the greatest reduction on potential loading to Daisy Creek. There are three issues we would ask to be examined in the final document.	A	Comment acknowledged.
B	1. Slope design criteria for the final pit topography. The addition of the Multicolored Dump and McLaren Pit spoils, and the regrading of waste material in-situ, should take into consideration the integrity of the interface between the geomembrane and the drain layer. Minimizing the final slope will also mitigate the affect of snow creep on vegetation and other features and limit erosion potential.	B	The USDA Forest Service will evaluate these design considerations during the design process.
C	2. Costs of material haulage. Alternatives to drain layer material source should be examined including the Pilot Creek gravel pit on the Shoshone NF, and use of crushed on-district material, perhaps from the quarry. If the latter source were used, there should be a discussion of environmental effects.	C	The USDA Forest Service will evaluate other sources of materials or replacement of materials during the design process.
D	3. The top-soil source proposed, the SB-4I moraine, is a highly visible feature of the Lulu road corridor. Blending revegetation efforts with the surrounding landscape and establishing a mature plant community within a meaningful time frame will be difficult. Please examine at the feasibility of retaining the A horizon sod layer of the stripped soil material for replacement on the borrow site, once the material for the soil cap is removed.	D	The USDA Forest Service implements stripping and salvaging of topsoil on borrow areas for subsequent reclamation as a standard of practice for this project.

	Greater Yellowstone Coalition Comments	*Response*
	We look forward to working with you on the continuation of the New World Mining District Response and Restoration Project. Sincerely, Don Bachman	

	Center for Science in Public Participation Comments	*Response*
A	RE: Comments of McLaren Pit Engineering Evaluation/Cost Analysis I would like to submit several comments on the McLaren Pit EE/CA. I believe the Forest Service and Maxim have chosen the proper approach for reclamation of the McLaren Pit. I realize it is unlikely that this reclamation will restore the water in Daisy Creek to state water quality standards. However, the alternative selected has the best chance of significantly improving water quality. At a minimum, the reclamation alternative chosen will allow the water quality in Daisy Creek to approach what it might have been pre-mining. That itself would be a significant improvement. In addition, the reclamation to the pit, water quality improvements aside, will minimize pollutants from airborne contaminants, and the vegetation will minimize visual impacts to the area. 1. I support the choice of alternative 3C – In-Situ treatment with Geomembrane Cover, Composite Waste Rock and Soil Cover Cap.	A Comments acknowledged.
B	2. I cannot support any of the alternatives that rely in whole, or even in part, an amended waste rock to immobilize potential contaminants.	B Comment acknowledged.

	Center for Science in Public Participation Comments		*Response*
	Arsenic has been discussed as a contaminant of concern. One of the potential pathways for arsenic contamination is through water and fish ingestion, and dermal contact. Even though arsenic has not been detected in surface water, it has been measured at potentially significant concentrations in the waste rock itself. It is possible that arsenic being liberated is, at present, being co-precipitated with iron, and is removed early in the metals precipitation process in the streams and groundwater. If lime amendments are utilized to raise the pH of the waste rock, it is possible that more arsenic will remain in solution and could become a human-health risk problem. All of the potentially viable alternatives, with the exception of 3C, rely in whole or part on pH amendments to the waste rock that is in communication with surface waters, and could lead to surface water contamination.		
C	Mercury is also a potentially hazardous metal that can cause significant problems in humans in its methylated form. There is no mention of the presence or absence of mercury in the EE/CA. If there is no significant mercury in the waste rock, than this fact should be documented in the EE/CA. Table 4-1 would be a good place to do this.	C	Mercury was only detected at very low total levels in samples collected from the multicolored dump and the pit wastes. These results were reported in Appendix D of the Selective Source Response Action Engineering Evaluation/Cost Analysis, which was finalized in January 2001. Because mercury is not a contaminant of concern at the site, it was not reported in the McLaren Pit EE/CA.
D	Finally, geomembranes should not be used on slopes greater than 3H:1V. There is no mention in the EE/CA about the slopes of the McLaren Pit area after waste material is backfilled into the pit. This should be discussed as a part of the analysis of the alternatives, and a diagram of the reclaimed site should be included. A diagram would also help in visualizing what the final reclaimed area will look like. Thank you for the opportunity to comment. Sincerely, David M. Chambers	D	The USDA Forest Service agrees that geomembranes should not be used on slopes greater than 3H:1V. During the design process, slope stability will be a primary consideration in the development of the final slope and cap configuration. This aspect of the alternative will be included in the engineering design drawings, rather than at the conceptual stage presented in the draft EE/CA.