The Mount Hope Final EIS is continued in Volume III.

# APPENDIX A

# INCONSISTENCIES BETWEEN THE MOUNT HOPE PROJECT AND THE LAND USE PLANS, POLICIES, AND CONTROLS OF EUREKA COUNTY

# APPENDIX A
## Inconsistencies Between the Mount Hope Project and the Land Use Plans, Policies, and Controls of Eureka County

The National Environmental Policy Act (NEPA) requires an EIS to discuss certain factors. See 42 U.S.C. § 4332(2) (C)(i-v). As set forth by NEPA's implementing regulations, one of these factors is potential conflicts between a proposed action and the objectives of Federal, regional, State and local land use plans, policies and controls for the area concerned. 40 C.F.R. § 1502.16. Where an inconsistency exists between the proposed and any approved State or local plan or law, the environmental impact statement should describe the extent to which the agency would reconcile its proposed action with the plan or law.

Also related to state and local planning, 40 C.F.R. § 1506.2(d) requires that the EIS "discuss any inconsistency of a proposed action with any approved State or local plan and laws," and if an inconsistency exists, describe "the extent to which the agency would reconcile its proposed action with the plan or law."

The Council on Environmental Quality (CEQ) regulations at 40 CFR 1502.16(c) require the Environmental Consequences section of an EIS to disclose "possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned." This appendix is referenced in the Environmental Consequences section and provides a complete discussion of any inconsistencies as perceived by Eureka County in compliance with the CEQ regulations.

The CEQ has also provided guidance for situations where a proposed action conflicts with local plans, policies, and controls through their publication: *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations (46 Fed. Reg. 18026 (1981)).* Question 23c asks, "What options are available for the decisionmaker when **conflicts with such plans** or policies are identified?" CEQ's answer states, "After identifying any potential land use conflicts, the decisionmaker must weigh the significance of the conflicts, among all the other environmental and non-environmental factors that must be considered in reaching a rational and balanced decision. Unless precluded by other law from causing or contributing to any inconsistency with the land use plans, policies or controls, the decisionmaker retains the authority to go forward with the proposal, despite the potential conflict…"

On May 30, 2012 the BLM sent a letter to Eureka County requesting a comprehensive list of potential inconsistencies between the Mount Hope Project and the land use plans, policies, and controls adopted by Eureka County. On June 22, 2012 Eureka County, as a Cooperating Agency in preparation of the EIS, responded by identifying several components of the Mount Hope Project that they have determined are in conflict their local planning efforts.

Each of the items below documents the perceived inconsistencies as described by Eureka County. Where there is potential for an inconsistency, each item also includes a discussion of the extent to which the BLM could reconcile the proposed action with the applicable State or local plan or law.

**Item 1**

*"1.1 Page 1-2: We have continued to point out to BLM that many of these regulations require coordination with Eureka County and efforts to achieve consistency with Eureka County plans and policies to the maximum extent possible. Despite our continual requests, however, the DEIS makes no effort to discuss these inconsistencies. This paragraph can legitimately claim that the EIS complies with NEPA only when BLM has taken the maximum effort to reconcile these conflicts. We will continue to point out these specific areas again in the comments that follow."*

Although the BLM is not required to achieve consistency between the proposed action and State or local laws, plans and policies (*see, e.g.*, 40 C.F.R. § 1506.2(d)), it has made extraordinary efforts to coordinate with Eureka County. Prior to the release of the Draft EIS for public review, the BLM continually attempted to schedule a meeting to discuss Eureka County's comments on the Administrative Draft EIS, but the county could not coordinate a time to meet. Additionally, the BLM formally requested that Eureka County identify all perceived inconsistencies in a letter dated May 30, 2012, so as to ensure that all potential inconsistencies would be documented in the Mt. Hope Project Final Environmental Impact Statement (FEIS). On June 22, 2012, Eureka County provided a response that includes all of the items listed in this appendix. The BLM is not required to reconcile perceived inconsistencies, however, this appendix discusses the BLM's reconciliation efforts, consistent with NEPA requirements.

**Item 2**

*1.5.4 Page 1-10: We asked BLM to revise this section on both ADEIS with inclusion of language to read, "Some elements of the Proposed Action would be in conformance with these plans and policies while other elements of the proposed mine could prove inconsistent with these plans and policies." BLMs response was that "Based on a review of the County Plan, no specific instances of non-conformance were identified." BLM inaccurately cites general County policy support of mining and economic development in a vacuum without taking into account all other plans, goals, and policies as a whole related to impacts on air quality, wildlife, water resources, private property, grazing, etc. Eureka County specifically pointed out these inconsistencies in our previous comments. Again, we highlight the following policies, word-for-word, that components of the Proposed Action are in conflict with including, "use of the best available science and technology to ensure adequate protection of land, air, and water resources ...[including]... adequate and proper mitigation; maintaining water resources in a condition that will render it useable by future generations for the full range of beneficial uses that further a viable and stable economic and social base for its citizens; maintain or improve soil, vegetation and watershed resources in a manner that perpetuates and sustains a diversity of uses while fully supporting the custom, culture, economic stability and viability of Eureka County and our individual citizens; mitigation of mining activities that may impair the economic future of Eureka County citizens; prevention of significant deterioration of the superior air quality found in Eureka County; and maintain, improve or mitigate...impacts to habitat in order to sustain viable and harvestable populations of...species as well as wetland/riparian habitat for...other game and non-game species." BLM can only say that the EIS is in compliance when the maximum effort has been made by BLM to work with Eureka County, the guardian of its own policies, to reconcile these conflicts.*

The last sentence of the first paragraph in Section 1.5.4 has been revised to say "Some elements of the proposal would be in conformance with plans and policies adopted by Eureka County while other elements of the proposed mine could prove inconsistent with these plans and policies." For example, the proposal is consistent with the County's general policy support of mining and economic development (i.e., "Goal: Facilitate environmentally responsible exploration, development and reclamation of oil, gas, geothermal, locatable minerals, aggregate and similar resources on federal lands."). However, these forms of development (both generally and as would be implemented via the proposed action) necessarily have some impact to environmental values like air quality, wildlife water resources, grazing, etc.; therefore, advancing one set of goals and policies may be inconsistent with other goals and policies. BLM's own review of the Eureka County Master Plan and other local planning documents, as well as comments from Eureka County, indicate that this may be the case here. However, the proposed action largely reconciles these goals and policies by including measures to reduce or avoid adverse impacts , as described throughout the Final EIS. The Final EIS further reconciles these goals and policies by proposing mitigation measures for various resources to further reduce or avoid impacts where they are anticipated. To the extent the policies and goals cited by Eureka County do not prohibit adverse impacts, but instead require mitigation or similar attempts to balance competing goals and policies, the proposed action and Final EIS satisfy those requirements.

The EIS uses the best available science and technology to analyze potential impacts, including all of the resources referenced by Eureka County.

**Item 3**

*3.2.3.3. 2 Page 3-108: Additionally, this evaporation of water is directly in conflict with our county Master Plan that mandates that water extracted for mining be used "in a manner that returns water to the ground in the same basin it is withdrawn with minimal evaporation and transpiration loss" (p. 6-55). Please revise to remove language of evaporation being a beneficial use and clearly state that the large evaporative losses of water due to the Project are inconsistent with our Master Plan.*

The BLM acknowledges that Eureka County, through its Master Plan, "supports . . . disposal of mine dewatering water in a manner that returns water to the ground in the same basin it is withdrawn with minimal evaporation and transpiration loss." The BLM does not read the Master Plan to require disposal in this manner. To the extent the County believes that the Master Plan somehow mandates that all water extracted for mining be returned to the ground in the same basin from which it is withdrawn with minimal evaporation and transpiration loss, the Proposed Action would be inconsistent with the Master Plan. However, mining is a beneficial use under Nevada water law and the distribution of processed material in the Tailing Storage Facilities are part of the mining use. Evaporation caused by the mining use of water is not contrary to Nevada law and has not been modified in the project design. It should be noted that the Seventh Judicial District Court for the State of Nevada ruled on June 13, 2012 to uphold the Nevada State Engineer's decision regarding the issuance of the water rights for the Project with a total combined duty of 11,300 acre-feet per year. The BLM, under the 3809 regulations, has an obligation to prevent not only unnecessary degradation but also degradation that, while necessary to mining, is undue or excessive. The extraction and use of groundwater is necessary to mining and the removal or use is not undue or excessive.

Additionally, as noted in response to Item 2, not all goals and policies described in the Eureka County Master Plan are consistent with one another and the furtherance of the mining and economic development goals through the Proposed Action necessarily have impacts to other policies and goals related to protection of natural resources. The mitigation measures proposed and analyzed in the Final EIS, along with measures contained in the Plan of Operations to reduce impacts to natural resources, largely reconcile any such perceived inconsistencies.

**Item 4**

*3.6 Page 3-254: Although analyses of air quality describe that the Project will not exceed the NAAQS (or NSAAQS), it is never recognized that the Project will, in fact, degrade the air quality of Eureka County regardless of a standard. This is in direct conflict with our Master Plan policy which is to prevent "deterioration of the superior air quality found in Eureka County." Please make this clear and describe what further can be done to protect the air quality of Eureka County through realistic and committed mitigation measures (and adequate monitoring to measure for degradation).*

The FEIS recognizes that any anthropogenic activity, including the future economic and industrial development that Eureka County mentions, would have some effect on air quality. In quoting Eureka County's Master Plan, the commenter has omitted the word "significant". A reading of the entire stated objective, "Prevent significant deterioration of the superior air quality found in Eureka County", shows that the Master Plan recognizes the possibility of air quality effects and that determining attainment of the goal is not quantified. It also plainly acknowledges that some level of deterioration to air quality is acceptable. As noted in Section 3.6.3 of the EIS, no impacts to air quality are considered to be significant. The FEIS demonstrates that the project will meet all applicable health-based standards and discloses the potential impacts to air quality.

**Item 5**

*3.12.3.2 and 3.12.3.3 Page 3-399: Therefore, the entire burden of directly lost AUMs will fall upon livestock grazing. This is also a specific example of the Proposed Action being in direct conflict with the policies of Eureka County as outlined in our Master Plan and County Code and this conflict must be described and documented in the EIS. Eureka County calls for no net-loss of AUMs.*

There is no text in the Eureka County Master Plan that specifically states a goal of "no net-loss of AUMs." The Master Plan instead includes an argument for grazing permits to be considered as private property rights, for which "Eureka County maintains a no-net-loss policy" under Title 9, Section 30.060.J.1 of the Eureka County Code. The Master Plan refers to the Taylor Grazing Act and other laws to support its characterization of grazing permits as property rights. However, the Taylor Grazing Act at 43 USC § 315(b) states that "such permits shall be for a period of not more than ten years, subject to the preference right of the permittees to renewal in the discretion of the Secretary of the Interior, who shall specify from time to time numbers of stock and seasons of use." Although a permittee may have preference rights for renewal of the permit, the number of stock, seasons of use, and other conditions remain the sole discretion of the Secretary of the Interior. Additionally, 43 USC § 315(b) also states that "the issuance of a permit pursuant to the provisions of this subchapter shall not create any right, title, interest, or estate in or to the lands." Accordingly, to the extent the County asserts that the Master Plan requires the BLM to

treat AUMs as private property rights, such portion of the Master Plan is contrary to federal law and cannot be reconciled with the Proposed Action.

The Proposed Action is consistent with the Taylor Grazing Act and all other federal statutes and regulations. The suspension of AUMs resulting from this project was calculated using the same method as when they were originally allocated based on temporary and permanent loss of acreage available for livestock grazing. As part of the 10-year permit renewal cycle, the BLM will conduct an Ecological Site Inventory that will involve an evaluation of the maximum AUM capacity for each of the affected allotments. Since the mine proposal is not a grazing action, it is not being conducted as part of the EIS. Accordingly, to the extent the County asserts that the Master Plan requires the BLM to treat AUMs as private property rights, such portion of the Master Plan is contrary to federal law and cannot be reconciled with the Proposed Action.[1]

**Item 6**

*This is another specific example of the Proposed Action being in direct conflict with the policies of Eureka County as outlined in our Master Plan and County Code and this conflict must be described and documented in the EIS. These documents call for no net-loss of AUMs and "mitigation of mining activities that may impair the economic future of Eureka County citizens." Since this Project will impair the economic future of Eureka County ranches, albeit only a few, it is inconsistent with our plans and policies.*

There is no text in the Eureka County Master Plan that specifically states a goal of "no net-loss of AUMs." The Master Plan instead includes an argument for grazing permits to be considered as private property rights, for which "Eureka County maintains a no-net-loss policy" under Title 9, Section 30.060.J.1 of the Eureka County Code. The Master Plan refers to the Taylor Grazing Act and other laws to support its characterization of grazing permits as property rights. However, the Taylor Grazing Act at 43 USC § 315(b) states that "such permits shall be for a period of not more than ten years, subject to the preference right of the permittees to renewal in the discretion of the Secretary of the Interior, who shall specify from time to time numbers of stock and seasons of use." Although a permittee may have preference rights for renewal of the permit, the number of stock, seasons of use, and other conditions remain the sole discretion of the Secretary of the Interior. Additionally, 43 USC § 315(b) also states that "the issuance of a permit pursuant

---

[1] The Master Plan cites other references including the District Court decision for *Public Lands Council, et al. v. Babbitt*. However, the Tenth Circuit Court of Appeals overturned portions of the District Court decision in 2000 and held that "the conditions placed on permits reflected the leasehold nature of grazing privileges, consistent with the fact that Congress had made the Secretary the landlord of the public range and basically made the grant of grazing privileges discretionary. The grazing regulations in effect from 1938 to the present day made clear that the Department retained the power to modify, fail to renew, or cancel a permit or lease for various reasons." Additionally, the Court of Appeals held that "the Secretary, consistent with 43 USC § 315f…was authorized to reclassify and withdraw land from grazing altogether and devote it to a more valuable and suitable use."

to the provisions of this subchapter shall not create any right, title, interest, or estate in or to the lands."

The Master Plan cites other references including the District Court decision for *Public Lands Council, et al. v. Babbitt*. However, the Tenth Circuit Court of Appeals overturned portions of the District Court decision in 2000 and held that "the conditions placed on permits reflected the leasehold nature of grazing privileges, consistent with the fact that Congress had made the Secretary the landlord of the public range and basically made the grant of grazing privileges discretionary. The grazing regulations in effect from 1938 to the present day made clear that the Department retained the power to modify, fail to renew, or cancel a permit or lease for various reasons." Additionally, the Court of Appeals held that "the Secretary, consistent with 43 USC § 315f…was authorized to reclassify and withdraw land from grazing altogether and devote it to a more valuable and suitable use."

As discussed in response to Item 5, the Proposed Action is consistent with the Taylor Grazing Act and all other federal statutes and regulations. However, due to Eureka County's incomplete interpretation of this law and other referenced documents in the Master Plan, the Proposed Action cannot be reconciled.

The Master Plan goes on to state that "It is critical to the welfare of the citizens of Eureka County and the nation that mining on state and federal lands remains an open and free enterprise. Eureka County upholds the tenet that mining claims are compensable property belonging to individuals or groups of individuals. Eureka County supports:… 6. Mitigation of mining activities that may impair the economic future of Eureka County citizens through bilateral or multi-lateral consultations with the Board of Eureka County Commissioners." The BLM has made every effort to coordinate with the Board of Eureka County Commissioners, has modified the Proposed Action in multiple instances in response to county requests, and has otherwise suggested mitigation to reduce economic impacts to non-mining interests. The BLM does not have the legal authority to require implementation of the type of mitigation discussed in the comment, however, additional language has been added to the EIS in Section 3.26 providing suggested mitigation where such measures fall outside the jurisdiction of the BLM. The Proposed Action cannot be further reconciled.

**Item 7**

*3.12.3.3 Page 3-400: It is improper for BLM to state that the permanent loss of 32 AUMs is "minimal." First of all, this is directly in conflict with Eureka County's Master Plan and County Code.*

The text in the paragraph following Table 3.12-2 has been revised in the FEIS as follows, " The grazing and agricultural service sectors of the Eureka County economy would be marginally affected by the reduction in AUMs associated with the Proposed Action due to the construction of the fence around 14,204 acres of the Project Area. The fence would exclude access to portions of the Roberts Mountains and Romano Allotments and result in a reduction of 781 AUMs for approximately 70 years and 32 AUMs permanently from the development of the open pit. According to the Nevada Grazing Statistics Report and Economic Analysis for Federal Lands in Nevada (Resource Concepts, Inc. 2001), the total economic impact associated with each AUM equals $53.40 (1999 dollars) ($73.75 in 2012 dollars) annually. This value specifically estimates

the direct, indirect, and induced impacts of industry output and added value of grazing in Nevada. Applying this value to the potentially and temporarily AUMs displaced under the Proposed Action, the total economic impact could be an annual reduction of $41,705 (1999 dollars) ($57,597 in 2012 dollars). This would be a $15,539 (1999 dollars) ($21,460 2012 dollars) impact resulting from displaced Romano Allotment AUMs and a $26,166 (1999 dollars) ($36,137 2012 dollars) impact resulting from displaced Roberts Mountain Allotment AUMs. While the impact may not be significant to the ranching community, the impact may be meaningful to invidual ranch operations. However, it is important that this impact reflects the total economic impact not lost revenue for specific operators. The subsequent two paragraphs in greater detail the economic impact to grazing investigated in the Nevada Grazing Statistics Report and Econonic Analysis for Federal Lands in Nevada Report." Even if this finding can be construed as somehow inconsistent with the Master Plan, the permanent loss of 32 AUMs due to the development of the open pit cannot be avoided and, therefore, the Proposed Action cannot be modified to avoid the alleged conflict.

**Item 8**

*3.12.3.3 Page 3-401: What must also be taken into account is that even with successful reseeding of impacted vegetation areas (phreatophytes, riparian vegetation, wet meadows, etc.) there is not a total removal of impacts to AUM availability. If an impact were to occur to vegetation due to the Project, the areas re-vegetated would likely be subject to BLM grazing closures until the area were to meet BLM established objectives. Through no fault of their own, a grazing permittee would be impacted while re-vegetation efforts are taking place and would likely suffer large economic impacts. This has been seen in many cases where ranchers have had to reduce their herds strictly because of closure due to re-vegetation treatments on the ground. Eureka County has a policy of no loss of AUMs, even temporarily.*

There is no text in the Eureka County Master Plan that specifically states a goal of "no net-loss of AUMs." The Master Plan instead includes an argument for grazing permits to be considered as private property rights, for which "Eureka County maintains a no-net-loss policy" under Title 9, Section 30.060.J.1 of the Eureka County Code. The Master Plan refers to the Taylor Grazing Act and other laws to support its characterization of grazing permits as property rights. However, the Taylor Grazing Act at 43 USC § 315(b) states that "such permits shall be for a period of not more than ten years, subject to the preference right of the permittees to renewal in the discretion of the Secretary of the Interior, who shall specify from time to time numbers of stock and seasons of use." Although a permittee may have preference rights for renewal of the permit, the number of stock, seasons of use, and other conditions remain the sole discretion of the Secretary of the Interior. Additionally, 43 USC § 315(b) also states that "the issuance of a permit pursuant to the provisions of this subchapter shall not create any right, title, interest, or estate in or to the lands." Accordingly, to the extent the County asserts that the Master Plan requires the BLM to treat AUMs as private property rights, such portion of the Master Plan is contrary to federal law and cannot be reconciled with the Proposed Action.

The Proposed Action is consistent with the Taylor Grazing Act and all other federal statutes and regulations. Potential closures following re-vegetation efforts will be evaluated at the time of implementation and remain under the discretion of the Authorized Officer to support achievement of stated revegetation goals.

**Item 9**

*3.12.3.3 Page 3-401: Revise to make it clear that EML will mitigate the impact to grazing permittees, not "would work" to mitigate the impact. We request the revision to read, "EML will fully mitigate and offset the loss of AUMs as a result of the Proposed Action by agreement with impacted grazing permittees. For purposes meant to inform the discussion between EML and the impacted grazing permittee, mitigation could include, but is not limited to: 1) Provide a livestock forage seeding on federally administered land on which the impacted grazing permittee is authorized to graze livestock or on private land owned by the impacted grazing permittee; 2) Provide an alternative livestock watering source in any area where forage was previously unused or underused due to lack of a viable water source on either federally administered land on which the impacted grazing permittee is authorized to graze livestock or private land owned by the impacted grazing permittee; 3) Implement a Rangeland Improvement Project on federally administered land on which the impacted grazing permittee is authorized to graze livestock or a project on private land owned by the impacted grazing permittee which would improve livestock production, forage availability, or rangeland condition (e.g., fencing, weed control, brush management, pinion-juniper thinning)." This language is consistent with (and nearly identical to) Eureka County's policy regarding AUM loss.*

The BLM does not have the legal authority to require implementation of the type of mitigation discussed in the comment, however, additional language has been added to the EIS in Section 3.26 providing suggested mitigation where such measures fall outside the jurisdiction of the BLM. The Proposed Action cannot be further reconciled.

**Item 10**

*3.13.3.3.1 Page 3-415: How can EML obtain a water right to water wild horses when EML has no ownership of wild horses and would be disallowed under State Law? Also, EML improvement of current stockwater sources that have certificated (and some vested) rights and changing the use to wild horses is not consistent with Nevada Water Law or Eureka County's Master Plan and County Code. There needs to be more thorough description in the text (and Appendix C) describing the legal mechanisms to carry forward this mitigation as we believe it is unlawful.*

There are several legal mechanisms that allow for the provision of water developments for wild horses. Wild horses are considered to be wildlife and are covered under NRS 533.367, which states that "before a person may obtain a right to the use of water from a spring or water which has seeped to the surface of the ground, the person must ensure that wildlife which customarily uses the water will have access to it." One of the water sources proposed by EML is a spring that would be subject to this requirement. The other five water developments would be supplied through wells and NDWR is allowed to specify wildlife as the type of use. NDWR can also specify "Environmental Remediation" as a beneficial use. Either of these methods could be used in transferring the water right for provision to wild horses. Alternatively, EML could transfer the water right to the BLM, NDOW or even a nearby rancher. Any of these could be used to meet the intent of mitigating impacts to wild horses. A description of the exact mechanism in the EIS would be speculative since there are multiple options available. Since this inconsistency is based on a difference of interpretation of Nevada water law, it cannot be further reconciled in the Proposed Action.

**Item 11**

*3.14.3.3.3 Page 3-429: First, this section fails to acknowledge or describe the County Code which carries force of law, much more so than county planning documents. As previously requested many times over the past few years, we ask BLM to fully review our County Code, County Plans and various County Resolutions and meet with us to discuss the policies of Eureka County before making consistency determinations. Second, we asked BLM to revise this section on both ADEIS. We again asked that there be an inclusion of language to read, "Some elements of the Proposed Action would be in conformance with these plans and policies while other elements of the proposed mine could prove inconsistent with these plans and policies." BLMs response was that "Based on a review of the County Plan, no specific instances of non-conformance were identified." BLM inaccurately cites general County policy support of mining and economic development in a vacuum without taking into account all other plans, goals, and policies as a whole related to impacts on air quality, wildlife, water resources, private property, grazing, etc. Again, we highlight the following policies, word-for-word, that components of the Proposed Action are in conflict with including, "use of the best available science and technology to ensure adequate protection of land, air, and water resources" including "adequate and proper mitigation; maintaining water resources in a condition that will render it useable by future generations for the full range of beneficial uses that further a viable and stable economic and social base for its citizens; maintain or improve soil, vegetation and watershed resources in a manner that perpetuates and sustains a diversity of uses while fully supporting the custom, culture, economic stability and viability of Eureka County and our individual citizens; mitigation of mining activities that may impair the economic future of Eureka County citizens; prevention of significant deterioration of the superior air quality found in Eureka County; and maintain, improve or mitigate...impacts to habitat in order to sustain viable and harvestable populations of...species as well as wetland/riparian habitat for...other game and non-game species." BLM can only say that the EIS is in compliance when the maximum effort has been taken by BLM to work with Eureka County, the guardian of its own policies, to reconcile these conflicts.*

Section 1.5.4 of the FEIS has been revised to include the following sentence, "The BLM acknowledges that EML would have to comply with any applicable Eureka County codes, to the extent that they are not preempted by federal law." Additionally, the FEIS includes the following language suggested by Eureka County: "Some elements of the Proposed Action would be in conformance with Eureka County plans and policies while other elements of the proposed mine could prove inconsistent with these plans and policies."

For example, the proposal is consistent with the County's general policy support of mining and economic development (i.e., "Goal: Facilitate environmentally responsible exploration, development and reclamation of oil, gas, geothermal, locatable minerals, aggregate and similar resources on federal lands."). However, these forms of development (both generally and as would be implemented via the proposed action) necessarily have some impact to environmental values like air quality, wildlife water resources, grazing, etc.; therefore, advancing one set of goals and policies may be inconsistent with other goals and policies. The BLM's own review of the Eureka County Master Plan and other local planning documents, as well as comments from Eureka County, indicate that this may be the case here. However, the proposed action largely reconciles these goals and policies by including measures to reduce or avoid adverse impacts , as described throughout the Final EIS. The Final EIS further reconciles these goals and policies by

proposing mitigation measures for various resources to further reduce or avoid impacts where they are anticipated. To the extent the policies and goals cited by Eureka County do not prohibit adverse impacts, but instead require mitigation or similar attempts to balance competing goals and policies, the proposed action and Final EIS satisfy those requirements.

The FEIS uses the best available science and technology to analyze potential impacts to land, air, water, and other resources. Analysis and mitigation measures for soil and vegetation resources are addressed in sections 3.8 and 3.9, respectively. Mitigation of mining activities with relation to socioeconomic impacts is addressed in Sections 3.17 and 3.26 of the FEIS. Sections 3.11 and 3.23 identify impacts and mitigation measures for wetlands and riparian zones and wildlife and fisheries resources, respectively. The BLM has made every effort to coordinate with the Board of Eureka County Commissioners and has modified the Proposed Action in multiple instances in response to county requests. As to other applicable law and regulation, EML has secured all of the required water permits and approvals from the State Engineer and mitigation for potential impacts to water resources, both quantity and quality, has been included in Sections 3.2 and 3.3 of the FEIS. An air quality permit has been issued by the State of Nevada with monitoring requirements and emissions limitations to ensure compliance with all applicable air quality regulations.

**Item 12**

*3.14.3.3.3 Page 3-429: The conclusion reached is incorrect. Eureka County plans and policies often cover private as well as public lands. Because the land use section of the DEIS excludes private lands, it is not possible for BLM to reach the conclusion of no conflicts with land use plans and regulations currently in place to guide development in Eureka County. Previous ADEIS comments from Eureka County as a Cooperating Agency have explained how the project is in conflict with the County's land use plans and regulations.*

The Final EIS includes the following language suggested by Eureka County, "Some elements of the Proposed Action would be in conformance with Eureka County plans and policies while other elements of the proposed mine could prove inconsistent with these plans and policies." The BLM acknowledges that EML would have to comply with any applicable Eureka County codes. This appendix further documents the BLM's consideration of potential inconsistencies with Eureka County land use regulations, plans and policies.

**Item 13**

*3.14.3.3.4 Page 3-429: It is inappropriate for BLM to continue to assert, as highlighted in BLMs response to our previous ADEIS comment (see 1961 among others) that "it is speculative to assert that the physical arrangement of Eureka would be disrupted or divided due to the project and the need for mine employee housing in Eureka." First of all, it is not just Eureka that we are concerned about disrupting and dividing; it is also Diamond Valley. Second, EMLs failure to come to grips with the lack of housing availability and land availability to cover both temporary construction worker housing (nearly 500 people) as well as permanent employees (roughly 400 people not including secondary employment) magnifies our concern about potential ramshackle development and fragmentation of our agricultural valley in addition to bifurcation of the Town of Eureka. The DEIS must be revised to speak to the possibility of this actually happening and*

*outline what will be done to minimize these impacts. This again is at direct odds with our Master Plan that calls for "orderly and common-sense development."*

The BLM has no jurisdiction over the placement of housing and other development on private land as that authority typically falls under the purview of local government through applicable master plans, policies, and adopted codes. Eureka County raises concerns over "potential ramshackle development and fragmentation of our agricultural valley in addition to bifurcation of the Town of Eureka." However, the Eureka County Code, Title 8 states that "it is declared to be the policy of the County to consider the division of land and the subsequent development of the land as subject to the control of the County pursuant to the Master Plan for the orderly, planned, efficient, and economical development of the County." The Eureka County Code provides procedures for the approval of tentative and final maps in order to subdivide land and design standards for minimum lot sizes, streets, alleys, pedestrian ways, easements for drainage and utilities, water supply and fire hydrants, sewer, garbage, and on-site drainage.

Since these issues will remain under the jurisdiction of Eureka County with regard to the Mount Hope Project, the EIS has not been modified to speculate on future patterns of development within Eureka or Diamond Valley.

**Item 14**

*3.15.2.2.1 Page 3-444: Impacts to Roberts Creek would be directly inconsistent with our Master Plan and County Code (see quoted text on p. 3-437). However, if impacted, at a minimum, mitigation must consist of 1) continued water flow to Roberts Creek; 2) comprehensive restoration activities to ensure habitat for fishing, hunting, wildlife viewing, and camping including re-vegetation, fishery stabilization, stocking of fish, and improvement of camping areas and access.*

It is unclear which portion of the Master Plan and County Code impacts to Roberts Creek allegedly "would be directly inconsistent" with, as the discussion on page 3-437 pertains to Recreation and Wilderness Study Areas. However, the EIS takes a hard look at potential impacts from groundwater consumption by the Proposed Action and proposes adequate mitigation for such impacts, consistent with the BLM's understanding of the County's Master Plan. Monitoring to provide advance warning of surface water impacts would be required as part of project approval. Table 3.2-9 of the EIS has been revised to make clear that mitigation may be required for Project-caused reductions, rather than "cessation" of flows, for Roberts Creek. Enhancement or replacement of surface flows with ground water is one of the potential mitigation options, should impacts occur, as described in the EIS. Additionally, Mitigation Measure 3.11.3.3-3 states that "EML, in coordination with the BLM, would identify sites for mitigation in the area affected and implement mitigation measures at a three to one ratio with local cuttings, plugs, and seeds within one year of direct disturbance. EML would monitor these sites on an annual basis for at least three years after treatment to ensure effectiveness." The BLM may select other options from the list provided in section 3.2.3 or identify other effective mitigation options, should impacts occur or be deemed imminent. Additionally, stocking of fish is conducted by NDOW and is outside the jurisdiction of the BLM.

**Item 15**

*3.17.1 Page 3-467: 43 CFR 1506.2 does not require consideration but integration and where inconsistency exists, the EIS should describe the extent to which the agency would reconcile its proposed action with the local plan or policy.*

CEQ regulations 40 CFR 1506.2 does not require integration, it merely states:

"To better integrate environmental impact statements into State or local planning processes, statements shall discuss any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law."

This appendix contains the description of perceived inconsistencies and documents the BLM's efforts to reconcile the proposed action with local plans and policies.

**Item 16**

*3.23.1 Page 3-592: Please include the language from the County's Master Plan regarding the policies for wildlife and fisheries (Master Plan 6.2.4). Some of the specific language that is applicable includes: "GOAL: Maintain, improve or mitigate wildlife impacts to habitat in order to sustain viable and harvestable populations of big game and upland game species as well as wetland/riparian habitat for waterfowl, fur bearers and a diversity of other game and non-game species. OBJECTIVES: 1) Coordinate with the Eureka County Wildlife Advisory Board, Eureka County Natural Resources Advisory Commission, Nevada Department of Wildlife, affected private property interests, lessees and permittees to develop...guidelines for future site specific management plans affecting upland, water fowl and big game habitat; 2) Community economic concerns and values will be obtained from the Eureka County Wildlife Advisory Board, Eureka County Natural Resources Advisory Commission, Eureka County Economic Development Board and the Board of Eureka County Commissioners; the voice of Eureka County citizens provides the basis for wildlife and wildlife habitat management...; 3) ...where necessary mitigate, harmful impacts to rangelands, woodlands, native wildlife species...Mitigation must accommodate impacts that have accumulated since initial resource allocation.; 4) Manage wildlife populations and wildlife habitat to enhance species native to Eureka County habitats. Exceptions to this objective must be founded on a clear public benefit attributed to the introduction, enhancement or propagation of a non-native species or a species native to Nevada, but not historically found in Eureka County. Public benefit is demonstrated through affirmation by the Eureka County Wildlife Advisory Board and Eureka County Natural Resources Advisory Commission.; 5) Conduct rangeland studies, pellet group plots, breeding bird transects and other appropriate studies to monitor wildlife relationships to available habitat as well as impacts of vegetation manipulation projects on wildlife; 7) Accelerate the planning, approval and completion of multiple-use water developments, rangeland treatment projects and prescribed burns that include objectives for enhancement of big game and other wildlife habitat. Wildlife developments must be cooperative in nature, respecting the rights and interests of existing resource users; 8) Include considerations of wildlife habitat requirements in the design and reclamation of mineral development projects through approved Plan(s) of Operations.; 9) Assure that management*

*agencies provide all necessary maintenance of enclosure fences not specifically placed for improved management of livestock."*

While the county has adopted policies regarding wildlife resources, it does not have regulatory authority commensurate with the state and federal agencies referenced in this section. However, mitigation that would be consistent with the Eureka County Master Plan has been developed in consultation with the regulatory agencies described in Section 3.23.1 of the EIS. No change has been made to the FEIS in response to this comment.

**Item 17**

*In addition to outlining the language above in the Regulatory Framework, the impacts analyses including framed mitigation must be done in a way to reach consistency with these policies [see Item 16 above] to the maximum extent possible.*

Mitigation for impacts to wildlife resources has been included in Section 3.23.3 of the EIS. In regards to objectives outlined in Item 16 above, Objectives 1 and 2 are beyond the scope of the EIS process, but could be conducted at a later date if implementation occurs. While the project is consistent with Objectives 4, 5, and 9, the implementation of such actions is beyond the scope of the proposed action and will not be completed as part of the mining proposal. The Proposed Action is consistent with Objective 7 and several water developments will be provided as mitigation for wildlife and wild horse impacts. The project is consistent with Objective 8. The BLM notes that there is no Objective 6 listed.

**Item 18**

*3.14.3.3.3 Page 3-429: The conclusion reached is incorrect. Eureka County plans and policies often cover private as well as public lands. Because the land use section of the DEIS excludes private lands, it is not possible for BLM to reach the conclusion of no conflicts with land use plans and regulations currently in place to guide development in Eureka County. Previous ADEIS comments from Eureka County as a Cooperating Agency have explained how the project is in conflict with the County's land use plans and regulations. Also, the last sentence refers to land use authorizations and not land use plans and goals. Land use authorizations were addressed in 3.14.3.3.2.*

Section 3.14.3.3.3 has been revised to read: "Plans and regulations currently in place to guide development in Eureka County include the following: Eureka County Master Plan (2010); Titles 8 and 9 of the Eureka County Code; and the BLM's RMP (BLM 1986a). The Proposed Action would not conflict with any federal land use plans or regulations. EML's proposed use of public lands under the Proposed Action is reasonably incident under the BLM's occupancy regulations at 43 CFR 3715. Some elements of the Proposed Action would be in conformance with Eureka County plans and policies while other elements of the proposed mine could prove inconsistent with these plans and policies. Potential inconsistencies identified by Eureka County are disclosed in Appendix A with a discussion of the efforts to reconcile or the rationale of the decision maker where reconciliation has not been achieved. The Proposed Action would not otherwise impact land use authorizations."

**Item 19**

*Eureka County has formally proposed, approved, budgeted, and is nearly two years in the process of an active planning effort to follow its Master Plan and develop a comprehensive water resource master plan. We believe components of the Proposed Action will result in conflicts with our Water Resources Plan....Further, the range of water management options left available for consideration in the water planning process will be limited by the Project. This Board anticipates policies and requirements in the Water Resources Plan related to monitoring, management, and mitigation that are at odds with measures analyzed, outlined, and committed to in the EIS. It is also anticipated that the Plan will have policies against single entities tying up the majority of the water resources in a basin...To address these possible future conflicts, we request addition of language to the Environmental Consequences section of the EIS to read:*

*Eureka County is currently involved in development of a comprehensive County water resource master plan. There is a potential that components of the Proposed Action will be in conflict with specific plans and policies of this water resources plan. If these conflicts do occur, BLM will coordinate with Eureka County through the water resources advisory committee, discussed in Section 2.1.15 at page 2-70, to implement mitigation measures to reduce the conflict to the maximum extent practicable."*

Although Eureka County may be currently involved in development of a comprehensive County water resource master plan, no draft has been provided for review by the BLM to determine consistency with the Proposed Action. The BLM acknowledges that there is "a potential that components of the Proposed Action will be in conflict with specific plans and policies of this water resources plan" as stated by Eureka County. The water resources advisory committee is intended to focus solely on the Mount Hope Project and "review the monitoring protocols, data and reports. The committee would meet on a periodic basis and make recommendations to the BLM on operational changes or compliance issues." The formation of this committee is not intended to identify, approve, or implement mitigation measures that would reduce any perceived conflicts with a plan that has not yet been written.

# APPENDIX B

# EUREKA MOLY LLC
# TAILINGS SITING EVALUATION

SMITH WILLIAMS CONSULTANTS, INC.

# Technical Memorandum

**To:** Renee Kochler

Project 1029A

**From:** Ronald Arlian

**Date:** August 26, 2005

**Re:** Mount Hope Phase II TSF Alternative Siting Analysis

This memorandum presents the preliminary results of the alternative analysis completed for the Phase II Mount Hope tailings storage facility (TSF) siting study incorporating the changes resulting from the discussions during the August 22/23, 2005 site visit. The intent of this memo is to present potential alternatives for consideration and discussion. Once the study team has a chance to review and comment on the alternatives, Smith Williams will finalize the alternative analysis.

The seven alternatives (Alternative 2a added as a result of the site discussions) under consideration as potential tailings storage sites are presented in Figure 7. Facility-specific layouts are presented in Figures 1 through 6 inclusive and Figure 8. The TSFs as analyzed consists of a small starter embankment constructed of mine waste or borrow which will be expanded by centerline construction methods using cycloned sands as embankment construction materials. In each case, it is assumed that distribution of the tailings will occur from the embankment face thereby resulting in a slimed beach immediately upstream of the embankment and a supernatant pond that will include surface water diversion, access roads, and tailings delivery and solution reclaim systems.

General layouts and physical details of each of the alternatives can be referenced on Figures 1 through 6 and Figure 8. Tables 1 through 7 are facility-specific cost estimates based on the criteria and assumptions presented below:

1. Total required storage capacity will be 925 million tonnes.
2. Tailings slurry solids content will be 35 percent.
3. Solids specific gravity will be 2.53.
4. Sand-to-slimes cyclone split will meet requirements for embankment construction. (Note: Actual required varies with alternative but do not exceed 20 percent of total tailings.)
5. The storage capacity of facilities was evaluated assuming a sand stored density of 1.6 T/m$^3$ and a slimes stored density of 1.3 T/m$^3$.
6. No geotechnical fatal flaws exist.
7. No environmental limitations exist that would completely eliminate any site from use.

8. Facilities will be constructed in phases with a starter embankment and basin with a capacity of one year's tailings storage constructed in Production Year minus 1 and subsequent basin expansions completed starting in Production Year 1 each with a 5-year storage capacity.

9. Embankment construction after the starter embankment will be via cycloned sand, which is assumed to be a continuous operation. (Note: Embankment foundation preparation will be phased with basin expansions.)

10. Minus 200 content of sand is less than 15 percent.

11. Embankment after starter will be constructed of cycloned sands and sand slopes will be stable at 3H:1V

12. Starter embankment will have a 10-meter crest width.

13. Reclaim system consists of a barge-mounted pump with a skid-mounted substation with a pole line for power supply.

14. Seepage collection ponds are double synthetic lined with LCRS.

15. Phreatic surface can be controlled in the sand portion of the embankment with an under drain system and toe drain.

16. Permanent diversion channels around the facility will need to be sized for the probable maximum flood event.

17. Operating costs are rough estimates (power cost is assumed as $0.06 per kilowatt-hour).

18. Mill site is at elevation 2015 meters.

19. Each facility requires the same number of cyclones (6 ea) for tailings distribution and embankment construction.

20. Power pole line will follow the most direct route from the mill site to the skid-mounted substation at the reclaim barge.

21. HDPE pipe will be used for the reclaim and tailings lines for line pressures up to 160 psi (SDR 9) and carbon steel (Schedule Std) will be used where the line pressures exceed 160 psi.

A brief description of each site follows:

### *Site 1*

Site 1 resides adjacent to the preferred mill site and in the general location previously identified as Alternative 1 in the Phase 1 Feasibility Study. The embankment location was selected such that relocation of State Highway 287 would not be required. (Note: The toe of the embankment parallels the highway with a 100-meter offset.) The general layout and specifics of the facility can be seen on Figure 1. The ultimate embankment crest of the facility is at elevation 2015 meters; and based on the latest site access road and waste dump configuration, the ultimate embankment and basin footprint will encroach slightly on these facilities along the TSF's western boundary and to a lesser degree the plant administration area. It has been assumed that the access road fill would be placed in controlled lifts with a fill slope not greater than 2.5H:1V and that the face of the fill would be covered with a geosynthetic liner within the encroachment area. Tailings deposition initially can be by gravity with pumping required in the late production years. The general layout and specifics of the facility can be seen on Figure 1. The estimated capital, operating, and reclamation costs are summarized below as well as presented in Table 9:

| Starter | Total Including Starter | Operating | Reclamation |
|---|---|---|---|
| $24,400,635 | $88,483,159 | $106,904,120 | $48,320,000 |

### *Site 1a*

Site 1a is similar to the Alternative 2 site for the Phase 1 Feasibility Study. The configuration consists of two facilities (referred to as upper and lower). The upper facility resides in the same location and has the same configuration as in the Phase 1 Study. The lower facility embankment toe has moved to the east in order to accommodate the greater overall tonnes (450 million versus 925 million tonnes); and in fact, the facility footprint is very near the same as Site 1 with the only difference being it is slightly smaller since the required storage capacity is slightly less. The embankment crest elevation is approximately 2002 meters. The ultimate embankment and basin footprint, based on the latest site access road and waste dump configuration, encroaches slightly on these facilities along the TSF's western boundary. It has been assumed that the access road fill would be placed in controlled lifts with a fill slope not greater than 2.5H:1V and that the face of the fill would be covered with a geosynthetic liner within the encroachment area. The lower facility at this site, as with the Site 1 facility, was specifically sited such that the state highway would not have to be relocated, with the embankment toe paralleling the highway with a 100-meter offset. The general layout and specifics of the facility can be seen on Figure 2. Tailings deposition for the upper facility will require pumping. Deposition to the lower facility can initially be by gravity with pumping required in the late production years. The estimated capital, operating, and reclamation costs are summarized below as well as presented in Table 9:

| Starter | Total Including Starter | Operating | Reclamation |
|---|---|---|---|
| $13,104,921 | $100,843,346 | $101,830,620 | $50,680,000 |

### *Site 1b*

Site 1b is similar to the Exxon Study Alternative A site. The configuration is a single facility and would require the relocation of approximately 11 km of State Highway 278 at the time of construction of the starter facility. The embankment ultimate elevation is approximately 1990 meters and, based on the most recent waste dump/site access road layout, the TSF footprint would encroach slightly on the site access road fill along the TSF's western boundary. It has been assumed that the access road fill would be placed in controlled lifts with a fill slope not greater than 2.5H:1V and that the face of the fill would be covered with a geosynthetic liner within the encroachment area.

The general layout and specifics of the facility can be seen on Figure 5. The tailings deposition for the most part can be by gravity with pumping only required in the last few years. The estimated capital, operating, and reclamation costs are summarized below as well as presented in Table 9:

| Starter | Total Including Starter | Operating | Reclamation |
|---|---|---|---|
| $28,872,371 | $96,337,737 | $106,677,820 | $44,240,000 |

### *Site 1c*

Site 1c is a combination of the Phase 1 Study Alternative 2 upper facility and the Exxon Study Alternative A site. The configuration consists of two facilities (referred to as upper and lower). The upper facility resides in the same location and has the same configuration as the upper facility for the Phase 1 Study Alternative 2 and also the Site 1a upper facility. The lower facility footprint is basically the same as the Site 1b facility footprint reduced by the storage capacity of the upper facility. The principal difference in this alternative and the Site 1b alternative is that the highway relocation is not required until approximately Production Year 11 (one year before the upper facility is at capacity). The embankment ultimate elevation for the upper facility is 2065 meters and for the lower facility 1975 meters. The general layout and specifics of the facility can be seen on Figure 6. The estimated capital, operating, and reclamation costs are summarized below as well as presented in Table 9:

| Starter | Total Including Starter | Operating | Reclamation |
|---|---|---|---|
| $13,104,921 | $117,640,637 | $101,544,460 | $54,160,000 |

### Site 2

Site 2 is similar to the Exxon Site J alternative and is sited south of the pit across the divide in the Kobeh Valley. The facility is approximately 6 km from the plant site. This site requires that both the tailing slurry and the reclaim water be pumped to the top of the divide (approximate elevation 2050 meters). Presently a high-tension power line passes through the TSF proposed footprint and approximately 7 km of the line would have to be relocated at the time of construction of the starter facility. The ultimate embankment crest is at approximately elevation 2050 meters. The specifics of the facility can be seen on Figure 3. The estimated capital, operating, and reclamation costs are summarized below as well as presented in Table 9:

| Starter | Total Including Starter | Operating | Reclamation |
|---|---|---|---|
| $26,243,402 | $90,956,368 | $158,862,600 | $45,350,000 |

### Site 2a

Site 2a is a combination of two sites The configuration consists of two facilities (referred to as upper and lower). The upper facility resides in the same location and has the same configuration as the upper facility for the Phase 1 Study Alternative 2 and also the Phase II Alternative Sites 1a, and 1c upper facility. The lower facility footprint is similar to the Site 2 facility footprint moved slightly up the slope and reduced by the storage capacity of the upper facility. The lower facility ultimate embankment crest is at approximately elevation 2070 meters. The specifics of the facility can be seen on Figure 8. The estimated capital, operating, and reclamation costs are summarized below as well as presented in Table 9:

| Starter | Total Including Starter | Operating | Reclamation |
|---|---|---|---|
| $13,104,921 | $97,031,196 | $138,101,400 | $43,930,000 |

### Site 3

The Site 3 facility location is the same as the Phase I Study Alternative 3 site basically with the footprint expanded to accommodate the 925 million tonnes. This site is located west of State Highway 278 approximately 6 km from the mill site; and the tailings and reclaim lines and facility access roads will have to cross the highway. For this study, it has been assumed that the tailings line and reclaim line would pass under the highway via a concrete vault and that a geomembrane-lined storage pond would be sited at the east side of the crossing for draining the

lines in case of shutdown and/or to contain solution or tailings in the event of a line break. The ultimate embankment elevation is at 1910 meters. Tailings deposition for the entire life of the facility can be by gravity. The specifics of the facility can be seen on Figure 4. The estimated capital, operating, and reclamation costs are summarized below as well as presented in Table 8:

| Starter | Total Including Starter | Operating | Reclamation |
|---|---|---|---|
| $26,006,677 | $81,902,915 | $116,499,240 | $41,015,000 |

## Capital Costs

The detailed estimate of the capital costs for the seven sites are provided on Tables 1 through 8 and summarized on Table 9. The estimated capital costs vary from a low of approximately $88.5 million for Site 1 to approximately $102.5 million for Site 1c. While Site 1c has the highest overall capital cost, it along with Sites 1a and 2a which utilize two facilities have the lowest initial capital cost, which is almost half of the next closest Alternative, Site 1.

| Site | Starter | Total Including Starter |
|---|---|---|
| 1 | $24,400,635 | $88,483,159 |
| 1a | $13,104,921 | $100,843,346 |
| 1b | $28,872,371 | $96,337,737 |
| 1c | $13,104,921 | $117,640,637 |
| 2 | $26,243,402 | $90,956,368 |
| 2a | $13,104,921 | $97,031,196 |
| 3 | $26,006,677 | $81,902,915 |

## Operating Costs

The operating unit cost per tonne for each facility was estimated at both the starter and ultimate conditions, which was then assumed to be linear over the life of the mine. (Note: Will overestimate the costs where gravity tailings deposition is used for most of the mine life.) The cost for electric power used for the calculations was $0.06 per kilowatt-hour. Maintenance costs were based on annual costs factored as a percent of the equipment capital cost. A factor of 25 percent of the capital costs was used for the pumps, 25 percent for cyclones and 10 percent of the capital costs for the pipelines and associated accessories. It was assumed that a D-6 dozer would be required to spread and shape the cycloned sands. The dozer was assumed to be working an average of 20 hours per day. The following table summarizes the estimated unit operating cost for each of the facilities at the starter and ultimate condition. The cost is based on 40,000 tonnes per day or 14.6 million tonnes per year.

| Facility | Starter ($/T) | Ultimate ($/T) | Total Operating Cost for Facility Life | Total Operating Cost for Site |
|---|---|---|---|---|
| Site 1 | 0.112 | 0.124 | $106,904,120 | $106,904,120 |
| Site 1a (upper) | 0.081 | 0.104 | $17,556,500 | $101,830,620 |
| Site 1a (lower) | 0.112 | 0.124 | $84,274,120 | |
| Site 1b | 0.109 | 0.127 | $106,677,820 | $106,677,820 |
| Site 1c (upper) | 0.081 | 0.104 | $17,556,500 | $101,544,460 |
| Site 1c (lower) | 0.108 | 0.127 | $83,987,960 | |
| Site 2 | 0.162 | 0.189 | $158,862,600 | $158,862,600 |
| Site 2a (upper) | 0.137 | 0.108 | $17,556,500 | $138,101,400 |
| Site 2a (lower) | 0.153 | 0.184 | $120,544,900 | |
| Site 3 | 0.145 | 0.112 | $116,499,240 | $116,499,240 |

The Site 1, 1a, 1c, and 3 facilities are reasonably close with the difference in cost being the result of the difference in pumping head for the reclaim water. Site 2 and 2a have a very high operating cost resulting from the fact that both the tailings and reclaim water require pumping for the life of the facility while for the other facilities the tailings for a certain amount of time is gravity flow. This operating cost could be reduced by cutting a slot 15 to 20 m deep at the divide (present elevation 2050 m) to reduce the pumping head. The cut material could probably be used in the starter embankment construction. This should be considered if either of these two options are viewed as possible final sites in the selection process.

### *Reclamation Cost*

For purposes of this study, closure requirements for the tailings impoundments were viewed to entail the following work:

- Embankment reclamation:
  - Top surface to be regraded to reduce the amount of impoundment leveling required.
  - Surfaces to be stabilized with a 500-mm cap of mine waste.
  - Mine waste cap to be covered with a 300-mm layer of growth medium.
  - Surface area to be revegetated using seed/fertilizer mixture.
  - Spillway/channel to be constructed to convey top area surface water to existing diversion channels.
- Impoundment area:

- Pond and adjacent beach area to be filled with mine waste to produce positive grades from back to front.
- Beach area to be stabilized with a 500-mm mine waste cap.
- Localized shaping to direct surface runoff to embankment spillway/channel.
- Mine waste cap to be covered with a 300-mm layer of growth medium.

- Underdrainage ponds (Note: Ponds will remain until seepage reduces to a level that can be handled via a method such as evapotranspiration.):
  - Pumps and sump to be removed.
  - Synthetic liners to be cut at anchor trench but not removed.
  - Pond to be backfilled with alluvium.
  - Surface area to be covered with growth medium and revegetated by use of a seed/fertilizer mixture.
- Perimeter roads:
  - Roads to be contoured into adjacent surfaces to remove abrupt slope changes.
  - Surface area to be covered with a 300-mm layer of growth medium and revegetated using seed/fertilizer mixture.
- Borrow areas:
  - Surface areas to be contoured to provide reasonably smooth contours and shaped to drain.
  - Surface area to be covered with a 300-mm layer of growth medium and seeded.

The estimated unit rates used in estimating the reclamation costs are summarized in the table below:

**Estimated Closure Costs**

| Description | Unit Rate US$/hectare |
|---|---|
| Embankment | $15,000 |
| Spillway/Channels | $500,000 |
| Impoundment | $30,000 |
| Underdrainage Ponds | $25,000 |
| Perimeter Roads | $20,000 |

| | |
|---|---|
| Borrow Areas | $5,000 |
| Tailings Conveyance Line | Note 1 |
| Reclaim Water Line | Note 1 |
| Monitoring | $25,000/yr |

Using the parameters above, the reclamation costs by facility are summarized below:

| Facility | Cost per Facility | Total Cost |
|---|---|---|
| Site 1 | $48,320,000 | $48,320,000 |
| Site 1a (upper) | $9,920,000 | |
| Site 1a (lower) | $40,760,000 | $50,680,000 |
| Site 1b | $44,240,00 | $44,240,000 |
| Site 1c (upper) | $9,920,000 | |
| Site 1c (lower) | $44,240,000 | $54,160,000 |
| Site 2 | $45,350,000 | $45,350,000 |
| Site 2a (upper) | $9,920,000 | |
| Site 2a (lower) | $34,010,000 | $43,930,000 |
| Site 3 | $41,015,000 | $41,015,000 |

### *NPV*

Using the capital, operating, and reclamation costs, the NPV for each of the sites was determined using a rate of 7 percent. The capital costs were distributed using the following assumptions:

1. Starter facility will be sized for one year's production.
2. Year 2 relates to Production Year 1 (i.e., starter capital assumed to be all spent in the year before production starts).
3. Production starts on January 1.
4. First expansion will be completed in Production Year 1 and sized for 5 years' production and expansions will then completed each 5 years.
5. Capital cost for each expansion will be equal and has been distributed equally over the mine life.
6. Change in operating cost from starter to ultimate will be linear.
7. For sites with two facilities, reclamation will start on the first facility one year after the facility reaches capacity.
8. Reclamation for each facility will be spread over two years.

Using these assumptions, the NPV for the sites is summarized below with more detail shown on Table 10:

| Alternative | NPV (7%) |
|---|---|
| Site 1 | $60,229,497 |
| Site 1a | $60,232,833 |
| Site 1b | $64,844,895 |
| Site 1c | $63,391,717 |
| Site 2 | $72,376,523 |
| Site 2a | $63,216,101 |
| Site 3 | $64,288,627 |

### *Decision Matrix*

A decision matrix has been prepared to rate the alternatives, taking into consideration various aspects including the following:

- NPV (20%)
- Initial capital cost (25%)
- Operating cost (15%)
- Permitting time/difficulty (15%)
- Land position (10%)
- Environmental considerations (7.5%)
- Technical considerations(7.5%)

The weighted percentages for each criterion were established during the discussions held at site August 23, 2005 and vary some from the criterion used for the Phase I Study.

Based on the criteria selected, the TSF sites were then given a rating using the following approach:

- The NPV, initial capital, and operating scores for each site were determined by assigning values between 1 and 7 to the alternative, based on a linear interpolation of the relationship between the lowest cost alternative (1) and the highest cost alternative (7).

- For the non-economic consideration, a value from 1 to 7 (1 = most favorable; 7 = least favorable) was assigned to each criterion for each alternative site. Values were assigned based primarily on comparisons between each of the facilities with the approach that, for criteria where there is no significant difference between sites, the scores will not be spread from 1 to 7 for the sites but will be evaluated upon comparison with ideal or extremely poor sites, with 1 being ideal and 7 being extremely poor.

- The items considered under environmental impact included the following:

- Visual impact
- Impacted cultural resources
- Fugitive dust potential (air quality)
- Ground water
- Surface water
- Vegetation

- The items considered under Technical Considerations included:
  - Embankment sand volume requirements
  - Surface water hydrology (upstream watershed/diversions)
  - Presumed depth to ground water
  - Topography
  - Location with respect to the mill
  - Operating ease
  - Geotechnical risk
  - Impacts on preferred waste dumps/administration area and existing facilities.

Tables 11 and 12 show the scores assigned for the sub-items under Technical and Environmental Consideration. The sub-items were scored independently by R. Arlian and D. Wittwer and those scores then averaged for the final score.

Permitting Time/Difficulty has not been scored pending discussions/input from Val Sawyer of SRK.

Based on the criteria and weighing as discussed above, Site 1a would show for this preliminary analysis to be the best overall site with Site 1b being the least desirable site with the order being Site 1a, 2a 1c, 1, 3, 2 and 1b. The three sites with the two facilities have the best overall scores. Of these three sites, Site 2a shows to be the best technically and environmentally while site 1a scored slightly better financially.

**TABLE 1**
**IDAHO GENERAL MINES, INC**
**MT. HOPE FEASIBILITY STUDY PHASE I**

**Tailing Storage Facility Alternative Siting Analysis**
**Site No. 1**

**Work By Owner**

| Item | Description | Units | Unit Rate | Starter Facility | | Ultimate Facility | | Total Facility | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Quantity | Total (US$) | Quantity | Total (US$) | Quantity | Total (US$) |
| **1.0** | **Embankment Fill Placement** | | | | | | | | |
| 1.1 | Construction Temporary Haul Road | m | $16.65 | 3050 | $50,773 | 0 | $0 | 3,050 | $50,773 |
| 1.2 | Extra Haul Over Waste Dump Temp Haul Road | $m^3$/km | $0.12 | 729,316 | $87,518 | 0 | $0 | 729,316 | $87,518 |
| 1.3 | Extra Haul Over Waste Dump for Starter Embankment | $m^3$/km | $0.12 | 7,673,800 | $920,856 | 1,700,924 | $204,111 | 9,374,724 | $1,124,967 |
| 1.4 | Mine Waste to TSF | $m^3$ | $0.00 | 2,516,000 | $0 | 557,680 | $0 | 3,073,680 | $0 |
| | | | | **Sub-Total** | **$1,059,147** | | **$204,111** | | **$1,263,258** |

**Work By Contractor**

| Item | Description | Units | Unit Rate | Starter Facility | | Ultimate Facility | | Total Facility | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Quantity | Total (US$) | Quantity | Total (US$) | Quantity | Total (US$) |
| **2.0** | **Mobilization/Demobilization** | | | | | | | | |
| 2.1 | Mobilization | | 5% | $16,427,674 | $821,384 | $51,146,648 | $2,557,332 | 67,574,322 | $3,378,716 |
| 2.2 | Demobilization | | 2% | $16,427,674 | $328,553 | $49,971,648 | $999,433 | 66,399,322 | $1,327,986 |
| | | | | **Sub-Total** | **$1,149,937** | | **$3,556,765** | | **$4,706,703** |
| **3.0** | **Earthworks** | | | | | | | | |
| 3.1 | Clearing and Grubbing | $m^2$ | $0.11 | 1,524,661 | $167,713 | 12,972,865 | $1,427,015 | 14,497,526 | $1,594,728 |
| 3.2 | Topsoil Stripping | $m^2$ | $0.50 | 1,524,661 | $762,331 | 12,972,865 | $6,486,433 | 14,497,526 | $7,248,763 |
| 3.3 | Embankment Foundation Excavation | $m^3$ | $1.65 | 270,504 | $446,331 | 862,383 | $1,422,932 | 1,132,887 | $1,869,263 |
| 3.4 | Embankment Foundation Preparation | $m^2$ | $0.28 | 541,007 | $151,482 | 1,724,766 | $482,934 | 2,265,773 | $634,416 |
| 3.5 | Embankment Foundation Subgrade | $m^2$ | $1.10 | 541,007 | $595,108 | 1,724,766 | $1,897,243 | 2,265,773 | $2,492,350 |
| 3.6 | Embankment Foundation Finger Drains | m | $21.89 | 18,034 | $394,755 | 57,492 | $1,258,504 | 75,526 | $1,653,259 |
| 3.8 | Embankment Spine drain | m | $86.74 | 200 | $17,348 | 330 | $28,624 | 530 | $45,972 |
| 3.7 | Embankment Toe Drain | $m^3$ | $2.20 | 0 | $0 | 557,680 | $1,226,896 | 557,680 | $1,226,896 |
| 3.9 | Embankment Construction | $m^3$ | $0.39 | 2,836,000 | $1,106,040 | 0 | $0 | 2,836,000 | $1,106,040 |
| 3.10 | Embankment Face Shaping | $m^2$ | $0.28 | 204,403 | $57,233 | | | 204,403 | $57,233 |
| 3.11 | Basin Foundation Preparation | $m^2$ | $0.28 | 983,654 | $275,423 | 11,248,099 | $3,149,468 | 12,231,753 | $3,424,891 |
| 3.12 | Basin Prepared Subgrade (300mm) | $m^2$ | $1.10 | 983,654 | $1,082,019 | 11,248,099 | $12,372,909 | 12,231,753 | $13,454,928 |
| 3.13 | Basin Drain Blanket (400mm) | $m^2$ | $1.10 | 983,654 | $1,082,019 | 11,248,099 | $12,372,909 | 12,231,753 | $13,454,928 |
| 3.14 | Basin Reclaim Slot Excavation | $m^3$ | $1.49 | 392,800 | $585,272 | 1,570,400 | $2,339,896 | 1,963,200 | $2,925,168 |
| 3.15 | Basin Reclaim Slot Retarding Layer (200mm) | $m^2$ | $1.10 | 54,796 | $60,275 | 219,071 | $240,978 | 273,866 | $301,253 |
| 3.16 | Basin Reclaim Slot Geotextile | $m^2$ | $1.38 | 109,591 | $151,236 | 438,141 | $604,635 | 547,732 | $755,870 |
| 3.17 | Basin Reclaim Slot Erosion Protection (150mm) | $m^2$ | $0.50 | 54,796 | $27,398 | 219,071 | $109,535 | 273,866 | $136,933 |
| 3.18 | Basin Drainage Collection Laterals (100 mm) | m | $6.05 | 19,673 | $119,022 | 224,962 | $1,361,020 | 244,635 | $1,480,042 |
| 3.19 | Basin Drainage Collection Headers (250mm) | m | $27.94 | 1,967 | $54,967 | 22,496 | $628,544 | 24,464 | $683,510 |
| 3.20 | Basin Drainage Collection Headers (300mm) | m | $40.52 | 1,491 | $60,415 | 5,889 | $238,622 | 7,380 | $299,038 |
| 3.21 | Basin Drainage Collection Headers (Solid HDPE 300 mm SDR 17) | m | $550.00 | 530 | $291,500 | | $0 | 530 | $291,500 |
| | | | | **Sub-Total** | **$7,487,886** | | **$47,649,096** | | **$55,136,982** |
| **4.0** | **Seepage Collection Pond** | | | | | | | | |
| 4.1 | Clearing and Grubbing | $m^2$ | $0.11 | 30,000 | $3,300 | 0 | $0 | 30,000 | $3,300 |
| 4.2 | Topsoil Stripping | $m^2$ | $0.76 | 30,000 | $22,800 | 0 | $0 | 30,000 | $22,800 |
| 4.3 | Excavation to Fill/Waste | $m^3$ | $3.30 | 111,000 | $366,300 | 0 | $0 | 111,000 | $366,300 |
| 4.4 | Prepared Subgrade | $m^2$ | $1.65 | 30,900 | $50,985 | 0 | $0 | 30,900 | $50,985 |
| 4.5 | Geomembrane Liner | $m^2$ | $5.76 | 61,800 | $355,968 | 0 | $0 | 61,800 | $355,968 |
| 4.6 | Reclaim and Pumpback System | ls | $50,000.00 | 1 | $50,000 | 0 | $0 | 1 | $50,000 |
| | | | | **Sub-Total** | **$849,353** | | **$0** | | **$849,353** |
| **5.0** | **Diversion Channels** | | | | | | | | |
| 5.1 | Minor Temporary Channels | m | $19.00 | 0 | $0 | 0 | $0 | | $0 |
| 5.2 | Major Temporary Channels | m | $87.00 | 6,628 | $576,636 | 26,696 | $2,322,552 | 33,324 | $2,899,188 |
| 5.3 | Minor Permanent Channels | m | $150.00 | 0 | $0 | 0 | $0 | 0 | $0 |
| 5.4 | Major Permanent Channels | m | $275.00 | 19,959 | $5,488,725 | 0 | $0 | 19,959 | $5,488,725 |
| | | | | **Sub-Total** | **$6,065,361** | | **$2,322,552** | | **$8,387,913** |
| **6.0** | **Tailing Delivery Line** | | | | | | | | |
| 6.1 | Delivery Line | ls | $2,403,610.00 | 1 | $2,403,610 | 1 | $1,500,000 | 2 | $3,903,610 |
| 6.2 | Adjacent Road and Trench | m | $70.00 | 1,025 | $71,750 | | | 1,025 | $71,750 |
| 6.3 | Valves and Fittings | ls | $240,361.00 | 1 | $240,361 | | $150,000 | 1 | $390,361 |
| | | | | **Sub-Total** | **$2,715,721** | | **$1,650,000** | | **$4,365,721** |
| **7.0** | **Reclaim Line** | | | | | | | | |
| 7.1 | Reclaim Line | ls | $1,334,428.00 | 1 | $1,334,428 | 1 | $700,000 | 2 | $2,034,428 |
| 7.2 | Sump at Mill | ls | $30,000.00 | 0 | $0 | | $0 | | $0 |
| 7.3 | Barge Costs | ls | $250,000.00 | 1 | $250,000 | | $0 | 1 | $250,000 |
| 7.4 | Power Line Costs | km | $100,000.00 | 2.5 | $250,000 | | $0 | 2.5 | $250,000 |
| 7.5 | Electrical Equipment | ls | $100,000.00 | 1.0 | $100,000 | | $0 | 1 | $100,000 |
| | | | | **Sub-Total** | **$1,934,428** | | **$700,000** | | **$2,634,428** |
| | | | | **Grand Total** | **$21,261,833** | | **$56,082,524** | | **$77,344,357** |
| **8.0** | **EPCM** | | | | | | | | |
| 8.1 | EPCM | ls | 11% | 21,261,833 | $2,338,802 | 1 | $8,000,000 | 21,261,834 | $10,338,802 |
| 8.2 | Engineering Phase II and Phase III | ls | $ 800,000.00 | 1 | $800,000 | | | 1 | $800,000 |
| | | | | **Subtotal** | **$3,138,802** | | **$8,000,000** | | **$11,138,802** |
| **9.0** | **Owners Costs** | | | | | | | | |
| 9.1 | Owners Costs | ls | | | Not Included | | Not Included | | |
| | | | | **Subtotal** | **$0** | | **$0** | | **$0** |
| **10.0** | **Contingency** | | | | | | | | |
| 10.1 | Contingency | | | | Not Included | | Not Included | | |
| | | | | | **$0** | | **$0** | | **$0** |
| | | | | **Grand Total** | **$24,400,635** | | **$64,082,524** | | **$88,483,159** |

**TABLE 2**
**IDAHO GENERAL MINES, INC**
**MT. HOPE FEASIBILITY STUDY PHASE I**

**Tailing Storage Facility Alternative Siting Analysis**
**Site No. 1a, 1c and 2a (Upper)**

**Work By Owner**

| Item | Description | Units | Unit Rate | Starter Facility | | Ultimate Facility | | Total Facility | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Quantity | Total (US$) | Quantity | Total (US$) | Quantity | Total (US$) |
| **1.0** | **Embankment Fill Placement** | | | | | | | | |
| 1.1 | Construction Temporary Haul Road | m | $16.58 | 2000 | $33,168 | 0 | $0 | 2000 | $33,168 |
| 1.2 | Extra Haul Over Waste Dump Temp Haul Road | $m^3$/km | $0.12 | 313,600 | $37,632 | 0 | $0 | 313600 | $37,632 |
| 1.3 | Extra Haul Over Waste Dump for Embankment | $m^3$/km | $0.12 | 3,728,200 | $447,384 | 229,000 | $27,480 | 3957200 | $474,864 |
| 1.4 | Mine Waste to TSF | $m^3$ | $0.00 | 1864100 | $0 | 114500 | $0 | 1978600 | $0 |
| | | | | **Sub-Total** | **$518,184** | | **$27,480** | | **$545,664** |

**Work By Contractor**

| Item | Description | Units | Unit Rate | Starter Facility | | Ultimate Facility | | Total Facility | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Quantity | Total (US$) | Quantity | Total (US$) | Quantity | Total (US$) |
| **2.0** | **Mobilization/Demobilization** | | | | | | | | |
| 2.1 | Mobilization | | 5% | $8,647,037 | $432,352 | $12,281,256 | $614,063 | $20,928,293 | $1,046,415 |
| 2.2 | Demobilization | | 2% | $8,647,037 | $172,941 | $12,281,256 | $245,625 | $20,928,293 | $418,566 |
| **3.0** | **Earthworks** | | | **Sub-Total** | **$605,293** | | **$859,688** | | **$1,464,981** |
| 3.1 | Clearing and Grubbing | $m^2$ | $0.19 | 636,000 | $117,660 | 2,696,471 | $498,847 | 3,332,471 | $616,507 |
| 3.2 | Topsoil Stripping | $m^2$ | $0.50 | 636,000 | $318,000 | 2,696,471 | $1,348,236 | 3,332,471 | $1,666,236 |
| 3.3 | Embankment Foundation Excavation | $m^3$ | $1.65 | 82,885 | $136,760 | 189,465 | $312,617 | 272,350 | $449,378 |
| 3.4 | Embankment Foundation Preparation | $m^2$ | $0.28 | 165,770 | $46,416 | 378,930 | $106,100 | 544,700 | $152,516 |
| 3.5 | Embankment Foundation Subgrade | $m^2$ | $1.10 | 165,770 | $182,347 | 378,930 | $416,823 | 544,700 | $599,170 |
| 3.6 | Embankment Foundation Finger Drains | m | $21.89 | 6,631 | $145,153 | 12,631 | $276,493 | 19,262 | $421,645 |
| 3.7 | Embankment Spine drain | m | $86.74 | 1,400 | $121,436 | 1,200 | $104,088 | 2,600 | $225,524 |
| 3.8 | Embankment Toe Drain | $m^3$ | $2.20 | 0 | $0 | 114,500 | $251,900 | 114,500 | $251,900 |
| 3.9 | Embankment Construction | $m^3$ | $0.39 | 2,590,100 | $1,010,139 | 0 | $0 | 2,590,100 | $1,010,139 |
| 3.10 | Embankment Face Shaping | $m^2$ | $0.28 | 182,347 | $51,057 | 0 | $0 | 182,347 | $51,057 |
| 3.11 | Basin Foundation Preparation | $m^2$ | $0.28 | 549,000 | $153,720 | 2,239,800 | $627,144 | 2,788,800 | $780,864 |
| 3.12 | Basin Prepared Subgrade (300mm) | $m^2$ | $1.10 | 549,000 | $603,900 | 2,239,800 | $2,463,780 | 2,788,800 | $3,067,680 |
| 3.13 | Basin Drain Blanket (400mm) | $m^2$ | $1.10 | 549,000 | $603,900 | 2,239,800 | $2,463,780 | 2,788,800 | $3,067,680 |
| 3.14 | Basin Reclaim Slot Excavation | $m^3$ | $1.49 | 726,000 | $1,081,740 | 755,400 | $1,125,546 | 1,481,400 | $2,207,286 |
| 3.15 | Basin Reclaim Slot Retarding Layer (200mm) | $m^2$ | $1.10 | 180,000 | $198,000 | 328,492 | $361,341 | 508,492 | $559,341 |
| 3.16 | Basin Reclaim Slot Geotextile | $m^2$ | $1.38 | 180,000 | $248,400 | 200,000 | $276,000 | 380,000 | $524,400 |
| 3.17 | Basin Reclaim Slot Erosion Protection (150mm) | $m^2$ | $0.50 | 180,000 | $90,000 | 328,492 | $164,246 | 508,492 | $254,246 |
| 3.18 | Basin Drainage Collection Laterals (100 mm) | m | $6.05 | 14,580 | $88,209 | 98,783 | $597,637 | 113,363 | $685,846 |
| 3.19 | Basin Drainage Collection Headers (250mm) | m | $27.94 | 1,694 | $47,330 | 3,576 | $99,913 | 5,270 | $147,244 |
| 3.20 | Basin Drainage Collection Headers (300mm) | m | $40.52 | 1,997 | $80,918 | 1,623 | $65,764 | 3,620 | $146,682 |
| 3.21 | Basin Drainage Collection Headers (Solid HDPE 300 mm S | m | $550.00 | 500 | $275,000 | 0 | $0 | 500 | $275,000 |
| | | | | **Sub-Total** | **$5,600,085** | | **$11,560,256** | | **$17,160,341** |
| **4.0** | **Seepage Collection Pond** | | | | | | | | |
| 4.1 | Clearing and Grubbing | $m^2$ | $0.19 | 2,500 | $463 | 0 | $0 | 2,500 | $463 |
| 4.2 | Topsoil Stripping | $m^2$ | $0.76 | 2,500 | $1,900 | 0 | $0 | 2,500 | $1,900 |
| 4.3 | Excavation to Fill/Waste | $m^3$ | $3.30 | 19,500 | $64,350 | 0 | $0 | 19,500 | $64,350 |
| 4.4 | Prepared Subgrade | $m^2$ | $1.65 | 2,615 | $4,315 | 0 | $0 | 2,615 | $4,315 |
| 4.5 | Geomembrane Liner with Geonet | $m^2$ | $5.76 | 5,230 | $30,125 | 0 | $0 | 5,230 | $30,125 |
| 4.6 | Reclaim and Pumpback System | ls | $50,000.00 | 1 | $50,000 | 0 | $0 | 1 | $50,000 |
| | | | | **Sub-Total** | **$151,152** | | **$0** | 0 | $151,152 |
| **5.0** | **Diversion Channels** | | | | | | | | |
| 5.1 | Minor Temporary Channels | m | $19.00 | 3200 | $60,800 | 14000 | $266,000 | 17,200 | $326,800 |
| 5.2 | Major Temporary Channels | m | $87.00 | 0 | $0 | 0 | $0 | 0 | $0 |
| 5.3 | Minor Permanent Channels | m | $150.00 | 6000 | $900,000 | 0 | $0 | 6,000 | $900,000 |
| 5.4 | Major Permanent Channels | m | $275.00 | 4000 | $1,100,000 | 0 | $0 | 4,000 | $1,100,000 |
| | | | | **Sub-Total** | **$2,060,800** | | **$266,000** | 0 | $2,326,800 |
| **6.0** | **Tailing Delivery Line** | | | | | | | | |
| 6.1 | Tailing Distribution System | ls | $900,000.00 | 1 | $900,000 | 1 | $810,000 | 2 | $1,710,000 |
| | | | | **Sub-Total** | **$900,000** | | **$810,000** | | **$1,710,000** |
| **7.0** | **Reclaim Line** | | | | | | | | |
| 7.1 | Reclaim Line | ls | $770,000.00 | 1 | $770,000 | 1 | $100,000 | 2 | $870,000 |
| 7.2 | Sump Mill | ls | $30,000.00 | 1 | $30,000 | 0 | $0 | 1 | $30,000 |
| 7.3 | Barge Costs | ls | $250,000.00 | 1 | $250,000 | | $0 | 1 | $250,000 |
| 7.4 | Power Line Costs | km | $100,000.00 | 1.0 | $100,000 | | $0 | 1 | $100,000 |
| 7.5 | Electrical Equipment | ls | $100,000.00 | 1.0 | $100,000 | 0 | $0 | 1 | $100,000 |
| | | | | Sub-Total | $1,250,000 | | $100,000 | | $1,350,000 |
| | | | | **Grand Total** | **$11,085,514** | | **$13,623,424** | | **$24,708,938** |
| **8.0** | **EPCM** | | | | | | | | |
| 8.1 | EPCM | ls | 11% | 13,623,424 | $1,219,407 | 1 | $1,498,577 | 13,623,425 | $2,717,983 |
| 8.2 | Engineering Phase II and Phase III | ls | $ 800,000.00 | 1 | $800,000 | | | 1 | $800,000 |
| | | | | **Subtotal** | **$2,019,407** | | **$1,498,577** | | **$3,517,983** |
| **9.0** | **Owners Costs** | | | | | | | | |
| 9.1 | Owners Costs | ls | | | Not Included | | Not Included | | |
| | | | | **Subtotal** | **$0** | | **$0** | | **$0** |
| **10.0** | **Contingency** | | | | | | | | |
| 10.1 | Contingency | | | | Not Included | | Not Included | | |
| | | | | | **$0** | | **$0** | | **$0** |
| | | | | **Grand Total** | **$13,104,921** | | **$15,122,000** | | **$28,226,921** |

**TABLE 3**
**IDAHO GENERAL MINES, INC**
**MT. HOPE FEASIBILITY STUDY PHASE I**

**Tailing Storage Facility Alternative Siting Analysis**
**Site No. 1a (lower)**

**Work By Owner**

| Item | Description | Units | Unit Rate | Starter Facility | | Ultimate Facility | | Total Facility | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Quantity | Total (US$) | Quantity | Total (US$) | Quantity | Total (US$) |
| **1.0** | **Embankment Fill Placement** | | | | | | | | |
| 1.1 | Construction of Temporary Haul Road | m | $16.76 | 5,000 | $83,820 | 0 | $0 | 5,000 | $83,820 |
| 1.2 | Extra Haul Over Waste Dump to Construct Temp Haul Road | $m^3$/km | $0.12 | 1,960,000 | $235,200 | 0 | $0 | 1,960,000 | $235,200 |
| 1.3 | Extra Haul Over Waste Dump for Starter Embankment | $m^3$/km | $0.12 | 12,216,000 | $1,465,920 | 2,788,400 | $334,608 | 15,004,400 | $1,800,528 |
| 1.4 | Place and Compact Mine Waste | $m^3$ | $0.00 | 2,443,200 | $0 | 557,680 | $0 | 3,000,880 | $0 |
| | | | | **Sub-Total** | **$1,784,940** | | **$334,608** | 0 | **$2,119,548** |

**Work By Contractor**

| Item | Description | Units | Unit Rate | Starter Facility | | Ultimate Facility | | Total Facility | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Quantity | Total (US$) | Quantity | Total (US$) | Quantity | Total (US$) |
| 2.1 | Mobilization | ls | 5% | $15,169,569 | $758,478 | $38,958,799 | $1,947,940 | 54,128,368 | $2,706,418 |
| 2.2 | Demobilization | ls | 2% | $15,169,569 | $303,391 | $38,958,799 | $779,176 | 54,128,368 | $1,082,567 |
| **3.0** | **Earthworks** | | | **Sub-Total** | **$1,061,870** | | **$2,727,116** | | **$3,788,986** |
| 3.1 | Clearing and Grubbing | $m^2$ | $0.11 | 1,524,661 | $167,713 | 9,631,200 | $1,059,432 | 11,155,861 | $1,227,145 |
| 3.2 | Topsoil Stripping | $m^2$ | $0.50 | 1,524,661 | $762,331 | 9,631,200 | $4,815,600 | 11,155,861 | $5,577,931 |
| 3.3 | Embankment Foundation Excavation | $m^3$ | $1.65 | 270,504 | $446,331 | 834,600 | $1,377,090 | 1,105,104 | $1,823,421 |
| 3.4 | Embankment Foundation Preparation | $m^2$ | $0.28 | 541,007 | $151,482 | 1,669,200 | $467,376 | 2,210,207 | $618,858 |
| 3.5 | Embankment Foundation Subgrade | $m^2$ | $1.10 | 541,007 | $595,108 | 1,669,200 | $1,836,120 | 2,210,207 | $2,431,228 |
| 3.6 | Embankment Foundation Finger Drains | m | $21.89 | 18,034 | $394,755 | 55,640 | $1,217,960 | 73,674 | $1,612,714 |
| 3.8 | Embankment Spine drain | m | $86.74 | 200 | $17,348 | 450 | $39,033 | 650 | $56,381 |
| 3.7 | Embankment Toe Drain | $m^3$ | $2.20 | 0 | $0 | 557,680 | $1,226,896 | 557,680 | $1,226,896 |
| 3.9 | Embankment Construction | $m^3$ | $0.39 | 2,836,000 | $1,106,040 | 0 | $0 | 2,836,000 | $1,106,040 |
| 3.10 | Embankment Face Shaping | $m^2$ | $0.28 | 204,403 | $57,233 | | | 204,403 | $57,233 |
| 3.11 | Basin Foundation Preparation | $m^2$ | $0.28 | 983,654 | $275,423 | 7,962,000 | $2,229,360 | 8,945,654 | $2,504,783 |
| 3.12 | Basin Prepared Subgrade (300mm) | $m^2$ | $1.10 | 983,654 | $1,082,019 | 7,962,000 | $8,758,200 | 8,945,654 | $9,840,219 |
| 3.13 | Basin Drain Blanket (400mm) | $m^2$ | $1.10 | 983,654 | $1,082,019 | 7,962,000 | $8,758,200 | 8,945,654 | $9,840,219 |
| 3.14 | Basin Reclaim Slot Excavation | $m^3$ | $1.49 | 392,800 | $585,272 | 1,570,400 | $2,339,896 | 1,963,200 | $2,925,168 |
| 3.15 | Basin Reclaim Slot Retarding Layer (200mm) | $m^2$ | $1.10 | 54,796 | $60,275 | 219,071 | $240,978 | 273,867 | $301,253 |
| 3.16 | Basin Reclaim Slot Geotextile | $m^2$ | $1.38 | 109,591 | $151,236 | 438,141 | $604,635 | 547,732 | $755,870 |
| 3.17 | Basin Reclaim Slot Erosion Protection (150mm) | $m^2$ | $0.50 | 54,796 | $27,398 | 219,071 | $109,536 | 273,867 | $136,933 |
| 3.18 | Basin Drainage Collection Laterals (100 mm) | m | $6.05 | 19,673 | $119,022 | 159,240 | $963,402 | 178,913 | $1,082,424 |
| 3.19 | Basin Drainage Collection Headers (250mm) | m | $27.94 | 1,967 | $54,967 | 15,924 | $444,917 | 17,891 | $499,883 |
| 3.20 | Basin Drainage Collection Headers (300mm) | m | $40.52 | 1,491 | $60,415 | 5,889 | $238,622 | 7,380 | $299,038 |
| 3.21 | Basin Drainage Collection Headers (Solid HDPE 300 mm SDR 1 | m | $550.00 | 530 | $291,500 | | $0 | 530 | $291,500 |
| **4.0** | **Seepage Collection Pond** | | | **Sub-Total** | **$7,487,886** | | **$36,727,252** | | **$44,215,137** |
| 4.1 | Clearing and Grubbing | $m^2$ | $0.11 | 30,000 | $3,300 | 0 | $0 | 30,000 | $3,300 |
| 4.2 | Topsoil Stripping | $m^2$ | $0.76 | 30,000 | $22,800 | 0 | $0 | 30,000 | $22,800 |
| 4.3 | Excavation to Fill/Waste | $m^3$ | $3.30 | 111,000 | $366,300 | 0 | $0 | 111,000 | $366,300 |
| 4.4 | Prepared Subgrade | $m^2$ | $1.65 | 30,900 | $50,985 | 0 | $0 | 30,900 | $50,985 |
| 4.5 | Geomembrane Liner and Geonet | $m^2$ | $5.76 | 61,800 | $355,968 | 0 | $0 | 61,800 | $355,968 |
| 4.6 | Reclaim and Pumpback System | ls | $50,000.00 | 1 | $50,000 | 0 | $0 | 1 | $50,000 |
| **5.0** | **Diversion Channels** | | | **Sub-Total** | **$849,353** | | **$0** | | **$849,353** |
| 5.1 | Minor Temporary Channels | m | $19.00 | 0 | | 0 | $0 | 0 | $0 |
| 5.2 | Major Temporary Channels (Without Riprap Protection) | m | $87.00 | 6,628 | $576,636 | 13,581 | $1,181,547 | 20,209 | $1,758,183 |
| 5.3 | Minor Permanent Channels | m | $150.00 | 0 | | 0 | $0 | 0 | $0 |
| 5.4 | Major Permanent Channels (With Riprap Protection) | m | $275.00 | 14,297 | $3,931,675 | 0 | $0 | 14,297 | $3,931,675 |
| **6.0** | **Tailing Delivery Line** | | | **Sub-Total** | **$4,508,311** | | **$1,181,547** | | **$5,689,858** |
| 6.1 | Tailing Distribution System | ls | $2,726,010.00 | 1 | $2,726,010 | 1 | $1,500,000 | 2 | $4,226,010 |
| 6.2 | Adjacent Road and Trench | m | $70.00 | 4,500 | $315,000 | | | 4,500 | $315,000 |
| 6.3 | Valves and Fittings | ls | $272,601.00 | 1 | $272,601 | 1 | $150,000 | 2 | $422,601 |
| **7.0** | **Reclaim Line** | | | **Sub-Total** | **$3,313,611** | | **$1,500,000** | | **$4,813,611** |
| 7.1 | Reclaim System | ls | $1,334,428.00 | 1 | $1,334,428 | 1 | $600,000 | 2 | $1,934,428 |
| 7.2 | Sump at Mill | ls | $30,000.00 | 0 | $0 | | | 0 | $0 |
| 7.3 | Barge Costs | ls | $250,000.00 | 1 | $250,000 | 1 | $250,000 | 2 | $500,000 |
| 7.4 | Power Costs | km | $100,000.00 | 2.5 | $250,000 | | $0 | 3 | $250,000 |
| 7.5 | Power Equipment | ls | $100,000.00 | 1.0 | $100,000 | 2 | $200,000 | 3 | $300,000 |
| | | | | **Sub-total** | **$1,934,428** | | **$1,050,000** | | **$2,984,428** |
| | | | | **Total** | **$20,940,398** | | **$41,572,583** | | **$62,512,981** |
| **8.0** | **EPCM** | | | | | | | | |
| 8.1 | EPCM | ls | 11% | 20,940,398 | $2,303,444 | 1 | $7,000,000 | 20,940,399 | $9,303,444 |
| 8.2 | Engineering Phase II and Phase III | ls | $ 800,000.00 | 1 | $800,000 | | | 1 | $800,000 |
| **9.0** | **Owners Costs** | | | **Subtotal** | **$3,103,444** | | **$7,000,000** | | **$10,103,444** |
| 9.1 | Owners Costs | ls | | | Not Included | | Not Included | | |
| **10.0** | **Contingency** | | | **Subtotal** | **$0** | | **$0** | | **$0** |
| 10.1 | Contingency | | | | Not Included | | Not Included | | |
| | | | | **Grand Total** | **$24,043,842** | | **$48,572,583** | | **$72,616,425** |

**TABLE 4**
**IDAHO GENERAL MINES, INC**
**MT. HOPE FEASIBILITY STUDY PHASE I**

**Tailing Storage Facility Alternative Siting Analysis**
**Site No. 1b (lower)**

**Work By Owner**

| Item | Description | Units | Unit Rate | Starter Facility | | Ultimate Facility | | Total Facility | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Quantity | Total (US$) | Quantity | Total (US$) | Quantity | Total (US$) |
| **1.0** | **Embankment Fill Placement** | | | | | | | | |
| 1.1 | Construction Temporary Haul Road | m | $16.46 | 0 | $0 | 0 | $0 | 0 | $0 |
| 1.2 | Extra Haul Over Waste Dump Temp Haul Road | $m^3$/km | $0.12 | 0 | $0 | 0 | $0 | 0 | $0 |
| 1.3 | Extra Haul Over Waste Dump for Starter Embankment | $m^3$/km | $0.12 | 0 | $0 | 0 | $0 | 0 | $0 |
| 1.3 | Place and Compact Mine Waste | $m^3$ | $0.00 | 0 | $0 | 0 | $0 | 0 | $0 |
| | | | | **Sub-Total** | **$0** | | **$0** | 0 | **$0** |

**Work By Contractor**

| Item | Description | Units | Unit Rate | Starter Facility | | Ultimate Facility | | Total Facility | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Quantity | Total (US$) | Quantity | Total (US$) | Quantity | Total (US$) |
| **2.0** | **Mobilization/Demobilization** | | | | | | | | |
| 2.1 | Mobilization | | 5% | $13,807,686 | $690,384 | $52,211,609 | $2,610,580 | 66,019,295 | $3,300,965 |
| 2.2 | Demobilization | | 2% | $13,807,686 | $276,154 | $52,211,609 | $1,044,232 | 66,019,295 | $1,320,386 |
| **3.0** | **Earthworks** | | | **Sub-Total** | **$966,538** | | **$3,654,813** | 0 | $4,621,351 |
| 3.1 | Clearing and Grubbing | $m^2$ | $0.11 | 1,008,300 | $110,913 | 13,710,400 | $1,508,144 | 14,718,700 | $1,619,057 |
| 3.2 | Topsoil Stripping | $m^2$ | $0.50 | 1,008,300 | $504,150 | 13,710,400 | $6,855,200 | 14,718,700 | $7,359,350 |
| 3.3 | Embankment Foundation Excavation | $m^3$ | $1.65 | 44,000 | $72,600 | 403,050 | $665,033 | 447,050 | $737,633 |
| 3.4 | Embankment Foundation Preparation | $m^2$ | $0.28 | 88,000 | $24,640 | 806,100 | $225,708 | 894,100 | $250,348 |
| 3.5 | Embankment Prepared Subgrade | $m^2$ | $1.10 | 88,000 | $96,800 | 806,100 | $886,710 | 894,100 | $983,510 |
| 3.6 | Embankment Foundation Finger Drains | m | $21.89 | 2,933 | $64,211 | 26,870 | $588,184 | 29,803 | $652,395 |
| 3.7 | Embankment Spine drain | m | $86.74 | 200 | $17,348 | 470 | $40,768 | 670 | $58,116 |
| 3.8 | Embankment Toe Drain | $m^3$ | $2.20 | 0 | $0 | 284,130 | $625,086 | 284,130 | $625,086 |
| 3.9 | Embankment Construction (10 m wide crest) | $m^3$ | $0.39 | 1,057,596 | $412,462 | 0 | $0 | 1,057,596 | $412,462 |
| 3.10 | Emankment Face Shaping | $m^2$ | $0.28 | 37,000 | $10,360 | | | 37,000 | $10,360 |
| 3.11 | Basin Foundation Preparation | $m^2$ | $0.28 | 920,300 | $257,684 | 12,904,300 | $3,613,204 | 13,824,600 | $3,870,888 |
| 3.12 | Basin Prepared Subgrade (300mm) | $m^2$ | $1.10 | 920,300 | $1,012,330 | 12,904,300 | $14,194,730 | 13,824,600 | $15,207,060 |
| 3.13 | Basin Drain Blanket (400mm) | $m^2$ | $1.10 | 920,300 | $1,012,330 | 12,904,300 | $14,194,730 | 13,824,600 | $15,207,060 |
| 3.14 | Basin Reclaim Slot Excavation | $m^3$ | $1.49 | 1,040,000 | $1,549,600 | 2,320,000 | $3,456,800 | 3,360,000 | $5,006,400 |
| 3.15 | Basin Reclaim Slot Retarding Layer (200mm) | $m^2$ | $1.10 | 143,000 | $157,300 | 319,000 | $350,900 | 462,000 | $508,200 |
| 3.16 | Basin Reclaim Slot Geotextile | $m^2$ | $1.38 | 286,000 | $394,680 | 638,000 | $880,440 | 924,000 | $1,275,120 |
| 3.17 | Basin Reclaim Slot Erosion Protection (150mm) | $m^2$ | $0.50 | 143,000 | $71,500 | 319,000 | $159,500 | 462,000 | $231,000 |
| 3.18 | Basin Drainage Collection Laterals (100 mm) | m | $6.05 | 21,278 | $128,732 | 264,466 | $1,600,019 | 285,744 | $1,728,751 |
| 3.19 | Basin Drainage Collection Headers (250mm) | m | $27.94 | 2,128 | $59,451 | 26,447 | $738,929 | 28,575 | $798,380 |
| 3.20 | Basin Drainage Collection Headers (300mm) | m | $40.52 | 3,900 | $158,028 | 8,700 | $352,524 | 12,600 | $510,552 |
| 3.21 | Basin Drainage Collection Headers (Solid HDPE 300 mm S | m | $550.00 | 670 | $368,500 | | $0 | 670 | $368,500 |
| 3.22 | Highway Relocation | km | $500,000.00 | 11 | $5,250,000 | | $0 | 11 | $5,250,000 |
| **4.0** | **Seepage Collection Pond** | | | **Sub-Total** | **$11,733,619** | | **$50,936,609** | | **$62,670,228** |
| 4.1 | Clearing and Grubbing | $m^2$ | $0.11 | 30,000 | $3,300 | 0 | $0 | 30,000 | $3,300 |
| 4.2 | Topsoil Stripping | $m^2$ | $0.76 | 30,000 | $22,800 | 0 | $0 | 30,000 | $22,800 |
| 4.3 | Excavation to Fill/Waste | $m^3$ | $3.30 | 111,000 | $366,300 | 0 | $0 | 111,000 | $366,300 |
| 4.4 | Prepared Subgrade | $m^2$ | $1.65 | 30,900 | $50,985 | 0 | $0 | 30,900 | $50,985 |
| 4.5 | Geomembrane Liner and Geonet | $m^2$ | $5.76 | 61,800 | $355,968 | 0 | $0 | 61,800 | $355,968 |
| 4.6 | Reclaim and Pumpback System | ls | $50,000.00 | 1 | $50,000 | 0 | $0 | 1 | $50,000 |
| **5.0** | **Diversion Channels** | | | **Sub-Total** | **$849,353** | | **$0** | | **$849,353** |
| 5.1 | Minor Temporary Channels | m | $19.00 | 0 | $0 | 0 | $0 | 0 | $0 |
| 5.2 | Major Temporary Channels | m | $87.00 | 6,513 | $566,631 | 26,712 | $2,323,944 | 33,225 | $2,890,575 |
| 5.3 | Minor Permanent Channels | m | $150.00 | 0 | $0 | 0 | $0 | 0 | $0 |
| 5.4 | Major Permanent Channels | m | $275.00 | 22,786 | $6,266,150 | 0 | $0 | 22,786 | $6,266,150 |
| **6.0** | **Tailing Delivery Line** | | | **Sub-Total** | **$6,832,781** | | **$2,323,944** | | **$9,156,725** |
| 6.1 | Delivery Line With Adjacent Access Road | ls | $2,112,460.00 | 1 | $2,112,460 | 1 | $1,850,000 | 2 | $3,962,460 |
| 6.2 | Adjacent Road and Trench | m | $70.00 | 7,000 | $490,000 | | | 7,000 | $490,000 |
| 6.3 | Valves and Fittings | ls | $211,246.00 | 1 | $211,246 | 1 | $185,000 | 2 | $396,246 |
| **7.0** | **Reclaim System** | | | **Sub-Total** | **$2,813,706** | | **$1,850,000** | | **$4,663,706** |
| 7.1 | Reclaim System | ls | $1,334,428.00 | 1 | $1,334,428 | 1 | $700,000 | 2 | $2,034,428 |
| 7.2 | Sump at Mill | ls | $30,000.00 | 0 | $0 | | | 0 | $0 |
| 7.3 | Barge Costs | ls | $250,000.00 | 1 | $250,000 | | $0 | 1 | $250,000 |
| 7.4 | Power Line Costs | km | $100,000.00 | 4.1 | $410,000 | | $0 | 4 | $410,000 |
| 7.5 | Electrical Equipment | ls | $100,000.00 | 1.0 | $100,000 | 0 | $0 | 1 | $100,000 |
| | | | | Sub-Total | $2,094,428 | | $700,000 | | $2,794,428 |
| | | | | **Grand Total** | **$25,290,425** | | **$59,465,366** | | **$84,755,790** |
| **8.0** | **EPCM** | | | | | | | | |
| 8.1 | EPCM | ls | 11% | 25,290,425 | $2,781,947 | 1 | $8,000,000 | 25,290,426 | $10,781,947 |
| 8.2 | Engineering Phase II and Phase III | ls | $ 800,000.00 | 1 | $800,000 | | | 1 | $800,000 |
| **9.0** | **Owners Costs** | | | **Subtotal** | **$3,581,947** | | **$8,000,000** | | $11,581,947 |
| 9.1 | Owners Costs | ls | | | Not Included | | Not Included | | |
| **10.0** | **Contingency** | | | **Subtotal** | **$0** | | **$0** | | **$0** |
| 10.1 | Contingency | | | | Not Included | | Not Included | | |
| | | | | **Grand Total** | **$0** | | **$0** | | **$0** |
| | | | | | **$28,872,371** | | **$67,465,366** | | **$96,337,737** |

**TABLE 5**
**IDAHO GENERAL MINES, INC**
**MT. HOPE FEASIBILITY STUDY PHASE I**

**Tailing Storage Facility Alternative Siting Analysis**
**Site No.1c (Lower)**

**Work By Owner**

| Item | Description | Units | Unit Rate | Starter Facility | | Ultimate Facility | | Total Facility | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Quantity | Total (US$) | Quantity | Total (US$) | Quantity | Total (US$) |
| **1.0** | **Embankment Fill Placement** | | | | | | | | |
| 1.1 | Construction Temporary Haul Road | m | $16.46 | 0 | $0 | 0 | $0 | 0 | $0 |
| 1.2 | Extra Haul Over Waste Dump Temp Haul Road | $m^3$/km | $0.12 | 0 | $0 | 0 | $0 | 0 | $0 |
| 1.3 | Extra Haul Over Waste Dump for Starter Embankment | $m^3$/km | $0.12 | 0 | $0 | 0 | $0 | 0 | $0 |
| 1.3 | Place and Compact Mine Waste | $m^3$ | $0.00 | 0 | $0 | 0 | $0 | 0 | $0 |
| | | | | **Sub-Total** | **$0** | | **$0** | | **$0** |

**Work By Contractor**

| Item | Description | Units | Unit Rate | Starter Facility | | Ultimate Facility | | Total Facility | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Quantity | Total (US$) | Quantity | Total (US$) | Quantity | Total (US$) |
| **2.0** | **Mobilization/Demobilization** | | | | | | | | |
| 2.1 | Mobilization | | 5% | $13,807,686 | $690,384 | $46,721,870 | $2,336,093 | 60,529,556 | $3,026,478 |
| 2.2 | Demobilization | | 2% | $13,807,686 | $276,154 | $46,721,870 | $934,437 | 60,529,556 | $1,210,591 |
| | | | | **Sub-Total** | **$966,538** | | **$3,270,531** | | $4,237,069 |
| **3.0** | **Earthworks** | | | | | | | | |
| 3.1 | Clearing and Grubbing | $m^2$ | $0.11 | 1,008,300 | $110,913 | 11,243,453 | $1,236,780 | 12,251,753 | $1,347,693 |
| 3.2 | Topsoil Stripping | $m^2$ | $0.50 | 1,008,300 | $504,150 | 11,243,453 | $5,621,727 | 12,251,753 | $6,125,877 |
| 3.3 | Embankment Foundation Excavation | $m^3$ | $1.65 | 44,000 | $72,600 | 293,941 | $485,002 | 337,941 | $557,602 |
| 3.4 | Embankment Foundation Preparation | $m^2$ | $0.28 | 88,000 | $24,640 | 587,881 | $164,607 | 675,881 | $189,247 |
| 3.5 | Embankment Prepared Subgrade | $m^2$ | $1.10 | 88,000 | $96,800 | 587,881 | $646,669 | 675,881 | $743,469 |
| 3.6 | Embankment Foundation Finger Drains | m | $21.89 | 2,933 | $64,211 | 19,596 | $428,957 | 22,529 | $493,168 |
| 3.7 | Embankment Spine drain | m | $86.74 | 200 | $17,348 | 470 | $40,768 | 670 | $58,116 |
| 3.8 | Embankment Toe Drain | $m^3$ | $2.20 | 0 | $0 | 284,130 | $625,086 | 284,130 | $625,086 |
| 3.9 | Embankment Construction (10 m wide crest) | $m^3$ | $0.39 | 1,057,596 | $412,462 | 0 | $0 | 1,057,596 | $412,462 |
| 3.10 | Emankment Face Shaping | $m^2$ | $0.28 | 37,000 | $10,360 | | | 37,000 | $10,360 |
| 3.11 | Basin Foundation Preparation | $m^2$ | $0.28 | 920,300 | $257,684 | 11,575,872 | $3,241,244 | 12,496,172 | $3,498,928 |
| 3.12 | Basin Prepared Subgrade (300mm) | $m^2$ | $1.10 | 920,300 | $1,012,330 | 11,575,872 | $12,733,459 | 12,496,172 | $13,745,789 |
| 3.13 | Basin Drain Blanket (400mm) | $m^2$ | $1.10 | 920,300 | $1,012,330 | 11,575,872 | $12,733,459 | 12,496,172 | $13,745,789 |
| 3.14 | Basin Reclaim Slot Excavation | $m^3$ | $1.49 | 1,040,000 | $1,549,600 | 2,320,000 | $3,456,800 | 3,360,000 | $5,006,400 |
| 3.15 | Basin Reclaim Slot Retarding Layer (200mm) | $m^2$ | $1.10 | 143,000 | $157,300 | 319,000 | $350,900 | 462,000 | $508,200 |
| 3.16 | Basin Reclaim Slot Geotextile | $m^2$ | $1.38 | 286,000 | $394,680 | 638,000 | $880,440 | 924,000 | $1,275,120 |
| 3.17 | Basin Reclaim Slot Erosion Protection (150mm) | $m^2$ | $0.50 | 143,000 | $71,500 | 319,000 | $159,500 | 462,000 | $231,000 |
| 3.18 | Basin Drainage Collection Laterals (100 mm) | m | $6.05 | 21,278 | $128,732 | 264,466 | $1,600,019 | 285,744 | $1,728,751 |
| 3.19 | Basin Drainage Collection Headers (250mm) | m | $27.94 | 2,128 | $59,451 | 26,447 | $738,929 | 28,575 | $798,380 |
| 3.20 | Basin Drainage Collection Headers (300mm) | m | $40.52 | 3,900 | $158,028 | 8,700 | $352,524 | 12,600 | $510,552 |
| 3.21 | Basin Drainage Collection Headers (Solid HDPE 300 mm SDR 17) | m | $550.00 | 670 | $368,500 | | $0 | 670 | $368,500 |
| 3.22 | Highway Relocation | km | $500,000.00 | 11 | $5,250,000 | | $0 | 11 | $5,250,000 |
| | | | | **Sub-Total** | **$11,733,619** | | **$45,496,870** | | **$57,230,489** |
| **4.0** | **Seepage Collection Pond** | | | | | | | | |
| 4.1 | Clearing and Grubbing | $m^2$ | $0.11 | 30,000 | $3,300 | 0 | $0 | 30,000 | $3,300 |
| 4.2 | Topsoil Stripping | $m^2$ | $0.76 | 30,000 | $22,800 | 0 | $0 | 30,000 | $22,800 |
| 4.3 | Excavation to Fill/Waste | $m^3$ | $3.30 | 111,000 | $366,300 | 0 | $0 | 111,000 | $366,300 |
| 4.4 | Prepared Subgrade | $m^2$ | $1.65 | 30,900 | $50,985 | 0 | $0 | 30,900 | $50,985 |
| 4.5 | Geomembrane Liner and Geonet | $m^2$ | $5.76 | 61,800 | $355,968 | 0 | $0 | 61,800 | $355,968 |
| 4.6 | Reclaim and Pumpback System | ls | $50,000.00 | 1 | $50,000 | 0 | $0 | 1 | $50,000 |
| | | | | **Sub-Total** | **$849,353** | | **$0** | | **$849,353** |
| **5.0** | **Diversion Channels** | | | | | | | | |
| 5.1 | Minor Temporary Channels | m | $19.00 | 0 | $0 | 0 | $0 | 0 | $0 |
| 5.2 | Major Temporary Channels | m | $87.00 | 6,513 | $566,631 | 26,712 | $2,323,944 | 33,225 | $2,890,575 |
| 5.3 | Minor Permanent Channels | m | $150.00 | 0 | $0 | 0 | $0 | 0 | $0 |
| 5.4 | Major Permanent Channels | m | $275.00 | 22,786 | $6,266,150 | 0 | $0 | 22,786 | $6,266,150 |
| | | | | **Sub-Total** | **$6,832,781** | | **$2,323,944** | | **$9,156,725** |
| **6.0** | **Tailing Delivery Line** | | | | | | | | |
| 6.1 | Delivery Line With Adjacent Access Road | ls | $2,112,460.00 | 1 | $2,112,460 | 1 | $1,750,000 | 2 | $3,862,460 |
| 6.2 | Adjacent Road and Trench | m | $70.00 | 7,000 | $490,000 | | | 7,000 | $490,000 |
| 6.3 | Valves and Fittings | ls | $211,246.00 | 1 | $211,246 | 1 | $175,000 | 2 | $386,246 |
| | | | | **Sub-Total** | **$2,813,706** | | **$1,750,000** | | **$4,563,706** |
| **7.0** | **Reclaim System** | | | | | | | | |
| 7.1 | Reclaim System | ls | $1,334,428.00 | 1 | $1,334,428 | 1 | $700,000 | 2 | $2,034,428 |
| 7.2 | Sump at Mill | ls | $30,000.00 | 0 | $0 | | | 0 | $0 |
| 7.3 | Barge Costs | ls | $250,000.00 | 1 | $250,000 | | $0 | 1 | $250,000 |
| 7.4 | Power Line Costs | km | $100,000.00 | 4.1 | $410,000 | | $0 | 4 | $410,000 |
| 7.5 | Electrical Equipment | ls | $100,000.00 | 1.0 | $100,000 | 0 | $0 | 1 | $100,000 |
| | | | | Sub-Total | **$2,094,428** | | **$700,000** | | **$2,794,428** |
| | | | | **Grand Total** | **$25,290,425** | | **$53,541,345** | | **$78,831,770** |
| **8.0** | **EPCM** | | | | | | | | |
| 8.1 | EPCM | ls | 11% | 25,290,425 | $2,781,947 | 1 | $7,000,000 | 25,290,426 | $9,781,947 |
| 8.2 | Engineering Phase II and Phase III | ls | $ 800,000.00 | 1 | $800,000 | | | 1 | $800,000 |
| | | | | **Subtotal** | **$3,581,947** | | **$7,000,000** | | **$10,581,947** |
| **9.0** | **Owners Costs** | | | | | | | | |
| 9.1 | Owners Costs | ls | | | Not Included | | Not Included | | |
| | | | | **Subtotal** | **$0** | | **$0** | | **$0** |
| **10.0** | **Contingency** | | | | | | | | |
| 10.1 | Contingency | | | | Not Included | | Not Included | | |
| | | | | | **$0** | | **$0** | | **$0** |
| | | | | **Grand Total** | **$28,872,371** | | **$60,541,345** | | **$89,413,716** |

**TABLE 6**
**IDAHO GENERAL MINES, INC**
**MT. HOPE FEASIBILITY STUDY PHASE I**

**Tailing Storage Facility Alternative Siting Analysis**
**Site No. 2**

**Work By Owner**

| Item | Description | Units | Unit Rate | Starter Facility | | Ultimate Facility | | Total Facility | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Quantity | Total (US$) | Quantity | Total (US$) | Quantity | Total (US$) |
| **1.0** | **Embankment Fill Placement** | | | | | | | | |
| 1.1 | Construction Temporary Haul Road | m | $16.46 | 0 | $0 | 0 | $0 | 0 | $0 |
| 1.2 | Extra Haul Over Waste Dump Temp Haul Road | $m^3$/km | $0.12 | 0 | $0 | 0 | $0 | 0 | $0 |
| 1.3 | Extra Haul Over Waste Dump for Starter Embankment | $m^3$/km | $0.12 | 0 | $0 | 0 | $0 | 0 | $0 |
| 1.3 | Place and Compact Mine Waste | $m^3$ | $0.21 | 0 | $0 | 0 | $0 | 0 | $0 |
| | | | | **Sub-Total** | **$0** | | **$0** | | **$0** |

**Work By Contractor**

| Item | Description | Units | Unit Rate | Starter Facility | | Ultimate Facility | | Total Facility | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Quantity | Total (US$) | Quantity | Total (US$) | Quantity | Total (US$) |
| **2.0** | **Mobilization/Demobilization** | | | | | | | | |
| 2.1 | Mobilization | | 5% | $14,152,717 | $707,636 | $52,185,015 | $2,609,251 | 66,337,732 | $3,316,887 |
| 2.2 | Demobilization | | 2% | $14,152,717 | $283,054 | $52,185,015 | $1,043,700 | 66,337,732 | $1,326,755 |
| | | | | **Sub-Total** | **$990,690** | | **$3,652,951** | | **$4,643,641** |
| **3.0** | **Earthworks** | | | | | | | | |
| 3.1 | Clearing and Grubbing | $m^2$ | $0.19 | 1,792,980 | $331,701 | 13,939,438 | $2,578,796 | 15,732,418 | $2,910,497 |
| 3.2 | Topsoil Stripping | $m^2$ | $0.50 | 1,792,980 | $896,490 | 13,939,438 | $6,969,719 | 15,732,418 | $7,866,209 |
| 3.3 | Embankment Foundation Excavation | $m^3$ | $1.65 | 154,231 | $254,480 | 995,430 | $1,642,459 | 1,149,660 | $1,896,939 |
| 3.4 | Embankment Foundation Preparation | $m^2$ | $0.28 | 308,461 | $86,369 | 1,990,859 | $557,441 | 2,299,320 | $643,810 |
| 3.5 | Embankment Prepared Subgrade | $m^2$ | $1.10 | 308,461 | $339,307 | | | 308,461 | $339,307 |
| 3.6 | Embankment Foundation Finger Drains | m | $21.89 | 10,282 | $225,074 | 66,362 | $1,452,663 | 76,644 | $1,677,737 |
| 3.7 | Embankment Spine drain | m | $86.74 | 100 | $8,674 | 300 | $26,022 | 400 | $34,696 |
| 3.8 | Embankment Toe Drain | $m^3$ | $2.20 | 0 | $0 | 841,355 | $1,850,981 | 841,355 | $1,850,981 |
| 3.9 | Embankment Construction (10 m wide crest) | $m^3$ | $0.39 | 2,202,284 | $858,891 | 0 | $0 | 2,202,284 | $858,891 |
| 3.10 | Embankment Face Shaping | $m^2$ | $0.28 | 655,355 | $183,499 | | | 655,355 | $183,499 |
| 3.11 | Basin Foundation Preparation | $m^2$ | $0.28 | 1,425,419 | $399,117 | 11,948,600 | $3,345,608 | 13,374,019 | $3,744,725 |
| 3.12 | Basin Prepared Subgrade (300mm) | $m^2$ | $1.10 | 1,425,419 | $1,567,961 | 11,948,600 | $13,143,460 | 13,374,019 | $14,711,421 |
| 3.13 | Basin Drain Blanket (400mm) | $m^2$ | $1.10 | 1,425,419 | $1,567,961 | 11,948,600 | $13,143,460 | 13,374,019 | $14,711,421 |
| 3.14 | Basin Recalim Slot Excavation | $m^3$ | $1.49 | 648,000 | $965,520 | 1,993,600 | $2,970,464 | 2,641,600 | $3,935,984 |
| 3.15 | Basin Reclaim Slot Retarding Layer (200mm) | $m^2$ | $1.10 | 90,396 | $99,436 | 278,107 | $305,918 | 368,503 | $405,353 |
| 3.16 | Basin Reclaim Slot Geotextile | $m^2$ | $1.38 | 180,792 | $249,493 | 556,214 | $767,575 | 737,006 | $1,017,068 |
| 3.17 | Basin Reclaim Slot Erosion Protection (150mm) | $m^2$ | $0.50 | 90,396 | $45,198 | 278,107 | $139,054 | 368,503 | $184,252 |
| 3.18 | Basin Drainage Collection Laterals (100 mm) | m | $6.05 | 28,508 | $172,476 | 238,972 | $1,445,781 | 267,480 | $1,618,256 |
| 3.19 | Basin Drainage Collection Headers (250mm) | m | $27.94 | 2,851 | $79,652 | 23,897 | $667,688 | 26,748 | $747,340 |
| 3.20 | Basin Drainage Collection Headers (300mm) | m | $40.52 | 2,430 | $98,464 | 7,476 | $302,928 | 9,906 | $401,391 |
| 3.21 | Basin Drainage Collection Headers (Solid HDPE 300 mm SDR 17) | m | $550.00 | 400 | $220,000 | 0 | $0 | 400 | $220,000 |
| 3.23 | Relocation of Powerlines | km | $250,000.00 | 11.5 | $2,875,000 | 0 | $0 | 12 | $2,875,000 |
| | | | | **Sub-Total** | **$11,524,763** | | **$51,310,015** | | **$62,834,778** |
| **4.0** | **Seepage Collection Pond** | | | | | | | | |
| 4.1 | Clearing and Grubbing | $m^2$ | $0.19 | 30,000 | $5,550 | 0 | $0 | 30,000 | $5,550 |
| 4.2 | Topsoil Stripping | $m^2$ | $0.76 | 30,000 | $22,800 | 0 | $0 | 30,000 | $22,800 |
| 4.3 | Excavation to Fill/Waste | $m^3$ | $3.30 | 111,000 | $366,300 | 0 | $0 | 111,000 | $366,300 |
| 4.4 | Prepared Subgrade | $m^2$ | $1.65 | 30,900 | $50,985 | 0 | $0 | 30,900 | $50,985 |
| 4.5 | Geomembrane Liner and Geonet | $m^2$ | $5.76 | 61,800 | $355,968 | 0 | $0 | 61,800 | $355,968 |
| 4.6 | Reclaim and Pumpback System | ls | $50,000.00 | 1 | $50,000 | 0 | $0 | 1 | $50,000 |
| | | | | **Sub-Total** | **$851,603** | | **$0** | | **$851,603** |
| **5.0** | **Diversion Channels** | | | | | | | | |
| 5.1 | Minor Temporary Channels | m | $19.00 | 0 | $0 | 0 | $0 | 0 | $0 |
| 5.2 | Major Temporary Channels | m | $87.00 | 4,960 | $431,520 | 22,032 | $1,916,784 | 26,992 | $2,348,304 |
| 5.3 | Minor Permanent Channels | m | $150.00 | 18,050 | $2,707,500 | 0 | $0 | 18,050 | $2,707,500 |
| 5.4 | Major Permanent Channels | m | $275.00 | | $0 | 0 | $0 | 0 | $0 |
| | | | | **Sub-Total** | **$3,139,020** | | | | **$3,139,020** |
| **6.0** | **Tailing Delivery Line** | | | | | | | | |
| 6.1 | Delivery Line With Adjacent Access Road | ls | $3,255,150.00 | 1 | $3,255,150 | 1 | $1,050,000 | 2 | $4,305,150 |
| 6.2 | Adjacent Access Road and Trench | m | $70.00 | 5,400 | $378,000 | | | 5,400 | $378,000 |
| 6.3 | Valves and Fittings | ls | $162,757.50 | 1 | $162,758 | 1 | $105,000 | 2 | $267,758 |
| | | | | **Sub-Total** | **$3,795,908** | | **$1,050,000** | | **$4,845,908** |
| **7.0** | **Reclaim Line** | | | | | | | | |
| 7.1 | Reclaim Line | ls | $1,460,000.00 | 1 | $1,460,000 | 1 | $700,000 | 2 | $2,160,000 |
| 7.2 | Sump at Mill | ls | $60,000.00 | 1 | $60,000 | | | 1 | $60,000 |
| 7.3 | Barge Costs | ls | $250,000.00 | 1 | $250,000 | | $0 | 1 | $250,000 |
| 7.4 | Power Line Costs | km | $100,000.00 | 7.5 | $750,000 | | $0 | 8 | $750,000 |
| 7.5 | Electrical Equipment | ls | $100,000.00 | 1.0 | $100,000 | | $0 | 1 | $100,000 |
| | | | | **Sub-Total** | **$2,620,000** | | **$700,000** | | **$3,320,000** |
| | | | | **Grand Total** | **$22,921,984** | | **$56,712,966** | | **$79,634,950** |
| **8.0** | **EPCM** | | | | | | | | |
| 8.1 | EPCM | ls | 11% | 22,921,984 | $2,521,418 | 1 | $8,000,000 | 22,921,985 | $10,521,418 |
| 8.2 | Engineering Phase II and Phase III | ls | $ 800,000.00 | 1 | $800,000 | | | 1 | $800,000 |
| | | | | **Subtotal** | **$3,321,418** | | **$8,000,000** | | **$11,321,418** |
| **9.0** | **Owners Costs** | | | | | | | | |
| 9.1 | Owners Costs | ls | | | Not Included | | Not Included | | |
| | | | | **Subtotal** | **$0** | | **$0** | | **$0** |
| **10.0** | **Contingency** | | | | | | | | |
| 10.1 | Contingency | | | | Not Included | | Not Included | | |
| | | | | | **$0** | | **$0** | | **$0** |
| | | | | **Grand Total** | **$26,243,402** | | **$64,712,966** | | **$90,956,368** |

**TABLE 7**
**IDAHO GENERAL MINES, INC**
**MT. HOPE FEASIBILITY STUDY PHASE I**

**Tailing Storage Facility Alternative Siting Analysis**
**Site No. 2a(Lower)**

**Work By Owner**

| Item | Description | Units | Unit Rate | Starter Facility | | Ultimate Facility | | Total Facility | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Quantity | Total (US$) | Quantity | Total (US$) | Quantity | Total (US$) |
| **1.0** | **Embankment Fill Placement** | | | | | | | | |
| 1.1 | Construction Temporary Haul Road | m | $16.46 | 0 | $0 | 0 | $0 | 0 | $0 |
| 1.2 | Extra Haul Over Waste Dump Temp Haul Road | $m^3$/km | $0.12 | 0 | $0 | 0 | $0 | 0 | $0 |
| 1.3 | Extra Haul Over Waste Dump for Starter Embankment | $m^3$/km | $0.12 | 0 | $0 | 0 | $0 | 0 | $0 |
| 1.3 | Place and Compact Mine Waste | $m^3$ | $0.21 | 0 | $0 | 0 | $0 | 0 | $0 |
| | | | | **Sub-Total** | **$0** | | **$0** | | **$0** |

**Work By Contractor**

| Item | Description | Units | Unit Rate | Starter Facility | | Ultimate Facility | | Total Facility | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Quantity | Total (US$) | Quantity | Total (US$) | Quantity | Total (US$) |
| **2.0** | **Mobilization/Demobilization** | | | | | | | | |
| 2.1 | Mobilization | | 5% | $11,741,237 | $587,062 | $33,409,705 | $1,670,485 | 45,150,942 | $2,257,547 |
| 2.2 | Demobilization | | 2% | $11,741,237 | $234,825 | $33,409,705 | $668,194 | 45,150,942 | $903,019 |
| **3.0** | **Earthworks** | | | **Sub-Total** | **$821,887** | | **$2,338,679** | | **$3,160,566** |
| 3.1 | Clearing and Grubbing | $m^2$ | $0.19 | 1,379,953 | $255,291 | 8,531,736 | $1,578,371 | 9,911,689 | $1,833,662 |
| 3.2 | Topsoil Stripping | $m^2$ | $0.50 | 1,379,953 | $689,977 | 8,531,736 | $4,265,868 | 9,911,689 | $4,955,845 |
| 3.3 | Embankment Foundation Excavation | $m^3$ | $1.65 | 142,875 | $235,744 | 743,500 | $1,226,775 | 886,375 | $1,462,519 |
| 3.4 | Embankment Foundation Preparation | $m^2$ | $0.28 | 285,750 | $80,010 | 1,487,000 | $416,360 | 1,772,750 | $496,370 |
| 3.5 | Embankment Prepared Subgrade | $m^2$ | $1.10 | 285,750 | $314,325 | | | 285,750 | $314,325 |
| 3.6 | Embankment Foundation Finger Drains | m | $21.89 | 9,525 | $208,502 | 49,567 | $1,085,014 | 59,092 | $1,293,517 |
| 3.7 | Embankment Spine drain | m | $86.74 | 100 | $8,674 | 300 | $26,022 | 400 | $34,696 |
| 3.8 | Embankment Toe Drain | $m^3$ | $2.20 | 0 | $0 | 657,994 | $1,447,587 | 657,994 | $1,447,587 |
| 3.9 | Embankment Construction (10 m wide crest) | $m^3$ | $0.39 | 2,500,000 | $975,000 | 0 | $0 | 2,500,000 | $975,000 |
| 3.10 | Embankment Face Shaping | $m^2$ | $0.28 | 655,355 | $183,499 | | | 655,355 | $183,499 |
| 3.11 | Basin Foundation Preparation | $m^2$ | $0.28 | 1,094,203 | $306,377 | 7,044,736 | $1,972,526 | 8,138,939 | $2,278,903 |
| 3.12 | Basin Prepared Subgrade (300mm) | $m^2$ | $1.10 | 1,094,203 | $1,203,623 | 7,044,736 | $7,749,210 | 8,138,939 | $8,952,833 |
| 3.13 | Basin Drain Blanket (400mm) | $m^2$ | $1.10 | 1,094,203 | $1,203,623 | 7,044,736 | $7,749,210 | 8,138,939 | $8,952,833 |
| 3.14 | Basin Recalim Slot Excavation | $m^3$ | $1.49 | 560,000 | $834,400 | 1,698,400 | $2,530,616 | 2,258,400 | $3,365,016 |
| 3.15 | Basin Reclaim Slot Retarding Layer (200mm) | $m^2$ | $1.10 | 78,120 | $85,932 | 236,927 | $260,620 | 315,047 | $346,552 |
| 3.16 | Basin Reclaim Slot Geotextile | $m^2$ | $1.38 | 156,240 | $215,611 | 473,854 | $653,919 | 630,094 | $869,530 |
| 3.17 | Basin Reclaim Slot Erosion Protection (150mm) | $m^2$ | $0.50 | 78,120 | $39,060 | 236,927 | $118,464 | 315,047 | $157,524 |
| 3.18 | Basin Drainage Collection Laterals (100 mm) | m | $6.05 | 21,884 | $132,399 | 140,895 | $852,413 | 162,779 | $984,812 |
| 3.19 | Basin Drainage Collection Headers (250mm) | m | $27.94 | 2,188 | $61,144 | 14,089 | $393,660 | 16,278 | $454,804 |
| 3.20 | Basin Drainage Collection Headers (300mm) | m | $40.52 | 2,100 | $85,092 | 6,369 | $258,072 | 8,469 | $343,164 |
| 3.21 | Basin Drainage Collection Headers (Solid HDPE 300 mm | m | $550.00 | 400 | $220,000 | 0 | $0 | 400 | $220,000 |
| 3.23 | Relocation of Powerlines | km | $250,000.00 | 7.1 | $1,775,000 | 0 | $0 | 7 | $1,775,000 |
| **4.0** | **Seepage Collection Pond** | | | **Sub-Total** | **$9,113,283** | | **$32,584,705** | | **$41,697,989** |
| 4.1 | Clearing and Grubbing | $m^2$ | $0.19 | 30,000 | $5,550 | 30,000 | $5,550 | 60,000 | $11,100 |
| 4.2 | Topsoil Stripping | $m^2$ | $0.76 | 30,000 | $22,800 | 30,000 | $22,800 | 60,000 | $45,600 |
| 4.3 | Excavation to Fill/Waste | $m^3$ | $3.30 | 111,000 | $366,300 | 111,000 | $366,300 | 222,000 | $732,600 |
| 4.4 | Prepared Subgrade | $m^2$ | $1.65 | 30,900 | $50,985 | 30,900 | $50,985 | 61,800 | $101,970 |
| 4.5 | Geomembrane Liner and Geonet | $m^2$ | $5.76 | 61,800 | $355,968 | 61,800 | $355,968 | 123,600 | $711,936 |
| 4.6 | Reclaim and Pumpback System | ls | $50,000.00 | 1 | $50,000 | 1 | $50,000 | 2 | $100,000 |
| **5.0** | **Diversion Channels** | | | **Sub-Total** | **$851,603** | | **$851,603** | | **$1,703,206** |
| 5.1 | Minor Temporary Channels | m | $19.00 | 0 | $0 | 0 | $0 | 0 | $0 |
| 5.2 | Major Temporary Channels | m | $87.00 | 4,960 | $431,520 | | $0 | 4,960 | $431,520 |
| 5.3 | Minor Permanent Channels | m | $150.00 | 18,050 | $2,707,500 | 0 | $0 | 18,050 | $2,707,500 |
| 5.4 | Major Permanent Channels | m | $275.00 | | $0 | 0 | $0 | 0 | $0 |
| **6.0** | **Tailing Delivery Line** | | | **Sub-Total** | **$3,139,020** | | | | **$3,139,020** |
| 6.1 | Delivery Line With Adjacent Access Road | ls | $3,255,150.00 | 1 | $3,255,150 | 1 | $1,050,000 | 2 | $4,305,150 |
| 6.2 | Adjacent Access Road and Trench | m | $70.00 | 5,400 | $378,000 | | | 5,400 | $378,000 |
| 6.3 | Valves and Fittings | ls | $162,757.50 | 1 | $162,758 | 1 | $105,000 | 2 | $267,758 |
| **7.0** | **Reclaim Line** | | | **Sub-Total** | **$3,795,908** | | **$1,050,000** | | **$4,845,908** |
| 7.1 | Reclaim Line | ls | $1,460,000.00 | 1 | $1,460,000 | 1 | $600,000 | 2 | $2,060,000 |
| 7.2 | Sump at Mill | ls | $60,000.00 | 1 | $60,000 | | | 1 | $60,000 |
| 7.3 | Barge Costs | ls | $250,000.00 | 1 | $250,000 | | $0 | 1 | $250,000 |
| 7.4 | Power Line Costs | km | $100,000.00 | 7.5 | $750,000 | | $0 | 8 | $750,000 |
| 7.5 | Electrical Equipment | ls | $100,000.00 | 1.0 | $100,000 | | $0 | 1 | $100,000 |
| | | | | **Sub-Total** | **$2,620,000** | | **$600,000** | | $3,220,000 |
| | | | | **Grand Total** | **$20,341,701** | | **$37,424,987** | | **$57,766,688** |
| **8.0** | **EPCM** | | | | | | | | |
| 8.1 | EPCM | ls | 11% | 20,341,701 | $2,237,587 | 1 | $8,000,000 | 20,341,702 | $10,237,587 |
| 8.2 | Engineering Phase II and Phase III | ls | $ 800,000.00 | 1 | $800,000 | | | 1 | $800,000 |
| **9.0** | **Owners Costs** | | | **Subtotal** | **$3,037,587** | | **$8,000,000** | | **$11,037,587** |
| 9.1 | Owners Costs | ls | | | Not Included | | Not Included | | |
| **10.0** | **Contingency** | | | **Subtotal** | **$0** | | **$0** | | **$0** |
| 10.1 | Contingency | | | | Not Included | | Not Included | | |
| | | | | | **$0** | | **$0** | | **$0** |
| | | | | **Grand Total** | **$23,379,288** | | **$45,424,987** | | **$68,804,275** |

**TABLE 8**
**IDAHO GENERAL MINES, INC**
**MT. HOPE FEASIBILITY STUDY PHASE I**

**Tailing Storage Facility Alternative Siting Analysis**
**Site No. 3**

**Work By Owner**

| Item | Description | Units | Unit Rate | Starter Facility | | Ultimate Facility | | Total Facility | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Quantity | Total (US$) | Quantity | Total (US$) | Quantity | Total (US$) |
| **1.0** | **Embankment Fill Placement** | | | | | | | | |
| 1.1 | Construction Temporary Haul Road | | | | | | | | |
| 1.2 | Extra Haul Over Waste Dump Temp Haul Road | m | $16.46 | 0 | $0 | 0 | $0 | 0 | $0 |
| 1.3 | Extra Haul Over Waste Dump for Starter Embankment | $m^3$/km | $0.12 | 0 | $0 | 0 | $0 | 0 | $0 |
| 1.4 | Place and Compact Mine Waste | $m^3$/km | $0.12 | 0 | $0 | 0 | $0 | 0 | $0 |
| | | $m^3$ | $0.21 | 0 | $0 | 0 | $0 | 0 | $0 |
| | | | | **Sub-Total** | **$0** | | **$0** | | **$0** |

**Work By Contractor**

| Item | Description | Units | Unit Rate | Starter Facility | | Ultimate Facility | | Total Facility | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Quantity | Total (US$) | Quantity | Total (US$) | Quantity | Total (US$) |
| **2.0** | **Mobilization/Demobilization** | | | | | | | | |
| 2.1 | Mobilization | | 5% | $8,351,539 | $417,577 | $2,891,147 | $144,557 | 11,242,685 | $562,134 |
| 2.2 | Demobilization | | 2% | $8,351,539 | $167,031 | $2,108,984 | $42,180 | 10,460,523 | $209,210 |
| **3.0** | **Earthworks** | | | | **Sub-Total** | **$584,608** | | **$186,737** | | **$771,345** |
| 3.1 | Clearing and Grubbing | $m^2$ | $0.06 | 1,531,550 | $88,064 | 12,914,510 | $742,584 | 14,446,060 | $830,648 |
| 3.2 | Topsoil Stripping | $m^2$ | $0.45 | 1,531,550 | $689,198 | 12,914,510 | $5,811,530 | 14,446,060 | $6,500,727 |
| 3.3 | Embankment Foundation Excavation | $m^3$ | $1.50 | 153,750 | $230,625 | 1,197,773 | $1,796,659 | 1,351,523 | $2,027,284 |
| 3.4 | Embankment Foundation Preparation | $m^2$ | $0.25 | 307,500 | $76,875 | 2,395,545 | $598,886 | 2,703,045 | $675,761 |
| 3.5 | Embankment Prepared Subgrade | $m^2$ | $1.00 | 307,500 | $307,500 | 2,395,545 | $2,395,545 | 2,703,045 | $2,703,045 |
| 3.6 | Embankment Foundation Finger Drains | m | $19.90 | 10,250 | $203,975 | | $0 | 10,250 | $203,975 |
| 3.7 | Embankment Spine drain | m | $78.85 | 120 | $9,462 | 330 | $26,021 | 450 | $35,483 |
| 3.8 | Embankment Toe Drain | $m^3$ | $3.50 | 0 | $0 | 1,162,238 | $4,067,833 | 1,162,238 | $4,067,833 |
| 3.9 | Embankment Construction | $m^3$ | $1.50 | 2,346,164 | $3,519,246 | 0 | $0 | 2,346,164 | $3,519,246 |
| 3.10 | Embankment Face Shaping | $m^2$ | $0.25 | 135,800 | $33,950 | | | 135,800 | $33,950 |
| 3.11 | Basin Foundation Preparation | $m^2$ | $0.25 | 1,224,050 | $306,013 | 10,518,965 | $2,629,741 | 11,743,015 | $2,935,754 |
| 3.12 | Basin Prepared Subgrade (300mm) | $m^2$ | $1.00 | 1,224,050 | $1,224,050 | 10,518,965 | $10,518,965 | 11,743,015 | $11,743,015 |
| 3.13 | Basin Drain Blanket (400mm) | $m^2$ | $1.00 | 1,224,050 | $1,224,050 | 10,518,965 | $10,518,965 | 11,743,015 | $11,743,015 |
| 3.14 | Basin Recalim Slot Excavation | $m^3$ | $1.35 | 576,000 | $777,600 | 1,624,000 | $2,192,400 | 2,200,000 | $2,970,000 |
| 3.15 | Basin Reclaim Slot Retarding Layer (200mm) | $m^2$ | $1.00 | 79,200 | $79,200 | 223,300 | $223,300 | 302,500 | $302,500 |
| 3.16 | Basin Reclaim Slot Geotextile | $m^2$ | $1.25 | 158,400 | $198,000 | 446,600 | $558,250 | 605,000 | $756,250 |
| 3.17 | Basin Reclaim Slot Erosion Protection (150mm) | $m^2$ | $0.45 | 79,200 | $35,640 | 223,300 | $100,485 | 302,500 | $136,125 |
| 3.18 | Basin Drainage Collection Laterals (100 mm) | m | $5.05 | 26,065 | $131,628 | 214,845 | $1,084,967 | 240,910 | $1,216,596 |
| 3.19 | Basin Drainage Collection Headers (250mm) | m | $25.40 | 2,607 | $66,205 | 21,485 | $545,706 | 24,091 | $611,911 |
| 3.20 | Basin Drainage Collection Headers (300mm) | m | $36.84 | 2,160 | $79,574 | 6,090 | $224,356 | 8,250 | $303,930 |
| 3.21 | Basin Drainage Collection Headers (Solid HDPE 300 mm SDR 17) | m | $500.00 | 450 | $225,000 | | $0 | 450 | $225,000 |
| **4.0** | **Seepage Collection Pond** | | | | **Sub-Total** | **$9,505,855** | | **$44,036,193** | | **$53,542,048** |
| 4.1 | Clearing and Grubbing | $m^2$ | $0.06 | 30,000 | $1,725 | 0 | $0 | 30,000 | $1,725 |
| 4.2 | Topsoil Stripping | $m^2$ | $0.69 | 30,000 | $20,700 | 0 | $0 | 30,000 | $20,700 |
| 4.3 | Excavation to Fill/Waste | $m^3$ | $3.00 | 111,000 | $333,000 | 0 | $0 | 111,000 | $333,000 |
| 4.4 | Prepared Subgrade | $m^2$ | $1.50 | 30,900 | $46,350 | 0 | $0 | 30,900 | $46,350 |
| 4.5 | Geomembrane Liner and Geonet | $m^2$ | $5.25 | 61,800 | $324,450 | 0 | $0 | 61,800 | $324,450 |
| 4.6 | Reclaim and Pumpback System | ls | $45,000.00 | 1 | $45,000 | 0 | $0 | 1 | $45,000 |
| **5.0** | **Diversion Channels** | | | | **Sub-Total** | **$771,225** | | **$0** | | **$771,225** |
| 5.1 | Minor Temporary Channels | m | $17.00 | 0 | $0 | 0 | $0 | 0 | $0 |
| 5.2 | Major Temporary Channels | m | $79.00 | 4,593 | $362,847 | 26,696 | $2,108,984 | 31,289 | $2,471,831 |
| 5.3 | Minor Permanent Channels | m | $136.00 | 0 | $0 | 0 | $0 | 0 | $0 |
| 5.4 | Major Permanent Channels | m | $250.00 | 14,403 | $3,600,750 | 0 | $0 | 14,403 | $3,600,750 |
| **6.0** | **Tailing Delivery Line** | | | | **Sub-Total** | **$3,963,597** | | **$2,108,984** | | **$6,072,581** |
| 6.1 | Delivery Line | ls | $3,696,510.00 | 1 | $3,696,510 | 1 | $785,750 | 2 | $4,482,260 |
| 6.2 | Adjacent Access Road and Trench | m | $70.00 | 7,214 | $504,980 | | | 7,214 | $504,980 |
| 6.3 | Valves and Fittings | ls | $369,651.00 | 1 | $369,651 | 1 | $78,575 | 2 | $448,226 |
| 6.4 | Culvert Crossings | m | $1,650.00 | 30 | $49,500 | | | 30 | $49,500 |
| 6.5 | Sump at Low Point | ls | $50,000.00 | 1 | $50,000 | | | 1 | $50,000 |
| **7.0** | **Reclaim Line** | | | | **Sub-Total** | **$4,670,641** | | **$864,325** | | **$5,534,966** |
| 7.1 | Reclaim Line | ls | $2,112,792.00 | 1 | $2,112,792 | 1 | $700,000 | 2 | $2,812,792 |
| 7.2 | Sump at Low Point | ls | $50,000.00 | 1 | $50,000 | | | 1 | $50,000 |
| 7.3 | Barge Costs | ls | $250,000.00 | 1 | $250,000 | | $0 | 1 | $250,000 |
| 7.4 | Power Line Costs | km | $100,000.00 | 7.0 | $700,000 | | $0 | 7 | $700,000 |
| 7.5 | Electrical Equipment | ls | $100,000.00 | 1.0 | $100,000 | | $0 | 1 | $100,000 |
| | | | | **Sub-Total** | **$3,212,792** | | **$700,000** | | **$3,912,792** |
| | | | | **Grand Total** | **$22,708,718** | | **$47,896,238** | | **$70,604,956** |
| **8.0** | **EPCM** | | | | | | | | |
| 8.1 | EPCM | ls | 11% | 22,708,718 | $2,497,959 | 1 | $8,000,000 | 22,708,719 | $10,497,959 |
| 8.2 | Engineering Phase II and Phase III | ls | $ 800,000.00 | 1 | $800,000 | | | 1 | $800,000 |
| **9.0** | **Owners Costs** | | | | **Subtotal** | **$3,297,959** | | **$8,000,000** | | **$11,297,959** |
| 9.1 | Owners Costs | ls | | | Not Included | | Not Included | | |
| **10.0** | **Contingency** | | | | **Subtotal** | **$0** | | **$0** | | **$0** |
| 10.1 | Contingency | | | | Not Included | | Not Included | | |
| | | | | | **$0** | | **$0** | | **$0** |
| | | | | **Grand Total** | **$26,006,677** | | **$55,896,239** | | **$81,902,915** |

TABLE 19
IDAHO GENERAL MINES, INC
NT HOPE PROJECT
PRELIMINARY ANALYSIS OF TAP ALTERNATIVE

| | | Operating Cost Starter Facility | Operating Cost Ultimate Facility | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | Year 11 | Year 12 | Year 13 | Year 14 | Year 15 | Year 16 | Year 17 | Year 18 | Year 19 | Year 20 | Year 21 | Year 22 | Year 23 | Year 24 | Year 25 | Year 26 | Year 27 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site 1, Single site | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Estimated Capital Cost Construction | $66,443,158 | | | $24,400,635 | $4,828,425 | | | | | $4,828,425 | | | | | | | | | | | | | | | | | | | | |
| Estimated Capital Cost Reclamation | $18,320,000 | | | | $1,672,280 | $1,635,206 | $1,638,311 | $1,641,327 | $1,644,343 | | | | | | $4,828,425 | | | | | $4,828,425 | | | | $4,828,425 | | | | | $4,828,425 |
| Estimated Operating Cost | $106,804,120 | $0.112 | $0.124 | $34,400,635 | $4,561,185 | $4,633,284 | $4,638,311 | $4,641,327 | $4,644,343 | $4,576,794 | $1,650,374 | $1,653,390 | $1,656,406 | $1,659,422 | $4,581,863 | $4,585,483 | $1,668,466 | $1,671,485 | $1,674,500 | $4,666,341 | $1,680,522 | $1,683,540 | $1,686,563 | $1,689,579 | $4,682,585 | $1,695,610 | $1,698,626 | $1,701,642 | $1,704,658 | $4,837,673 |
| | $343,787,373 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NPV | 7% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | $44,229,467 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Site 1a, (construct upper facility first) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Stage 1 (upper facility) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Estimated Capital Cost Construction | $28,228,821 | | | $13,104,821 | $5,040,667 | | | | | $5,040,667 | | | | | | | | | | | | | | | | | | | | |
| Estimated Capital Cost Reclamation | $8,920,000 | | | | $1,162,800 | $1,210,563 | $1,236,567 | $1,266,550 | $1,294,533 | | | | | | $5,040,667 | | | | | $4,660,000 | $4,660,000 | | | | | | | | |
| Estimated Operating Cost | $17,564,500 | $0.081 | $0.104 | $13,104,821 | $4,222,267 | $1,210,563 | $1,236,567 | $1,266,550 | $1,294,533 | $4,343,183 | $1,330,300 | $1,378,483 | $1,406,467 | $1,434,450 | $4,563,100 | $1,490,417 | $1,518,400 | $0 | $4,660,000 | $4,660,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| | $80,703,421 | | | | | | | | | | | | | | | | $24,043,842 | $4,657,258 | | | | | | | | | | | | |
| Stage 2 (your facility) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Estimated Capital Cost Construction | $73,618,425 | | | | | | | | | | | | | | | | $34,843,842 | $4,827,800 | $4,831,753 | $4,833,545 | $4,830,366 | $4,843,230 | $4,847,043 | $4,850,895 | $4,854,728 | $4,858,562 | | $4,857,254 | | |
| Estimated Capital Cost Reclamation | $40,780,000 | | | | | | | | | | | | | | | | $29,542,842 | $4,466,158 | $4,831,753 | $4,836,543 | $4,833,366 | $4,843,230 | $4,844,231 | $4,850,895 | $4,854,728 | $4,858,562 | $4,862,393 | $4,866,225 | $4,870,056 | $4,873,890 |
| Estimated Operating Cost | $84,374,120 | $0.112 | $0.124 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $4,831,753 | $4,836,543 | $4,833,366 | $4,843,230 | $4,844,231 | $4,850,895 | $4,854,728 | $4,858,562 | $4,862,393 | $8,333,481 | $8,870,056 | $8,873,890 |
| | $197,636,545 | | | $12,104,821 | $8,222,267 | $1,210,563 | $1,236,567 | $1,266,550 | $1,294,533 | $8,343,183 | $1,330,300 | $1,378,483 | $1,406,467 | $1,434,450 | $8,883,100 | $1,490,417 | $29,542,842 | $6,466,158 | $9,491,753 | $9,496,543 | $9,493,366 | $9,503,230 | $9,504,231 | $9,510,895 | $9,514,728 | $9,518,562 | $4,862,393 | $8,333,481 | $8,870,056 | $8,873,890 | |
| | $293,352,966 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NPV | 7% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | $44,337,198 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Site 1b | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Estimated Capital Cost Construction | $96,337,737 | | | $28,573,371 | $5,188,644 | | | | | $5,188,644 | | | | | | | | | | | | | | | | | | | | |
| Estimated Capital Cost Reclamation | $44,240,000 | | | | $1,845,540 | $1,588,966 | $1,564,410 | $1,538,844 | $1,603,271 | | | | | | $5,188,644 | | | | | $5,188,644 | | | | $5,188,644 | | | | | $5,188,644 |
| Estimated Operating Cost | $108,677,626 | $0.109 | $0.127 | $28,573,371 | $4,779,384 | $1,588,966 | $1,564,410 | $1,538,844 | $1,603,271 | $6,757,643 | $1,612,127 | $1,616,566 | $1,620,983 | $1,625,411 | $5,029,630 | $1,634,267 | $1,638,684 | $1,643,122 | $6,647,556 | $5,141,976 | $1,654,408 | $1,646,834 | $1,645,282 | $1,646,600 | $5,162,761 | $1,678,545 | $1,682,973 | $1,687,401 | $1,691,829 | $5,318,257 |
| | $211,897,363 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NPV | 7% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | $64,773,479 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Site 1c, (construct upper facility first | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Stage 1 (upper facility) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Estimated Capital Cost Construction | $28,228,821 | | | $13,104,821 | $5,040,667 | | | | | $5,040,667 | | | | | | | | | | | | | | | | | | | | |
| Estimated Capital Cost Reclamation | $8,920,000 | | | | $1,162,800 | $1,210,563 | $1,236,567 | $1,266,550 | $1,294,533 | | | | | | $5,040,667 | | | | | $4,660,000 | $4,660,000 | | | | | | | | |
| Estimated Operating Cost | $17,564,500 | $0.081 | $0.104 | $13,104,821 | $4,222,267 | $1,210,563 | $1,236,567 | $1,266,550 | $1,294,533 | $4,343,183 | $1,330,300 | $1,378,483 | $1,406,467 | $1,434,450 | $4,563,100 | $1,490,417 | $1,518,400 | $0 | $4,660,000 | $4,660,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| | $80,703,421 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Site 1d lower | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Estimated Capital Cost Construction | $66,443,716 | | | | | | | | | | | | | | | | $38,872,371 | $8,954,134 | | | | | | | | | | | | |
| Estimated Capital Cost Reclamation | $44,240,000 | | | | | | | | | | | | | | | | | | $5,561,118 | $5,566,966 | $5,562,679 | $5,566,457 | $5,804,236 | $5,810,015 | $5,813,794 | $5,821,573 | $5,827,353 | $8,954,134 | $5,833,133 | $5,838,911 |
| Estimated Operating Cost | $83,987,886 | $0.109 | $0.127 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $38,872,371 | $7,375,340 | $5,561,118 | $5,566,966 | $5,562,679 | $5,566,457 | $7,648,279 | $5,810,015 | $5,813,794 | $5,821,573 | $5,827,353 | $7,457,264 | $5,838,911 | $5,844,690 |
| | $317,647,676 | | | $13,104,821 | $4,222,267 | $1,210,563 | $1,236,567 | $1,266,550 | $1,294,533 | $4,343,183 | $1,330,300 | $1,378,483 | $1,406,467 | $1,434,450 | $4,563,100 | $1,490,417 | $38,872,371 | $7,375,340 | $5,561,118 | $5,566,966 | $5,562,679 | $5,566,457 | $7,648,279 | $5,810,015 | $5,813,794 | $5,821,573 | $5,827,353 | $7,457,264 | $5,838,911 | $5,844,690 |
| | $379,349,997 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NPV | 7% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | $63,563,888 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Site 2 (single Kobeh Valley facility) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Estimated Capital Cost Construction | $80,956,388 | | | $36,343,453 | $4,977,930 | | | | | $4,977,930 | | | | | | | | | | | | | | | | | | | | |
| Estimated Capital Cost Reclamation | $43,360,000 | | | | $2,346,259 | $2,371,643 | $2,379,125 | $2,344,567 | $2,391,049 | | | | | | $4,977,930 | | | | | $4,977,930 | | | | $4,977,930 | | | | | $4,977,930 |
| Estimated Operating Cost | $158,842,605 | $0.182 | $0.186 | $36,343,453 | $7,324,188 | $2,371,643 | $2,379,125 | $2,344,567 | $2,391,049 | $2,977,511 | $2,403,974 | $2,410,436 | $2,416,896 | $2,423,361 | $7,407,763 | $2,434,265 | $2,442,748 | $2,448,210 | $2,455,672 | $7,440,053 | $2,460,587 | $2,473,068 | $2,481,521 | $2,487,984 | $7,472,366 | $2,500,304 | $2,507,379 | $2,513,833 | $2,520,295 | $2,526,757 |
| | $296,158,046 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NPV | 7% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | $72,391,922 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Site 2b, (construct small facility Tyrone Creek drainage first | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Stage 1 (upper facility) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Estimated Capital Cost Construction | $28,228,821 | | | $13,104,821 | $5,040,667 | | | | | $5,040,667 | | | | | | | | | | | | | | | | | | | | |
| Estimated Capital Cost Reclamation | $8,920,000 | | | | $1,162,800 | $1,210,563 | $1,236,567 | $1,266,550 | $1,294,533 | | | | | | $5,040,667 | | | | | $4,660,000 | $4,660,000 | | | | | | | | |
| Estimated Operating Cost | $17,564,500 | $0.081 | $0.104 | $13,104,821 | $4,222,267 | $1,210,563 | $1,236,567 | $1,266,550 | $1,294,533 | $4,343,183 | $1,330,300 | $1,378,483 | $1,406,467 | $1,434,450 | $4,563,100 | $1,490,417 | $1,518,400 | $0 | $4,660,000 | $4,660,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| | $80,703,421 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Site 2b (construct Kobeh Valley facility second | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Estimated Capital Cost Construction | $66,804,273 | | | | | | | | | | | | | | | | $23,379,286 | $4,542,499 | | | | | | | | | | | | |
| Estimated Capital Cost Reclamation | $34,610,000 | | | | | | | | | | | | | | | | | | $3,243,228 | $3,252,658 | $3,262,064 | $3,271,517 | $3,280,946 | $3,290,375 | $3,299,804 | $3,309,233 | $3,318,663 | $4,542,499 | $3,328,092 | $3,337,521 |
| Estimated Operating Cost | $136,544,800 | $0.153 | $0.194 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $23,379,286 | $4,542,499 | $3,243,228 | $3,252,658 | $3,262,064 | $3,271,517 | $4,822,446 | $3,290,375 | $3,299,804 | $3,309,233 | $3,318,663 | $4,542,499 | $3,328,092 | $3,337,521 |
| | $273,359,175 | | | | | | | | | | | | | | | | | | $3,243,228 | $3,252,658 | $3,262,064 | $3,271,517 | $4,822,446 | $3,294,375 | $3,299,804 | $3,309,233 | $3,318,663 | $4,879,599 | $3,328,092 | $3,337,521 |
| | $279,062,594 | | | | | | | | | | | | | | | | | | $7,343,229 | $7,213,650 | $5,262,064 | $5,271,517 | $4,822,446 | $4,294,378 | $3,299,804 | $3,309,233 | $3,318,663 | $4,879,599 | $3,328,092 | $3,337,521 |
| NPV | 7% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | $63,218,191 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Site 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Estimated Capital Cost Construction | $61,902,815 | | | $26,006,677 | $4,298,711 | | | | | $4,298,711 | | | | | | | | | | | | | | | | | | | | |
| Estimated Capital Cost Reclamation | $41,015,000 | | | | $2,117,000 | $2,108,197 | $2,101,385 | $2,093,583 | $2,086,790 | | | | | | $4,298,711 | | | | | $4,298,711 | | | | $4,298,711 | | | | | $4,298,711 |
| Estimated Operating Cost | $118,486,240 | $0.141 | $0.112 | $26,006,677 | $6,415,711 | $2,108,197 | $2,101,385 | $2,093,583 | $2,086,790 | $2,077,887 | $2,070,184 | $2,063,382 | $2,054,579 | $2,046,776 | $4,334,884 | $2,031,171 | $2,023,368 | $2,015,566 | $2,007,763 | $4,306,641 | $2,992,158 | $2,984,355 | $2,976,553 | $2,968,750 | $4,268,858 | $2,953,145 | $2,945,342 | $4,237,540 | $2,929,737 | $2,921,934 |
| | $288,417,156 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NPV | 7% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | $64,221,267 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

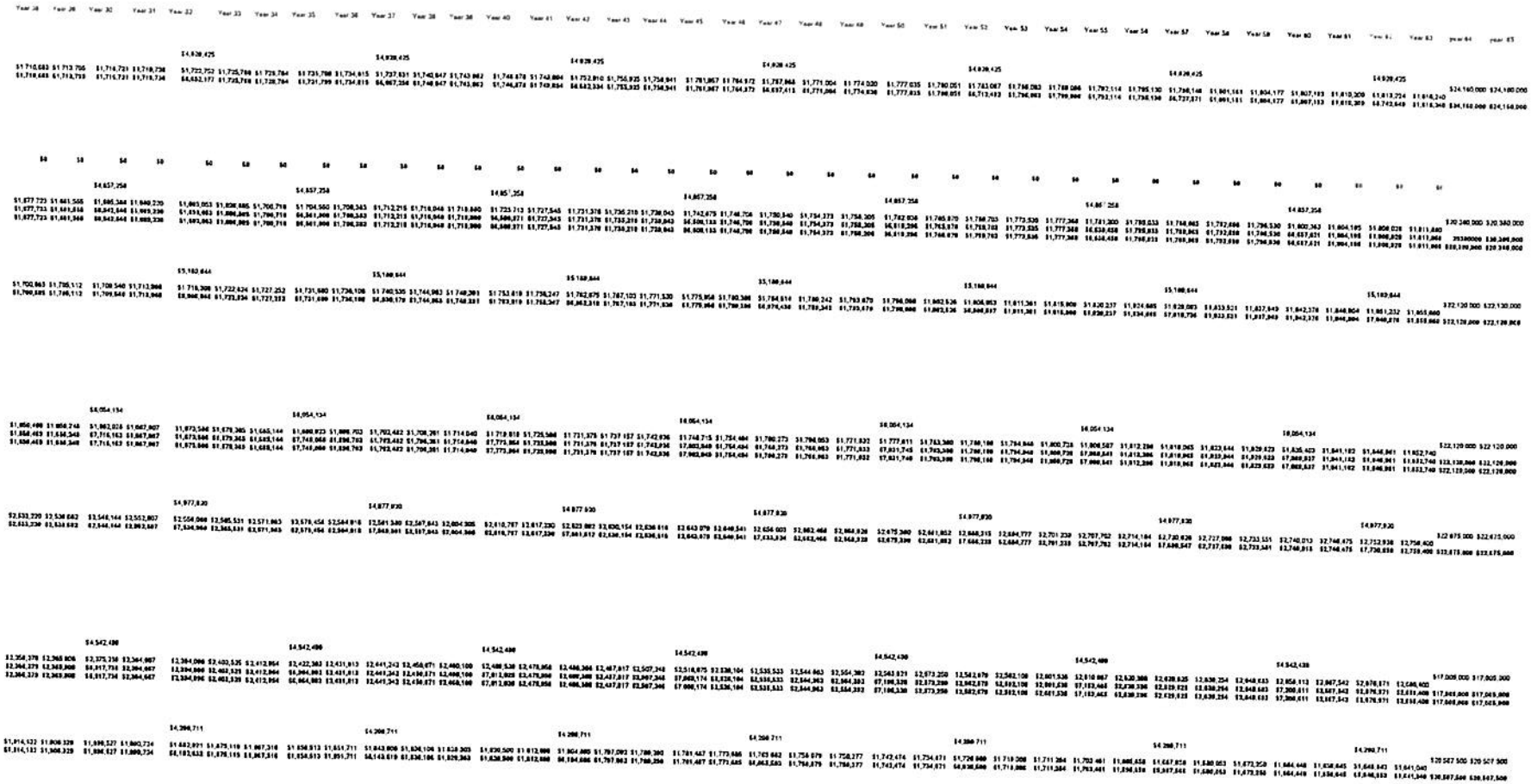


TABLE 9

IDAHO GENERAL MINES, INC

MT HOPE FEASIBILITY STUDY PHASE I

Tailing Storage Facility Alternative Analysis

Decision Matrix

| Alternative | NPV (7%) | Initial Capital Cost | Operating Cost | NPV (20%) | Initial Capital (25%) | Operating Cost (15%) | Permit Time (15%) | Land Position (10%) | Environmental (7.5%) | Technical (7.5%) | Score | Overall Rank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No.1 | $60,229,497 | $24,400,635 | $106,904,120 | 0.95 | 5.30 | 1.56 | | 1 | 6.6 | 7.0 | 268 | 4 |
| No.1a (two facilities) | $60,337,198 | $13,104,921 | $101,830,620 | 1.00 | 1.00 | 1.03 | | 1 | 7.0 | 5.5 | 144 | 1 |
| No.1b | $64,772,179 | $28,872,371 | $106,677,820 | 3.22 | 7.00 | 1.54 | | 2 | 6.1 | 7.3 | 319 | 7 |
| No. 1c (two facilities) | $63,562,890 | $13,104,921 | $101,544,460 | 2.62 | 1.00 | 1.00 | | 2 | 6.6 | 9.4 | 180 | 3 |
| No.2 | $72,301,922 | $26,243,402 | $158,862,600 | 7.00 | 6.00 | 7.00 | | 4 | 1.0 | 1.0 | 310 | 6 |
| No.2a (two facilities) | $63,216,101 | $13,104,921 | $138,101,400 | 2.44 | 1.00 | 4.83 | | 4 | 2.3 | 1.6 | 167 | 2 |
| No.3 | $64,221,387 | $26,006,677 | $116,499,240 | 2.95 | 5.91 | 2.57 | | 3 | 1.6 | 6.2 | 275 | 5 |

Rating Criteria

Alternatives rated from 1 to 7, with 1 being best

Costs were rated with a formula that compared the cost of each alternative based on the difference of the costs between the highest priced and lowest alternatives priced. This was used as to not penalize alternatives that were extremely close in cost.

Site Descriptions:

Alternative 1: One large site along the Highway.
Alternative 1a: One upper site and one smaller lower site along the Highway.
Alternative 1b: One large site that uses Highway 278 causing relocation of the Highway
Alternative 1c: Lower site that uses Highway 278 causing relocation of the road and creates a smaller upper site.
Alternative 2: One large site that is West of the pit.
Alternative 2a: One upper site and one site West of the pit (over the divide in Kobeh Valley.
Alternative 3. One large pit that is Southeast of the Pit. This crosses Highway 278 but doesn't require relocation of the Highway.

**Table 11**
**IDAHO GENERAL MINES, INC**
**MT HOPE FEASIBILITY STUDY PHASE I**

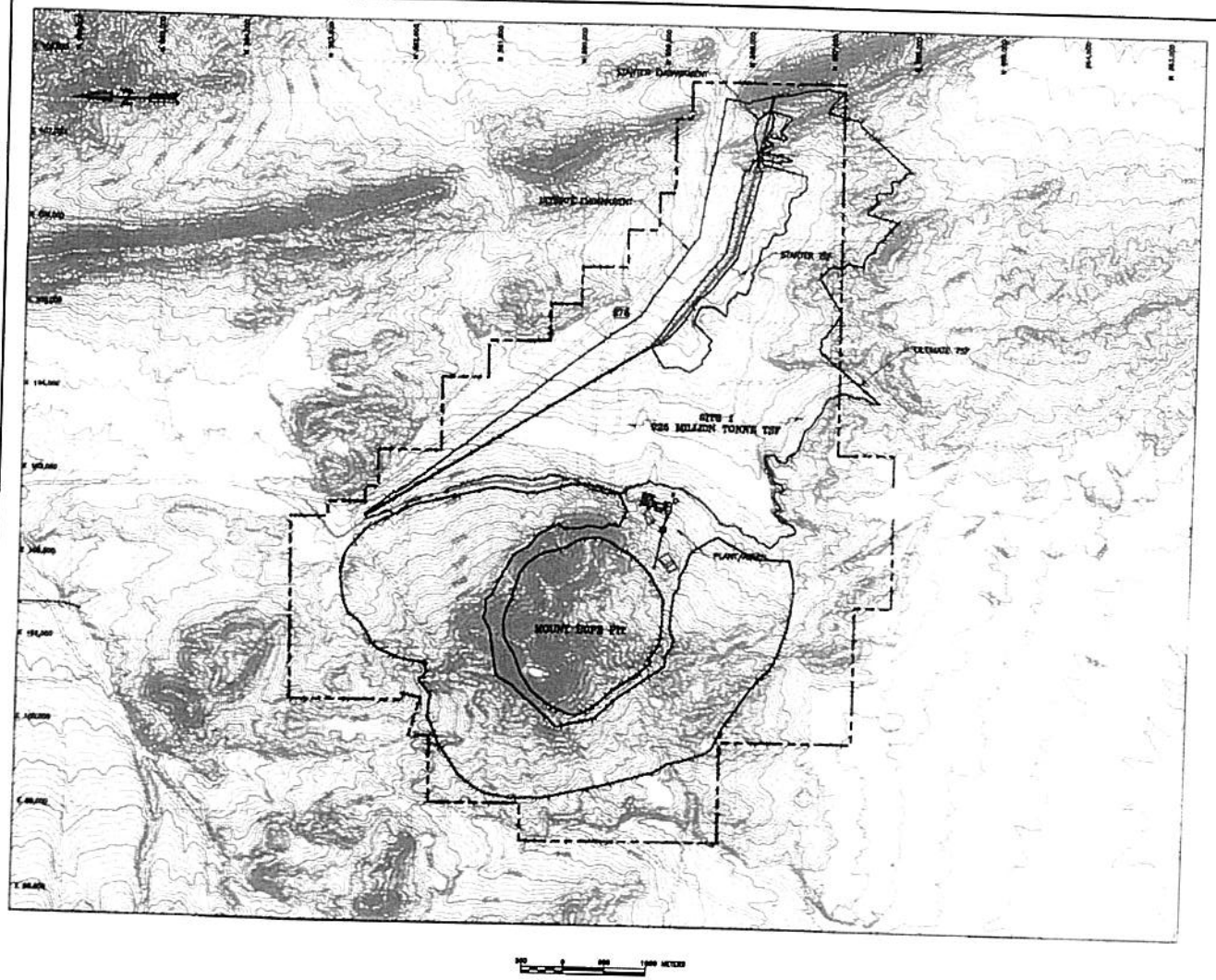
**Tailing Storage Facility Alternative Analysis**
**Enviromental Considerations (Sub-Scores)**

| Site | Visual Impact | Impacted Culture Resources | Fugitive Dust Visual Impact | Ground Water | Surface Water | Vegetation | Raw Score | Rating |
|---|---|---|---|---|---|---|---|---|
| 1 | 6.50 | 3 | 5.5 | 6 | 5 | 2 | 28.00 | 6.6 |
| 1a | 6.50 | 3.5 | 5.5 | 6 | 4.5 | 3 | 29.00 | 7.0 |
| 1b | 5.00 | 3.5 | 4 | 6 | 6.5 | 2 | 27.00 | 6.1 |
| 1c | 5.00 | 3.5 | 4 | 6 | 6.5 | 3 | 28.00 | 6.6 |
| 2 | 1.00 | 4 | 2 | 3 | 2 | 3 | 15.00 | 1.0 |
| 2a | 2.50 | 4 | 2.5 | 4 | 2 | 3 | 18.00 | 2.3 |
| 3 | 3.00 | 2 | 3.5 | 3 | 3 | 2 | 16.50 | 1.6 |

**Table 12**
**IDAHO GENERAL MINES, INC**
**MT HOPE FEASIBILITY STUDY PHASE I**

**Tailing Storage Facility Alternative Analysis**
**Technical Considerations (Sub-Score)**

| Site | Sand Volume | Surface Water Hydrology | Depth to GW | Topo | Location From Mill | Operating Ease | Geotechnical Risk | Impacts on Other Facilities | Raw Score | Rating |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.52 | 4 | 5.5 | 1.5 | 2 | 1.5 | 5.5 | 5 | 30.52 | 7.0 |
| 1a | 5.43 | 3.5 | 5.5 | 1.5 | 1.5 | 2 | 5.5 | 4 | 28.93 | 5.5 |
| 1b | 2.30 | 6.5 | 5.5 | 2 | 3 | 2 | 3.5 | 6 | 30.80 | 7.3 |
| 1c | 4.62 | 6.5 | 5.5 | 2 | 2.5 | 2.5 | 3.5 | 6 | 33.12 | 9.4 |
| 2 | 4.62 | 2 | 1.5 | 4 | 4 | 5 | 2 | 1 | 24.12 | 1.0 |
| 2a | 5.29 | 2 | 2 | 3.5 | 4 | 4 | 2.5 | 1.5 | 24.79 | 1.6 |
| 3 | 5.15 | 3 | 3.5 | 2.5 | 6 | 5 | 2.5 | 2 | 29.65 | 6.2 |




LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FEET
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING TRAIL
- STREAM OR DRAINAGE
- PROPERTY BOUNDARY
- BLM DISPOSAL BOUNDARY

## TSF STATISTICS

| | |
|---|---|
| TSF & Embankment Footprint Area ($M^2$) | 15,432,482 |
| Volume of TSF and Embankment ($M^3$) | 765,724,744 |
| Volume of Embankment ($M^3$) | 125,840,715 |
| Capacity of Embankment (TONNES) | 201,345,144 |
| Embankment Elevation (M) | 2,015 |
| TSF Volume ($M^3$) | 639,884,029 |
| Capacity of TSF (TONNES) | 831,849,238 |
| Starter Embankment Volume ($M^3$) | 5,766,023 |
| Starter Embankment Elevation (M) | 1,910 |
| Starter Embankment Capacity (TONNES) | 9,225,637 |
| Starter TSF and Embankment Footprint Area ($M^2$) | 1,566,280 |
| Starter TSF and Embankment Volume ($M^3$) | 15,794,296 |
| Starter TSF Volume ($M^3$) | 10,028,273 |
| Capacity of Emankment Less Starter Embankment (TONNES) | 192,119,507 |
| Total Capacity (TONNES) | 1,023,968,745 |

FOR DISCUSSION PURPOSES ONLY

CLIENT: IDAHO GENERAL MINES, INC.

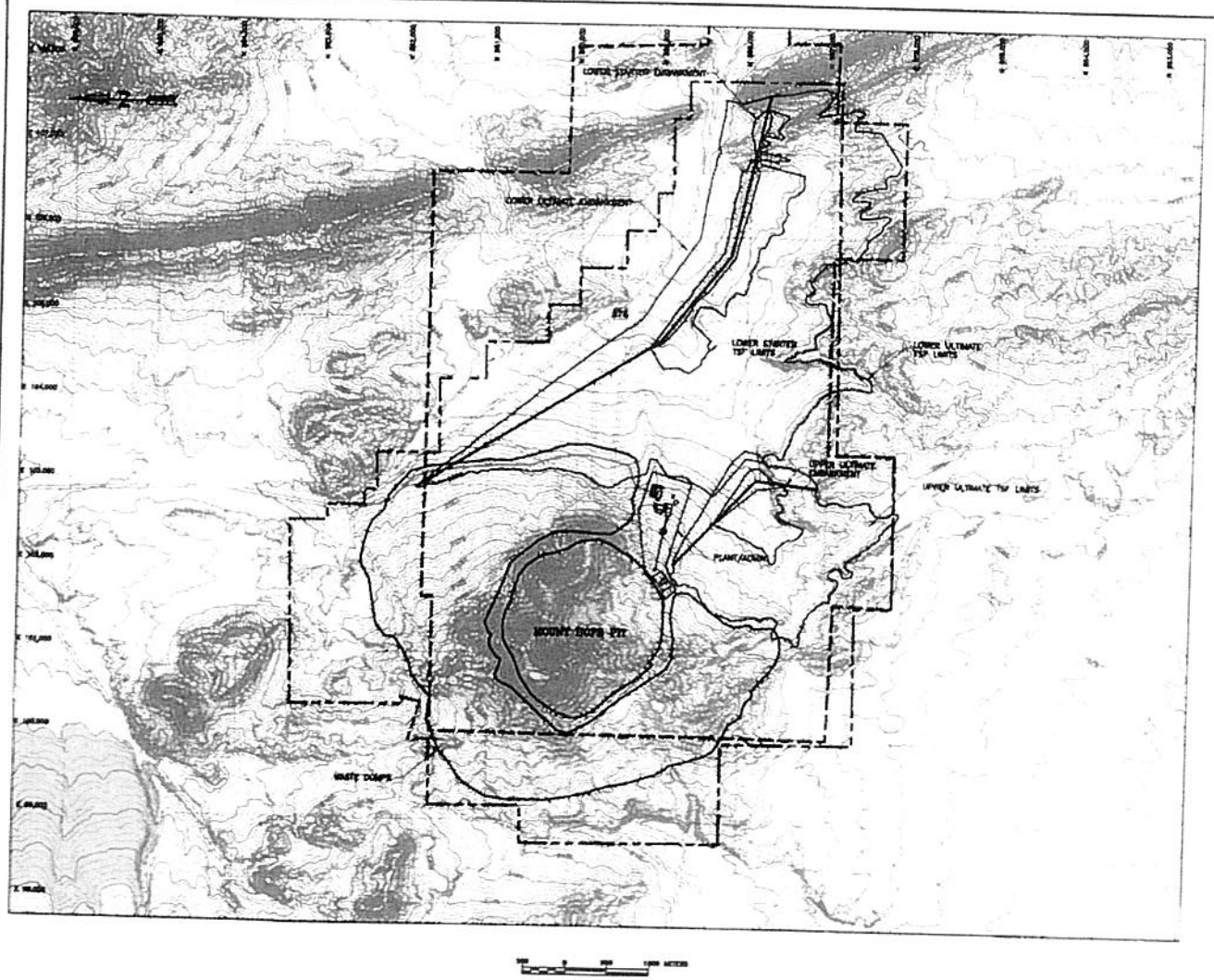
PROJECT: MOUNT HOPE FEASIBILITY STUDY PHASE II

TITLE: MOUNT HOPE TSF ALTERNATIVES
925 MILLION TONNE FACILITY
SITE 1

SWC
SOUTH WILLIAMS CONSULTANTS, INC.

| DESIGNED BY | DTW | CHECKED BY | RLA | DATE |
|---|---|---|---|---|
| DRAWN BY | DS | APPROVED BY | RMS | 07/28/00 |

FILENAME: 1029F28
FIGURE No.: 1
REV: A




LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FEET
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING TRAIL
- STREAM OR DRAINAGE
- PROPERTY BOUNDARY
- BLM DISPOSAL BOUNDARY

## LOWER TSF STATISTICS

| | |
|---|---|
| TSF & Embankment Footprint Area ($M^2$) | 12,131,898 |
| Volume of TSF and Embankment ($M^3$) | 800,761,952 |
| Volume of Embankment ($M^3$) | 97,098,714 |
| Capacity of Embankment (TONNES) | 155,357,942 |
| Embankment Elevation (M) | 2,002 |
| TSF Volume ($M^3$) | 596,583,357 |
| Capacity of TSF (TONNES) | 775,558,364 |
| Starter Embankment Volume ($M^3$) | 3,277,620 |
| Starter Embankment Elevation (M) | 1,905 |
| Starter Embankment Capacity (TONNES) | 5,244,192 |
| Starter TSF and Embankment Footprint Area ($M^2$) | 1,524,661 |
| Starter TSF and Embankment Volume ($M^3$) | 12,919,448 |
| Starter TSF Volume ($M^3$) | 9,641,828 |
| Capacity of Emankment Less Starter Embankment (TONNES) | 150,113,750 |
| Total Capacity (TONNES) | 800,761,552 |

## UPPER TSF STATISTICS

| | |
|---|---|
| TSF & Embankment Footprint Area ($M^2$) | 4,146,600 |
| Volume of TSF and Embankment ($M^3$) | 128,457,206 |
| Volume of Embankment ($M^3$) | 16,829,273 |
| Capacity of Embankment (TONNES) | 26,926,838 |
| Embankment Elevation (M) | 2,065 |
| TSF Volume ($M^3$) | 112,295,491 |
| Capacity of TSF (TONNES) | 145,116,310 |
| Starter Embankment Volume ($M^3$) | 1,748,663 |
| Starter Embankment Elevation (M) | 1,997 |
| Starter Embankment Capacity (TONNES) | 4,397,860 |
| Starter TSF and Embankment Footprint Area ($M^2$) | 655,099 |
| Starter TSF and Embankment Volume ($M^3$) | 9,486,569 |
| Starter TSF Volume ($M^3$) | 6,737,900 |
| Capacity of Emankment Less Starter Embankment (TONNES) | 22,528,978 |
| Total Capacity (TONNES) | 172,043,149 |

FOR DISCUSSION PURPOSES ONLY

CLIENT: IDAHO GENERAL MINES, INC.

PROJECT: MOUNT HOPE FEASIBILITY STUDY PHASE II

TITLE: MOUNT HOPE TSF ALTERNATIVES
925 MILLION TONNE FACILITY
SITE 1A

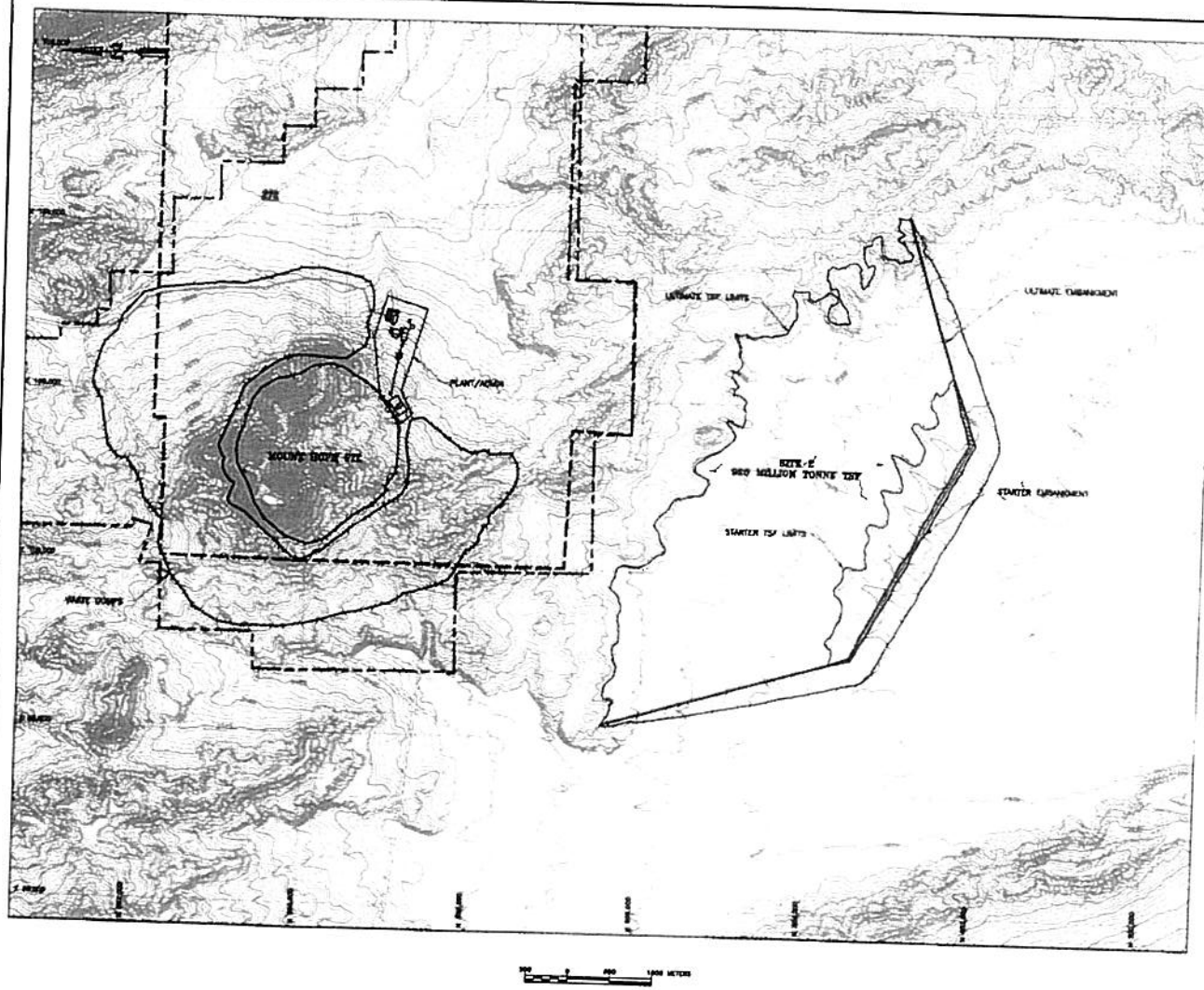
SMITH WILLIAMS CONSULTANTS, INC.

| DESIGNED BY | DTW | CHECKED BY | RLA | DATE |
|---|---|---|---|---|
| DRAWN BY | DS | APPROVED BY | RWS | 07/28/95 |

FILENAME: 1029F29

DRAWING No.: 2

REV: A




LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FEET
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING TRAIL
- STREAM OR DRAINAGE
- PROPERTY BOUNDARY
- BLM DISPOSAL BOUNDARY

## TSF STATISTICS

| | |
|---|---|
| TSF & Embankment Footprint Area ($M^2$) | 15,732,418 |
| Volume of TSF and Embankment ($M^3$) | 775,089,715 |
| Volume of Embankment ($M^3$) | 110,699,716 |
| Embankment Elevation (M) | 177,439,546 |
| TSF Volume ($M^3$) | 2,050 |
| Capacity of TSF (TONNES) | 674,101,271 |
| Starter Embankment Volume ($M^3$) | 876,331,652 |
| Starter Embankment Elevation (M) | 1,875,730 |
| Starter Embankment Capacity (TONNES) | 1,963 |
| Starter TSF and Embankment Footprint Area ($M^2$) | 3,001,168 |
| Starter TSF and Embankment Volume ($M^3$) | 1,792,980 |
| Starter TSF Volume ($M^3$) | 13,475,730 |
| Capacity of Embankment Less Starter Embankment (TONNES) | 11,600,000 |
| Total Capacity (TONNES) | 174,438,377 |
| | 1,050,770,029 |



CLIENT: IDAHO GENERAL MINES, INC.

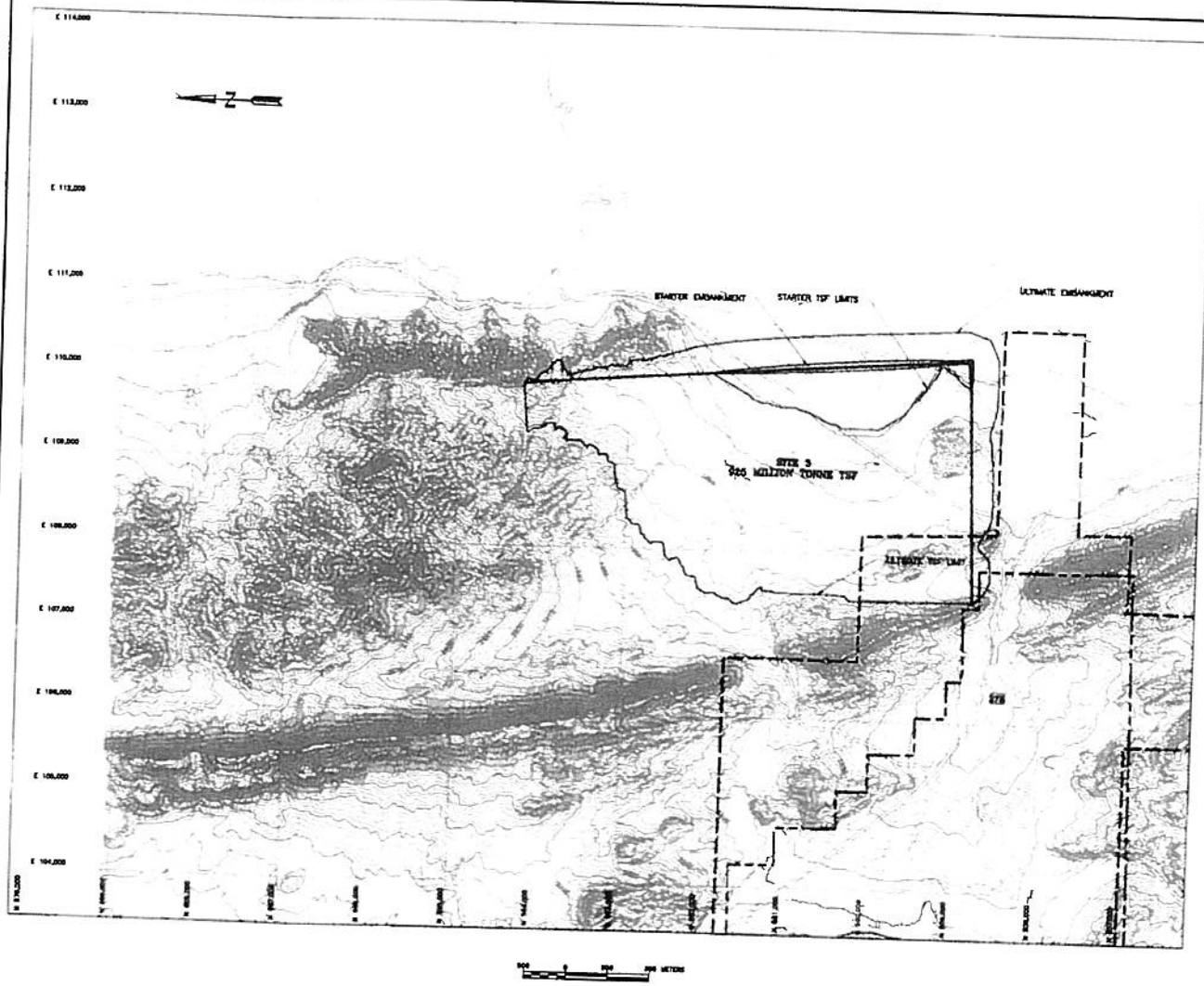
PROJECT: MOUNT HOPE FEASIBILITY STUDY PHASE II

TITLE: MOUNT HOPE TSF ALTERNATIVES
925 MILLION TONNE FACILITY
SITE 2

SMC SMITH WILLIAMS CONSULTANTS, INC.

| DESIGNED BY | DTW | CHECKED BY | RLA | DATE |
|---|---|---|---|---|
| DRAWN BY | DS | APPROVED BY | RWS | 07/28/05 |

FILENAME: 1029F30 FIGURE No.: 3 REV: A




LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FEET
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING TRAIL
- STREAM OR DRAINAGE
- PROPERTY BOUNDARY
- BLM DISPOSAL BOUNDARY

## TSF STATISTICS

| | |
|---|---|
| TSF & Embankment Footprint Area ($M^2$) | 14,448,057 |
| Volume of TSF and Embankment ($M^3$) | 818,745,310 |
| Volume of Embankment ($M^3$) | 118,142,638 |
| Capacity of Embankment (TONNES) | 189,028,220 |
| Embankment Elevation (M) | 1,910 |
| TSF Volume ($M^3$) | 700,602,672 |
| Capacity of TSF (TONNES) | 909,865,791 |
| Starter Embankment Volume ($M^3$) | 2,348,164 |
| Starter Embankment Elevation (M) | 1,806 |
| Starter Embankment Capacity (TONNES) | 3,754,822 |
| Starter TSF and Embankment Footprint Area ($M^2$) | 1,604,267 |
| Starter TSF and Embankment Volume ($M^3$) | 12,927,674 |
| Starter TSF Volume ($M^3$) | 11,690,201 |
| Capacity of Embankment Less Starter Embankment (TONNES) | 185,273,398 |
| Total Capacity (TONNES) | 1,114,908,930 |

FOR DISCUSSION PURPOSES ONLY

CLIENT: IDAHO GENERAL MINES, INC.

PROJECT: MOUNT HOPE FEASIBILITY STUDY PHASE II

TITLE: MOUNT HOPE TSF ALTERNATIVES
925 MILLION TONNE FACILITY
SITE 3

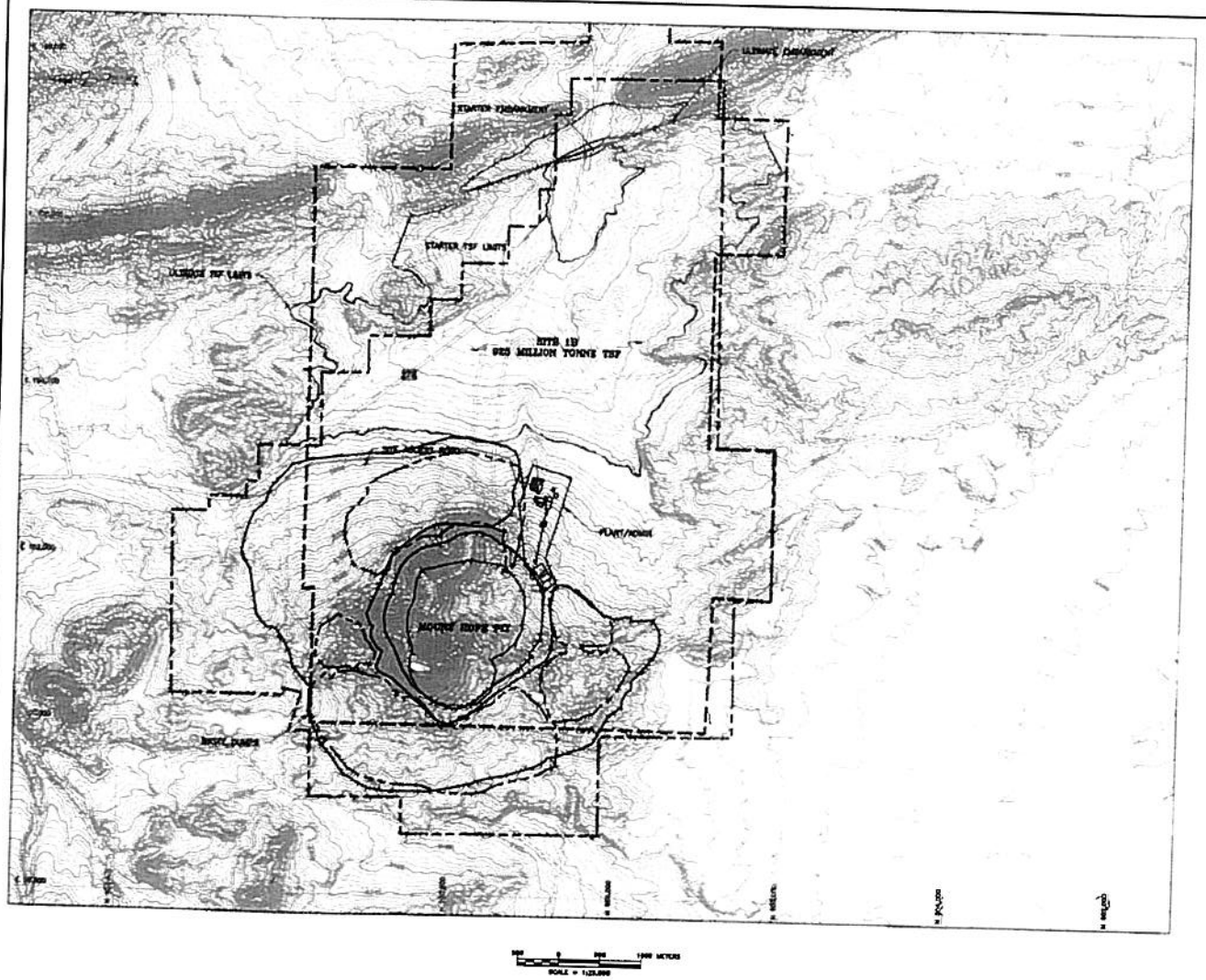
SMC SMITH WILLIAMS CONSULTANTS, INC.

| DESIGNED BY | MWS | CHECKED BY | RLA | DATE |
|---|---|---|---|---|
| DRAWN BY | DD | APPROVED BY | RLS | 06/02/00 |

FILENAME: 1029F31

FIGURE No.: 4

REV: A




LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FEET
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING TRAIL
- STREAM OR DRAINAGE
- PROPERTY BOUNDARY
- BLM DISPOSAL BOUNDARY

## TSF STATISTICS

| | |
|---|---|
| TSF & Embankment Footprint Area ($M^2$) | 14,704,000 |
| Volume of TSF and Embankment ($M^3$) | 750,499,600 |
| Volume of Embankment ($M^3$) | 43,968,972 |
| Capacity of Embankment (TONNES) | 70,350,356 |
| Embankment Elevation (M) | 1,990 |
| TSF Volume ($M^3$) | 706,530,628 |
| Capacity of TSF (TONNES) | 918,489,816 |
| Starter Embankment Volume ($M^3$) | 988,700 |
| Starter Embankment Elevation (M) | 1,882 |
| Starter Embankment Capacity (TONNES) | 1,581,920 |
| Starter TSF and Embankment Footprint Area ($M^2$) | 1,041,550 |
| Starter TSF and Embankment Volume ($M^3$) | 12,557,700 |
| Starter TSF Volume ($M^3$) | 11,568,000 |
| Capacity of Embankment Less Starter Embankment (TONNES) | 68,768,436 |
| Total Capacity (TONNES) | 987,258,252 |

FOR DISCUSSION PURPOSES ONLY

CLIENT: IDAHO GENERAL MINES, INC.

PROJECT: MOUNT HOPE FEASIBILITY STUDY PHASE II

TITLE: MOUNT HOPE TSF ALTERNATIVES
925 MILLION TONNE FACILITY
SITE 1B

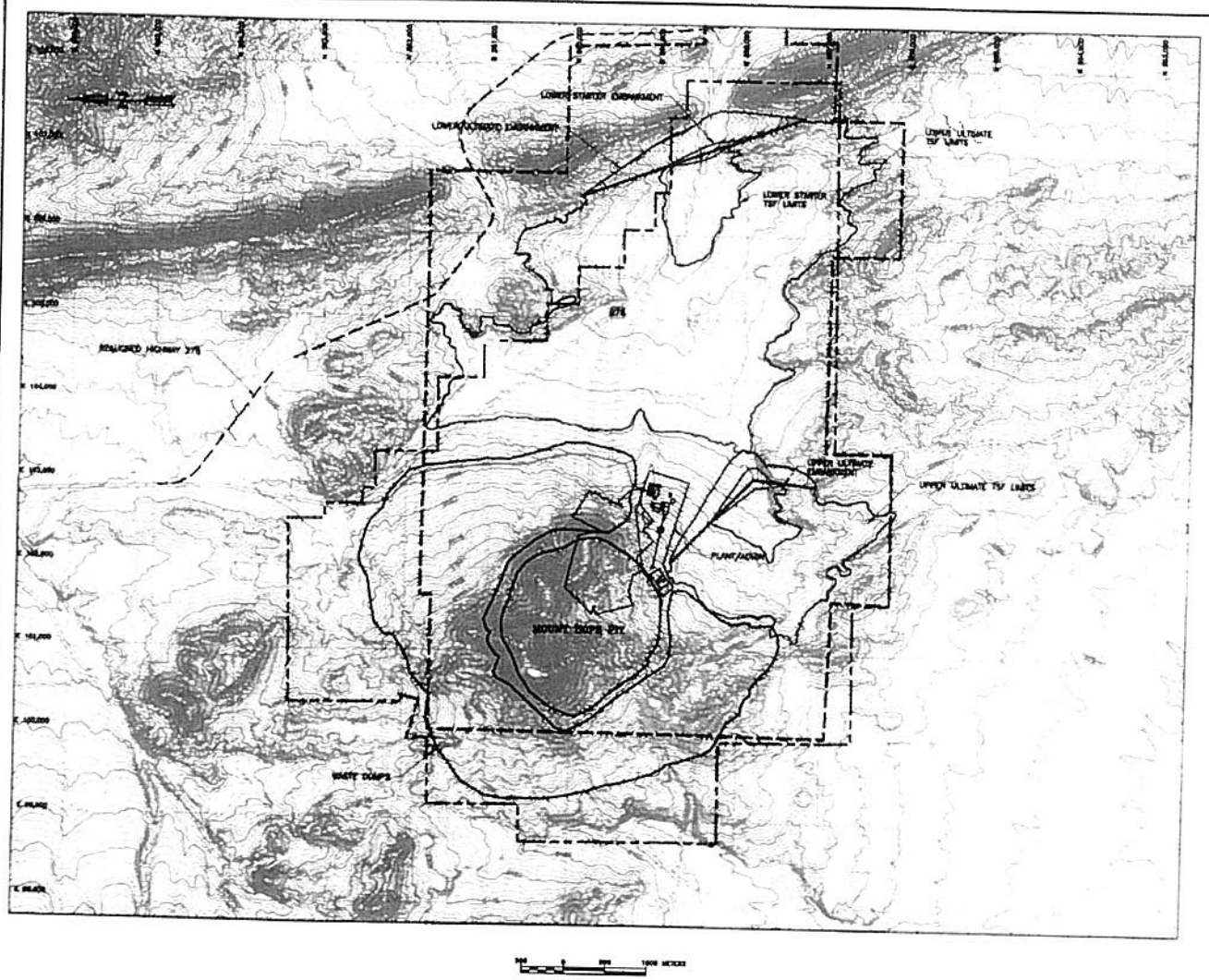
SMC SMITH WILLIAMS CONSULTANTS, INC.

| DESIGNED BY | DTW | CHECKED BY | RLA | DATE |
|---|---|---|---|---|
| DRAWN BY | DS | APPROVED BY | RMS | 07/28/05 |

FILENAME: 1029F32

FIGURE No.: 5

REV: A




LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FEET
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING TRAIL
- STREAM OR DRAINAGE
- PROPERTY BOUNDARY
- BLM DISPOSAL BOUNDARY

## LOWER TSF STATISTICS

| | |
|---|---|
| TSF & Embankment Footprint Area ($M^2$) | 12,251 753 |
| Volume of TSF and Embankment ($M^3$) | 557,596,451 |
| Volume of Embankment ($M^3$) | 34,585,219 |
| Capacity of Embankment (TONNES) | 55,336,350 |
| Embankment Elevation (M) | 1,975 |
| TSF Volume ($M^3$) | 523,011,232 |
| Capacity of TSF (TONNES) | 879,914,602 |
| Starter Embankment Volume ($M^3$) | 988,700 |
| Starter Embankment Elevation (M) | 1,882 |
| Starter Embankment Capacity (TONNES) | 1,581,920 |
| Starter TSF and Embankment Footprint Area ($M^2$) | 1,041,550 |
| Starter TSF and Embankment Volume ($M^3$) | 12,557,700 |
| Starter TSF Volume ($M^3$) | 11,569,000 |
| Capacity of Embankment Less Starter Embankment (TONNES) | 53,754,430 |
| Total Capacity (TONNES) | 733,669,032 |

## UPPER TSF STATISTICS

| | |
|---|---|
| TSF & Embankment Footprint Area ($M^2$) | 4,146,800 |
| Volume of TSF and Embankment ($M^3$) | 128,457,205 |
| Volume of Embankment ($M^3$) | 16,829,273 |
| Capacity of Embankment (TONNES) | 26,926,838 |
| Embankment Elevation (M) | 2,065 |
| TSF Volume ($M^3$) | 112,295,491 |
| Capacity of TSF (TONNES) | 145,116,310 |
| Starter Embankment Volume ($M^3$) | 1,748,663 |
| Starter Embankment Elevation (M) | 1,997 |
| Starter Embankment Capacity (TONNES) | 4,397,860 |
| Starter TSF and Embankment Footprint Area ($M^2$) | 855,099 |
| Starter TSF and Embankment Volume ($M^3$) | 9,486,569 |
| Starter TSF Volume ($M^3$) | 8,737,900 |
| Capacity of Emankment Less Starter Embankment (TONNES) | 22,528,978 |
| Total Capacity (TONNES) | 172,043,149 |

FOR DISCUSSION PURPOSES ONLY

CLIENT: IDAHO GENERAL MINES, INC.

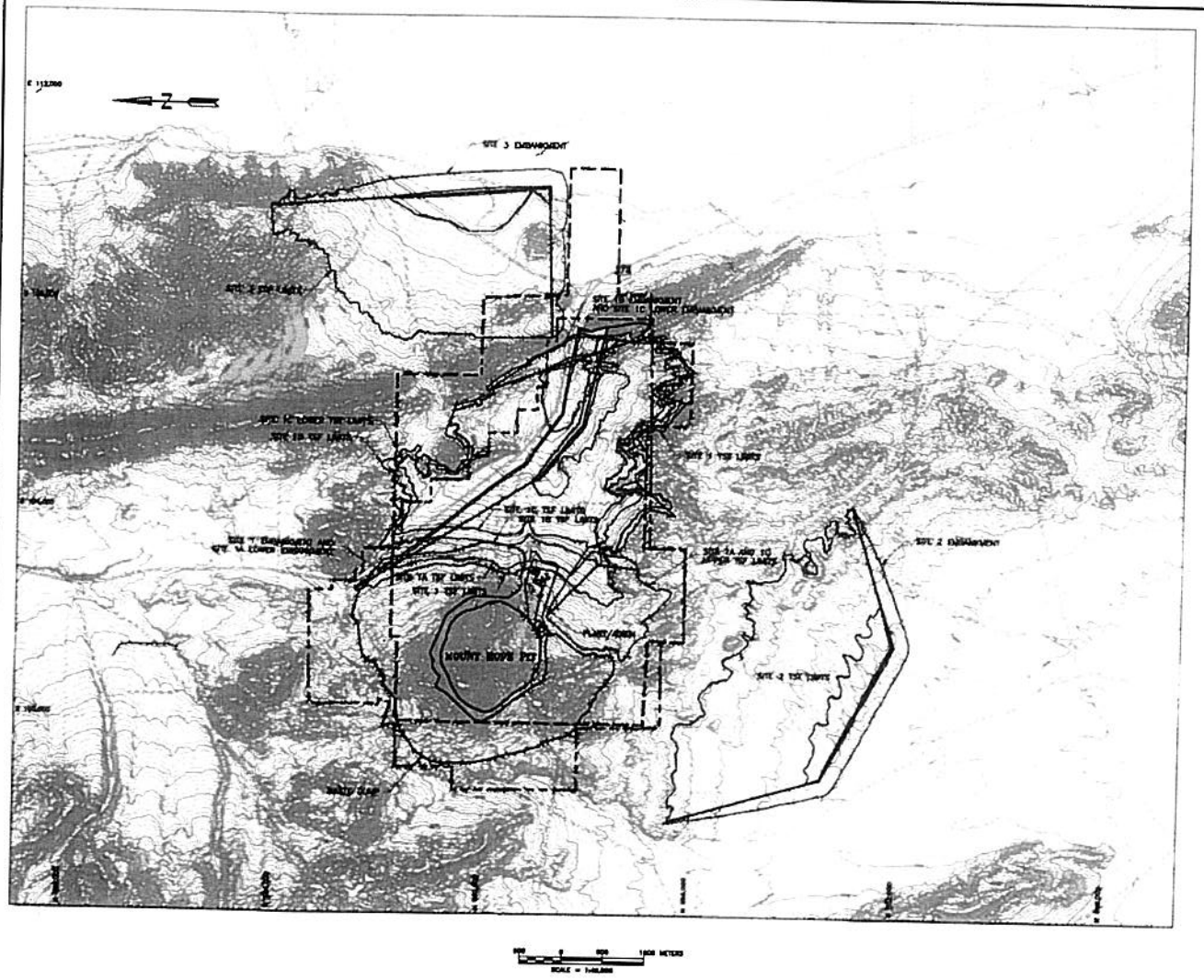
PROJECT: MOUNT HOPE FEASIBILITY STUDY PHASE II

TITLE: MOUNT HOPE TSF ALTERNATIVES
925 MILLION TONNE FACILITY
SITE 1C

SWC SMITH WILLIAMS CONSULTANTS, INC.

| DESIGNED BY | DTW | CHECKED BY | RLA | DATE |
|---|---|---|---|---|
| DRAWN BY | DS | APPROVED BY | RMS | 07/28/03 |

FILENAME: 1029F33 | FIGURE No.: 6 | REV: A




LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FEET
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING TRAIL
- STREAM OR DRAINAGE
- PROPERTY BOUNDARY
- BLM DISPOSAL BOUNDARY

FOR DISCUSSION PURPOSES ONLY

CLIENT: IDAHO GENERAL MINES, INC.

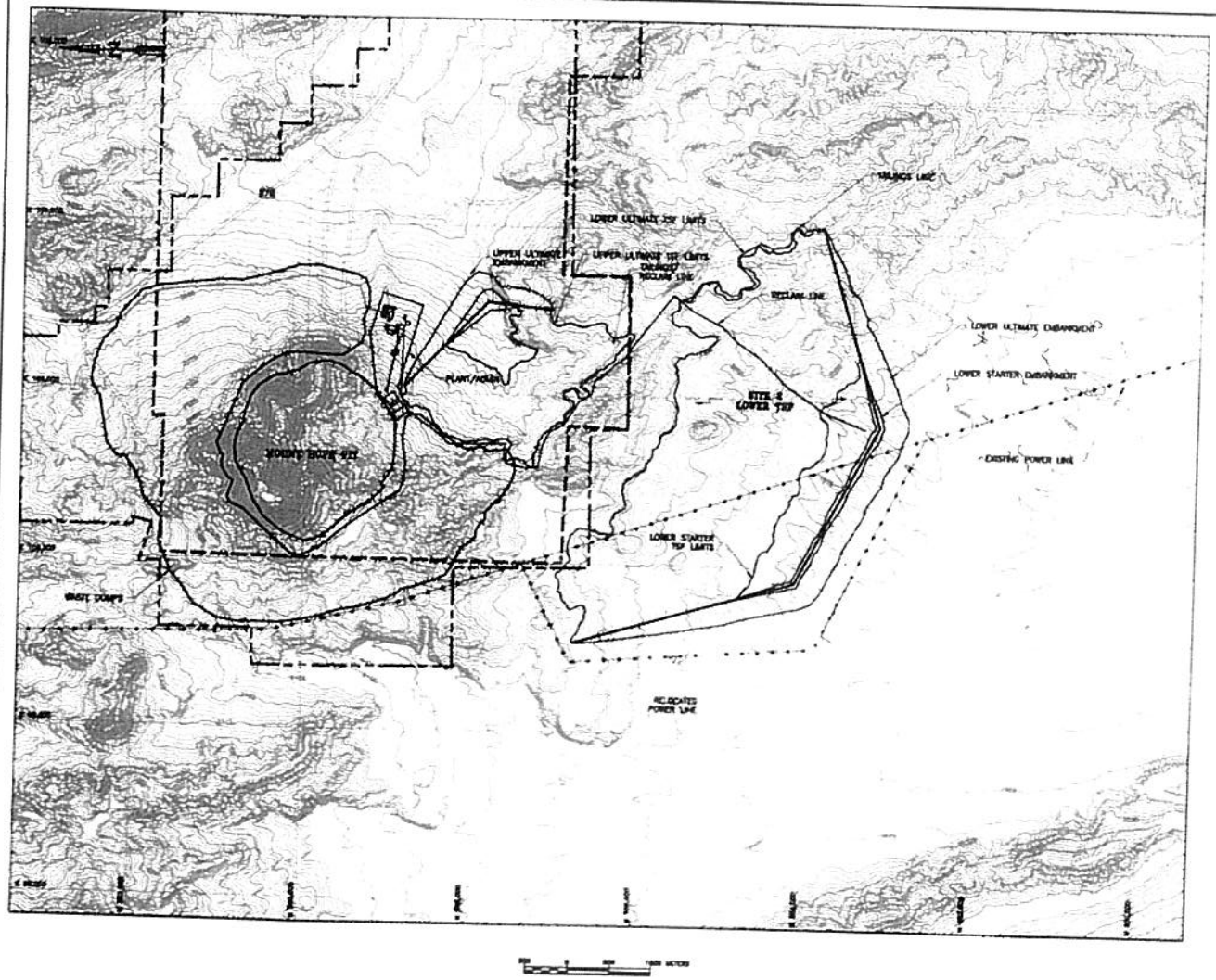
PROJECT: MOUNT HOPE FEASIBILITY STUDY PHASE II

TITLE: MOUNT HOPE TSF ALTERNATIVES
925 MILLION TONNE FACILITIES
ALL SITES

SMITH WILLIAMS CONSULTANTS, INC.

| DESIGNED BY | DTW | CHECKED BY | RLA | DATE |
|---|---|---|---|---|
| DRAWN BY | DS | APPROVED BY | RMS | 07/28/00 |

FILENAME: 1029F35 | FIGURE No.: 7 | REV: A




LEGEND:

- EXISTING GROUND SURFACE CONTOUR AND EL. FEET
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING TRAIL
- STREAM OR DRAINAGE
- PROPERTY BOUNDARY
- BLM DISPOSAL BOUNDARY

## UPPER TSF STATISTICS

| | |
|---|---|
| TSF & Embankment Footprint Area ($M^2$) | 4,146,600 |
| Volume of TSF and Embankment ($M^3$) | 128,457,205 |
| Volume of Embankment ($M^3$) | 16,629,273 |
| Capacity of Embankment (TONNES) | 26,926,836 |
| Embankment Elevation (M) | 2,065 |
| TSF Volume ($M^3$) | 112,295,491 |
| Capacity of TSF (TONNES) | 145,116,310 |
| Starter Embankment Volume ($M^3$) | 1,748,663 |
| Starter Embankment Elevation (M) | 1,997 |
| Starter Embankment Capacity (TONNES) | 4,397,860 |
| Starter TSF and Embankment Footprint Area ($M^2$) | 655,099 |
| Starter TSF and Embankment Volume ($M^3$) | 9,466,569 |
| Starter TSF Volume ($M^3$) | 6,737,900 |
| Capacity of Embankment Less Starter Embankment (TONNES) | 22,526,976 |
| Total Capacity (TONNES) | 172,043,149 |

## 2A-LOWER TSF STATISTICS

| | |
|---|---|
| TSF & Embankment Footprint Area ($M^2$) | 9,911,689 |
| Volume of TSF and Embankment ($M^3$) | 54,068,511 |
| Volume of Embankment ($M^3$) | 88,229,374 |
| Capacity of Embankment (TONNES) | 141,166,999 |
| Embankment Elevation (M) | 2,070 |
| TSF Volume ($M^3$) | 466,035,344 |
| Capacity of TSF (TONNES) | 804,993,966 |
| Starter Embankment Volume ($M^3$) | 2,500,000 |
| Starter Embankment Elevation (M) | 1,965 |
| Starter Embankment Capacity (TONNES) | 4,000,000 |
| Starter TSF and Embankment Footprint Area ($M^2$) | 1,379,953 |
| Starter TSF and Embankment Volume ($M^3$) | 14,156,397 |
| Starter TSF Volume ($M^3$) | 11,656,397 |
| Capacity of Embankment Less Starter Embankment (TONNES) | 137,166,999 |
| Total Capacity (TONNES) | 742,160,965 |

FOR DISCUSSION PURPOSES ONLY

CLIENT: IDAHO GENERAL MINES, INC.

PROJECT: MOUNT HOPE FEASIBILITY STUDY PHASE II

TITLE: MOUNT HOPE TSF ALTERNATIVES
925 MILLION TONNE FACILITY
SITE 2A LOWER

SMC SMITH WILLIAMS CONSULTANTS, INC.

| DESIGNED BY | DTV | CHECKED BY | RLA | DATE |
|---|---|---|---|---|
| DRAWN BY | DS | APPROVED BY | RMS | 07/26/95 |

PROJECT NO. 1029F36 | FIGURE No. 8 | REV A

# APPENDIX C

# EUREKA MOLY LLC
# WATER RESOURCES MONITORING PLAN

# Mount Hope Mine Project
# Water Resources Monitoring Plan

1) This Water Resources Monitoring Plan (WRMOP) has been developed by Eureka Moly, LLC (EMLLC), in conjunction with the BLM, Eureka County and Nevada Department of Wildlife (NDOW). EMLLC proposes this WRMOP to provide a means to assess impacts to water resources from the Mt Hope Mine Project, currently the subject of an Environmental Impact Statement (EIS) being conducted in the Battle Mountain BLM Mount Lewis Field office (MLFO). As such, it is based on Mt Hope Mine potential impacts to BLM-administered resources as predicted by the groundwater modeling conducted to support the EIS. EMLLC may also have additional monitoring responsibilities associated with the Water Pollution Control Permit administered by Nevada Division of Environmental Protection, water rights administered by the Nevada Division of Water Resources (NDWR), or other permit or regulatory programs. This WRMOP is intended to accompany the Plan of Operations (POO) and only addresses the POO and EIS requirements as administered by BLM.

2) EMLLC will install newly proposed monitoring wells diligently upon receipt of the Record of Decision (ROD) and acknowledgment of cultural clearance of the locations by the Nevada State Historic Preservation Office and BLM. The intent is to provide for monitoring of baseline data from the new wells prior to changes induced by pumping or pit dewatering.

3) Mitigation of project-related impacts may be required by BLM (or NDWR) based on the degree of impact identified by the data collected under this WRMOP. Potential mitigation elements and thresholds are not discussed in this document.

4) Revisions to the monitoring program may be warranted in the future. This WRMOP is considered to be a living document that will be modified to accommodate changes in the hydrologic understanding of the area, data collected, advances in monitoring methodology, and other reasons as appropriate.

5) EMLLC will be responsible for collecting, managing, and reporting monitoring data. EMLLC may propose modifications to the WRMOP based on the data collected under this plan.

6) EMLLC will provide monitoring data collected under this WRMOP on an annual basis to BLM and members of the Technical Advisory Panel. A written annual report will be provided and a meeting will be scheduled during which EMLLC will present the annual report data.

7) A Technical Advisory Panel (TAP) is proposed to provide stakeholders with access to hydrologic monitoring data and to have a venue to bring forth their comments and concerns. TAP membership and member roles and responsibilities would be developed with BLM upon project approval.

8) Peak groundwater extraction rates of up to 11,300 acre-feet annually (afa) are proposed, with the majority of groundwater coming from the Kobeh Valley wellfield and the remainder coming from pit dewatering operations. Water flowing to the pit is anticipated to come from Kobeh Valley and Diamond Valley, with the majority from Diamond Valley. Based on predicted dewatering rates, the Diamond Valley withdrawal rate will be approximately 460 gpm (740 afa) near the end of mining. The groundwater extracted for mining use will be consumptively used in processing activities of the Project (i.e. no water will be returned to the aquifer).

9) As previously stated, the purpose of this Monitoring Plan is to identify and characterize changes to the hydrologic environment that could be caused by groundwater withdrawals for the Mt Hope Mine. It is recognized that impacts to water resources may occur from natural processes, non-project related water resource development, and land management practices, as well as from the Mt Hope mining operation.

10) Specific objectives of this WRMOP are to:
   - Confirm or improve the understanding of the hydro-geologic system.
   - Measure changes to surface water flows and groundwater levels caused by the groundwater withdrawals for the project.
   - Characterize impacts to streams, seeps and springs caused by the project.
   - Evaluate impacts to vegetation and/or wildlife habitat caused by the project.
   - Support periodic updates to the hydrologic model to improve the predictive quality of the model.
   - Provide an early warning capability to detect adverse impacts before they become unmanageable

11) Monitoring elements include measuring water extraction, surface water (streams and springs) flow, groundwater elevations, health and trends of wetland, riparian and phreatophyte vegetative communities, water quality, and meteorological data. Pre-development data will be collected to provide a baseline against which to assess data collected after the project pumping begins.

12) Monitoring locations, parameters, and frequencies have been selected to facilitate identification and assessment of impacts. Thus, an overview of the predicted impacts is warranted:
   - Significant ground water consumption in Kobeh Valley is expected to remove water from storage and lower groundwater elevations in portions of Kobeh Valley.
   - Reduction of spring or surface water flows in portions of Kobeh Valley is possible as a result of the lowered groundwater levels.
   - Groundwater drawdown in the extreme western portion of Diamond Valley, in the vicinity of Tyrone Gap, is predicted to occur as the open pit extends below the water table.

- Predicted impacts to groundwater in Diamond Valley are minimal. Current data suggests that the hydrologic interconnection between Kobeh Valley and Diamond Valley is limited. Historical data document a significant reduction in water levels in Diamond Valley due to extensive agricultural uses of groundwater.
- As the cone of groundwater depression propagates to the north from the well field or to the north and northwest from the pit area, it could encroach upon the southernmost or south-easternmost portions of the Roberts Mountains. This could result in reduction of spring or surface water flows or lowering of shallow groundwater tables that support wet meadow complexes and associated wildlife habitat in these areas.
- Water rights within the cone of depression could be affected: Appropriated surface waters could experience diminished flows. Appropriated groundwater could experience groundwater elevation declines which could impact well efficiencies or pumping costs.
- Ground subsidence and development of fissures at the ground surface could occur due to removal of interstitial water from a substantial volume of alluvial sediments in Kobeh Valley.
- In general, the potential for impacts increases both with proximity of a given resource to the proposed well field and with increased duration of pumping.
- Figures 1 and 2 depict the area that is predicted to experience groundwater drawdown in excess of ten feet at 44 years following project start-up. Figures 1 and 2 also show monitoring locations selected for the WRMOP.

13) Data collection completed by EMLLC will be used by EMLLC to assist in defining baseline conditions. EMLLC has also collected and compiled available water resources data and information in Kobeh Valley, Diamond Valley, Pine Valley, and surrounding areas, including data collected by Eureka County, the USGS, and the NDWR. This information includes location of existing supply and monitoring wells, groundwater extraction rates, groundwater level measurements, flow rates at springs and streams, water quality, and precipitation data.

14) To provide appropriate coverage of the potentially affected area, EMLLC will construct 14 new monitoring wells and observe their water levels on a daily basis utilizing down-hole transducers and data loggers. The preliminary proposed location of these wells is shown on Figures 1 and 2; actual locations may be adjusted in consultation with the BLM, NDWR, and/or TAP. These wells are generally near the extent of the area predicted to experience drawdown in excess of ten feet at Project Year 44, and will provide a sentinel function.

15) As part of the wellfield construction, it is anticipated that a test well would be drilled near each planned production well location. The test wells would be converted to monitoring wells and equipped with down-hole transducers and data loggers for continuous monitoring. The anticipated test well/monitor well locations are within the well field corridor as shown on Figures 1 and 2.

16) In addition to collecting data, EMLLC will compile data collected by USGS, NDWR and Eureka County that is made publicly available and use this data to refine and calibrate the numeric model. EMLLC will incorporate data from the monitoring sites shown on Figures 1 and 2, provided that these data continue to be collected and made available by USGS and NDWR. Eleven USGS sites are considered to provide important coverage, and EMLLC will monitor these locations if USGS discontinues this monitoring (see Figures 1 and 2, and Table 1).

17) As provided in Figure 1, EMLLC will provide for the monitoring of flows in

- Steiner Creek in southeast Grass Valley, west of Kobeh Valley
- Pine Creek in southern Monitor Valley, south of Kobeh Valley; and
- Allison Creek in Antelope Valley, south of Kobeh Valley.

These regional streams will serve as analogs to provide improved understanding of seasonal or regional conditions that may be impacting the flows in perennial streams. Stage- flow relationships will be established at these locations and the streams will then be equipped with pressure transducers to allow continuous measurement.

18) The information collected pursuant to this WRMOP will be entered by EMLLC into a project database on a regular basis, once it has been checked for laboratory quality control and quality assurance procedures, generally reflecting the monitoring interval.

19) EMLLC has developed a numeric model to simulate the groundwater flow system and the model will be updated to incorporate the data collected for this WRMOP. EMLLC will update the model after recovering 6 months of post-operational monitoring data. Thereafter, EMLLC will update the model on a schedule to reflect the requirements of the BLM.

20) EMLLC will analyze water chemistry to assist in evaluating water source contributions for the specific monitoring locations.

21) EMLLC will implement documented quality assurance and quality control procedures. Monitoring data will be recorded using a standardized (NDEP-compliant) protocol and format for each monitoring event. Protocols will be submitted to BLM for approval. It is anticipated that protocols will be based on those described by Rantz and others (1982) for surface water flow monitoring, Lapham and others (1995) for groundwater level monitoring, and Wilde (2005) for water sampling. Laboratory analyses will be conducted by Nevada-certified laboratories using standard laboratory quality control procedures.

22) EMLLC will survey production wells, monitoring wells and surface water locations to establish ground surface and measuring point elevations.

23) Tables 1 and 2, provided at the end of this document, lists the proposed monitoring site locations, type of monitoring, monitoring frequency and a brief rationale for selecting

each location, Wells identified in Table 1 include both existing wells and wells that EMLLC proposes to construct upon project approval. Some wells are located within pit limits that would be mined out as the project advances, and these locations would be dropped from the monitoring plan at that time. Site locations are shown on the attached figures. The monitoring sites in Tables 1 and 2 are organized by locations corresponding to those shown on the attached figures. The monitoring sites were selected in consideration of the type of data to be collected and the potential impact they are designed to evaluate and assess, as described below.

a. Production Wells: Extraction rates and groundwater levels will be measured continuously (daily readings following an initial period of hourly readings) in production wells.

b. Monitor Wells: Monitoring wells provided in Figure 1 and 2, and as amended in the future under this plan will be monitored to determine depth to groundwater, according to the frequency provided in Table 1. This data is anticipated to assist in characterizing the extent of drawdown within the well field and open pit areas and the propagation of the drawdown away from those areas. Transducers will be placed in the new monitoring wells to provide for continuous monitoring (daily readings following an initial period of hourly readings). It is recognized that the data collection frequency may be adjusted at BLM's direction

c. Surface Waters: Selected springs and surface flow sites in Kobeh Valley, Diamond Valley, and Pine Valley will be monitored to determine flow rates. Continuous flow recording devices will be installed at Roberts Creek, Pete Hanson Creek, Birch Creek, South Fork of Henderson Creek, Vinini Creek, and Tonkin Springs. For low flow conditions or where flow is diffuse on the ground surface, flow measurements may not be practicable, and flow would be estimated.

   Site selection for surface water flow monitoring seeks to generally measure flow within perennial reaches, while considering aspects such as accessibility and channel morphology. At each site, flows and depths will be measured monthly to establish a stage-flow relationship. Pressure transducers will be installed for hourly measurement of head, which will be converted to flow via the stage-flow relations.

d. Baseline chemistry analyses will be completed at all water monitoring sites provided within this plan. Future water chemistry analyses will be conducted as warranted. The suite of baseline parameters will consist of NDEP Profile II constituents plus isotopes of oxygen and hydrogen.

e. Vegetation monitoring will be conducted on transects to represent four wet meadow complexes in the Roberts Mountains to measure species composition, species richness, and plant cover. Minimal impact (hand-augered) monitoring wells or other field assessment will be conducted to identify the source of water

that supplies these meadows. The four wet meadow complexes include a pair relatively close to the open pit and well field, and a pair outside of the predicted area of drawdown.

Vegetation monitoring will also be conducted at representative transects in the lower portions of Kobeh Valley and in the lower portions of Roberts Creek. Vegetation monitoring will also be conducted in the Roberts Mountains to augment the larger-scale remote-sensing monitoring described in subsection "f" below.

f. Remote sensing will be conducted to assess vegetation distribution in the Roberts Mountains. The remote sensing will allow the relatively large areas to be monitored economically, provide a more extensive monitoring data set and reduce potential observer bias.

g. Precipitation data will be collected hourly at the existing meteorological station located at Mt Hope. High altitude precipitation storage and measuring sites will be established in the Roberts Mountains, to help in understanding the relationship between precipitation and elevation in this area. Regional data from BLM or NOAA stations will also be evaluated periodically to better define regional and local meteorological inputs.

h. Macroinvertebrate monitoring will be conducted in Roberts Creek, Henderson Creek and Vinini Creek to provide an indication of the ecological health of these streams.

i. Subsidence monitoring will be conducted in Kobeh Valley to measure ground subsidence in response to production water pumping, identify the formation of any fissures caused by pumping, and quantify the rate of growth of any fissures that develop from pumping.

## REFERENCES


Lapham, W.W., Wilde, F.D., and Koterba, M.T., 1995, *Ground-water data collection protocols and procedures for the National Water-Quality Assessment Program: Selection, installation, and documentation of wells, and collection of related data:* U.S. Geological Survey Open-File Report 95-398, 70 p.

Rantz, S.E., et al., 1982. *Measurement and computation of streamflow,* U.S. Geological Survey Water Supply Paper 2175, Volumes 1 and 2, 631 p.

Wilde, F.D., 2005, *National field manual for the collection of water-quality data:* Book 9, Handbooks for Water-Resources Investigations, U.S. Department of the Interior and the U.S. Geological Survey.

## Table 1 – Hydrologic Monitoring

| Area | Site Name(s) | Parameters | Frequency | Formation | Rationale |
|---|---|---|---|---|---|
| Diamond Valley Groundwater | GMI-PDT-1 | Depth to Water | Continuous | Vinini hornfels | Pit area groundwater drawdown monitoring |
| | GMI-PDT-2 | Depth to Water | Continuous | Vinini and hornfels | Pit area groundwater drawdown monitoring |
| | GMI-PDT-3B | Depth to Water | Continuous | Vinini Hornfels | Pit area groundwater drawdown monitoring |
| | IGMI-152 | Depth to Water | Continuous | Vinini Fm | Pit area groundwater drawdown monitoring |
| | IGMI-155 | Depth to Water | Continuous | Qtz Porphyry | Pit area groundwater drawdown monitoring |
| | IGMI-156 | Depth to Water | Continuous | Vinini Fm | Pit area groundwater drawdown monitoring |
| | IGMI-157 | Depth to Water | Continuous | Vinini Fm | Pit area groundwater drawdown monitoring |
| | IGM-169 | Depth to Water | Continuous | Vinini Hornfels | Pit area groundwater drawdown monitoring |
| | IGMI-226P | Depth to Water | Continuous | Vinini Fm | Pit area groundwater drawdown monitoring |
| | IGMI-228P | Depth to Water | Continuous | Vinini Fm | Pit area groundwater drawdown monitoring |
| | IGMI-230P | Depth to Water | Continuous | Tuff | Pit area groundwater drawdown monitoring |
| | IGMI-232P | Depth to Water | Continuous | Vinini Fm | Pit area groundwater drawdown monitoring |
| | IGMI-233P | Depth to Water | Continuous | Tuff | Pit area groundwater drawdown monitoring |
| | IGMI-MH-248 | Depth to Water | Continuous | Bedrock | Pit area groundwater drawdown monitoring |
| | NDWR-15462 | Depth to Water | Continuous | Alluvium | Pit area groundwater drawdown monitoring |
| | MH-300 | Depth to Water | Continuous | Alluvium | Monitoring groundwater gradient changes in Tyrone Gap with MH – |

| Area | Site Name(s) | Parameters | Frequency | Formation | Rationale |
|---|---|---|---|---|---|
| Diamond Valley Groundwater | | | | | 301 |
| | MH-301 | Depth to Water | Continuous | Alluvium | Monitoring groundwater gradient changes in Tyrone Gap with MH – 300 |
| | MH-302 | Depth to Water | Continuous | Alluvium | Monitor influence of potential increased transmissivity zone through Whistler Range. |
| | MH-303 | Depth to Water | Continuous | Alluvium | Monitor groundwater elevation trend on west side of Diamond Valley; Sentinel well. |
| | MH-304 | Depth to Water | Continuous | Alluvium | Monitor groundwater elevation trend on west side of Diamond Valley; Sentinel well. |
| | MH-305 | Depth to Water | Continuous | Alluvium | Monitor drawdown east of pit. |
| | IGMI-158 | Depth to Water | Continuous | Alluvium | Monitor groundwater elevation trend on west side of Diamond Valley; Sentinel well. |
| | IGMI - 236P | Depth to Water | Continuous | Vinini Fm | Monitor groundwater elevation change in Whistler Range; Sentinel well. |
| | Romano Well | Depth to Water | Continuous | Vinini Fm | Monitor groundwater elevation trend on west side of Diamond Valley; Sentinel well. |
| | MH – 306 (153 N21 E52 10AAAC1) | Depth to Water | Continuous | | Monitor groundwater elevation trend on west side of Diamond Valley |
| | MH – 307 (153 N20 E52 26AABC1) | Depth to Water | Continuous | | Monitor groundwater elevation changes in Devil's Gate. |
| | MH – 308 (153 N20 E52 26AABC2) | Depth to Water | Continuous | | Monitor groundwater elevation changes in Devil's Gate. |
| Diamond Valley Springs | KV-059 (Stinking) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | KV-060 (Hash) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |

| Area | Site Name(s) | Parameters | Frequency | Formation | Rationale |
|---|---|---|---|---|---|
| | KV-061 (Railroad) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | KV-062 (Trap Corral) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | DV -065 (Shipley) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | SP-1 (McBride) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | SP-2 (Garden pass) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | SP-3 (unnamed) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | SP-4 (Mt Hope) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | SP-7 (unnamed) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| Kobeh Valley Groundwater | All production wells | Flow and Depth to Water | Continuous | Alluvium and carbonate | Measure well field production, individual well response to pumping stress, and drawdown progression in wellfield |
| | GMI-RWX-228T | Depth to Water | Continuous | Alluvium | Measure drawdown progression in wellfield |
| | GMI-RWX-229 | Depth to Water | Continuous | Alluvium | Measure drawdown progression in wellfield |
| | RWX -205 | Depth to Water | Continuous | Alluvium | Measure drawdown progression in wellfield |
| | MH-400 | Depth to Water | Continuous | Alluvium | Monitor groundwater elevation change in alluvium on west side of Whistlers paired w/ MH-401 to assess connection between alluvium and bedrock aquifers; assess effect of inferred structure located to the east. |
| | MH-401 | Depth to Water | Continuous | Bedrock | Monitor groundwater elevation |

| Area | Site Name(s) | Parameters | Frequency | Formation | Rationale |
|---|---|---|---|---|---|
| Kobeh Valley Groundwater | | | | | change in bedrock on west side of Whistlers paired w/ MH-400 to assess connection between alluvium and bedrock aquifers; assess effect of inferred structure located to the west. |
| | MH-402 | Depth to Water | Continuous | Alluvium | Monitor drawdown at east edge of Kobeh Valley. |
| | MH-403 | Depth to Water | Continuous | Alluvium | Monitor potential drawdown in upper Roberts Creek; Sentinel. |
| | MH-404 | Depth to Water | Continuous | Bedrock | Monitor potential drawdown in western part of Robert's Creek watershed; Sentinel. |
| | MH – 405 | Depth to Water | Continuous | Alluvium | Measure drawdown progression in wellfield |
| | MH – 406 | Depth to Water | Continuous | Alluvium | Measure drawdown progression in wellfield |
| | MH – 407 | Depth to Water | Continuous | Alluvium | Measure drawdown progression in wellfield |
| | MH – 408 | Depth to Water | Continuous | Alluvium | Measure drawdown progression in wellfield |
| | MH – 409 | Depth to Water | Continuous | Alluvium | Measure drawdown progression in wellfield |
| | MH – 410 | Depth to Water | Continuous | Alluvium | Measure drawdown progression in wellfield |
| | MH – 411 | Depth to Water | Continuous | Alluvium | Measure drawdown progression in wellfield |
| | MH – 412 | Depth to Water | Continuous | Alluvium | Monitor groundwater elevation change in transition zone between wellfield and pit area |
| | MH- 413 | Depth to Water | Continuous | Alluvium | Monitor groundwater elevation change in transition zone between wellfield and pit area |

| Area | Site Name(s) | Parameters | Frequency | Formation | Rationale |
|---|---|---|---|---|---|
| | MH - 414 (139 N21 E49 25BBDA) | Depth to Water | Continuous | Alluvium | Monitoring of west side of KV wellfield drawdown |
| | MH - 415 (139 N21 E50 17BACC) | Depth to Water | Continuous | Alluvium | Monitoring of west side of KV wellfield drawdown |
| | MH - 416 (139 N20 E51 05CBCC ) | Depth to Water | Continuous | Alluvium | Monitoring of south side of KV wellfield drawdown |
| | MH - 417 (139 N21 E51 36DCDB1) | Depth to Water | Continuous | Alluvium | Monitoring of southeast side of KV wellfield drawdown |
| | MH -418 (139 N21 E51 24DDDB1) | Depth to Water | Continuous | Alluvium | Monitoring of southeast side of KV wellfield drawdown |
| | MH – 419 (139 N20 E49 23ACCB1) | Depth to Water | Continuous | Alluvium | Monitoring of drawdown between wellfield and Bean Flat phreatophytes |
| | MH – 420 (139 N20 E49 24ACAB) | Depth to Water | Continuous | Alluvium | Monitoring of drawdown between wellfield and Bean Flat phreatophytes |
| | MH – 421 | Depth to Water | Continuous | Alluvium | Monitoring of west side of KV wellfield drawdown |
| | RWX - 209 shallow and deep | Depth to Water | Continuous | Alluvium /Vinini | Monitoring of northwest side of KV wellfield drawdown |
| | MRCMW | Depth to Water | Continuous | Alluvium | Monitoring of potential drawdown in Roberts Creek watershed |
| | LRCMW | Depth to Water | Continuous | Alluvium | Monitoring of potential drawdown in Roberts Creek watershed |
| | IGM-154, | Depth to Water | Continuous | Alluvium | Pit area groundwater monitoring |
| | IGMI-234P | DTW and Chemistry | Continuous | Alluvium | Monitor groundwater elevation change in Whistler Range; Sentinel well. |
| | IGMI-235P | DTW and Chemistry | Continuous | Vinini Fm | Monitor groundwater elevation change in Whistler Range; Sentinel well. |
| | IGMI-237P | DTW and | Continuous | Vinini Fm | Monitor groundwater elevation |

| Area | Site Name(s) | Parameters | Frequency | Formation | Rationale |
|---|---|---|---|---|---|
| | | Chemistry | | | change in Whistler Range; Sentinel well. |
| | TM1-B | DTW and Chemistry | Continuous | Alluvium | Monitoring of east side of KV wellfield drawdown |
| | Atlas 1 | DTW/ pressure | Continuous | Alluvium | Monitoring northwest of predicted 10 foot drawdown contour |
| | Bartine Ranch Well 1, 2, 3 (flowing) | DTW/pressure | Continuous | Alluvium | Assess impact of pumping on artesian flows outside predicted 10 foot drawdown contour |
| | Big Windmill | DTW/pressure | Continuous | Alluvium | Monitor groundwater elevation change in transition zone between wellfield and pit area |
| | Colby well | DTW/pressure | Continuous | Alluvium | Assess impact of pumping on artesian flows outside predicted 10 foot drawdown contour |
| | KV 064 | DTW/pressure | Continuous | Alluvium | Assess impact of pumping on artesian flows outside predicted 10 foot drawdown contour |
| | Depco INC; | DTW/pressure | Continuous | Alluvium | Monitoring of drawdown between wellfield and Bean Flat phreatophytes |
| | Etcheverry Windmill | DTW/pressure | Continuous | Alluvium | Monitoring of west side of KV wellfield drawdown |
| | IGMI-MH-RWX-203 T | DTW/pressure | Continuous | Alluvium | Monitor groundwater elevation change in transition zone between wellfield and pit area |
| | NDWR9211R | DTW/pressure | Continuous | Alluvium | Assess impact of pumping on artesian flows outside predicted 10 foot drawdown contour |
| | RWX- 204 | DTW/pressure | Continuous | Alluvium | Monitor groundwater elevation change in transition zone between wellfield and pit area |
| | KFE | DTW/pressure | Continuous | Alluvium | Monitor groundwater elevation change in transition zone between |

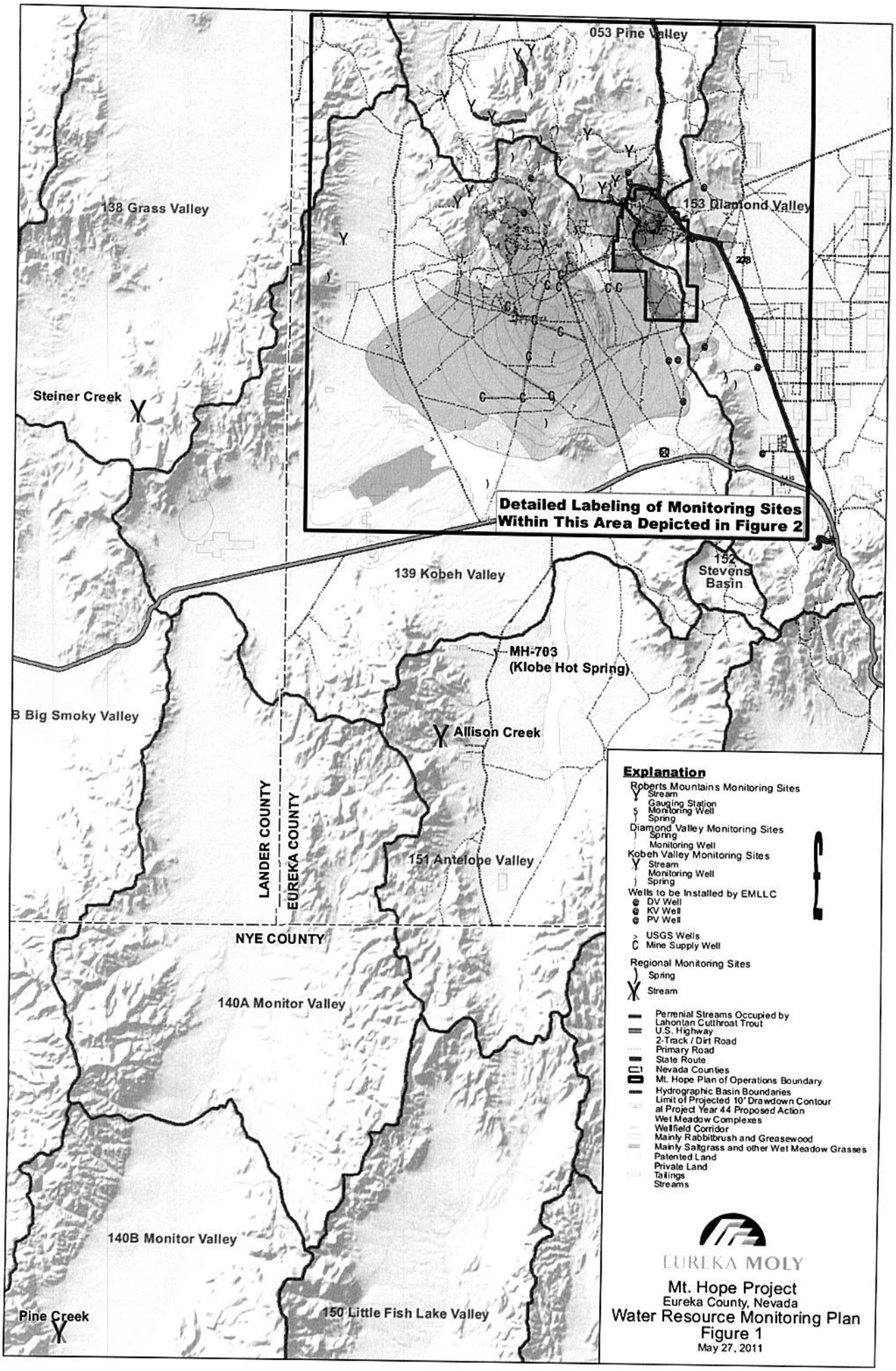
| Area | Site Name(s) | Parameters | Frequency | Formation | Rationale |
|---|---|---|---|---|---|
| | | | | | wellfield and pit area |
| | KFW | DTW/pressure | Continuous | Alluvium | Monitoring northwest of predicted 10 foot drawdown contour |
| | Treasure Well | DTW/pressure | Continuous | Alluvium | Assess impact of pumping on artesian flows outside predicted 10 foot drawdown contour |
| | GMI-RWX-223 | DTW/pressure | Continuous | Alluvium | Measure drawdown progression in wellfield |
| Kobeh Valley Streams | LRC (Lower Roberts Creek) | Flow Rate; Water Quality | Continuous | | Potential indirect impacts to perennial streams |
| | URC (Upper Roberts Creek) | Flow Rate; Water Quality | Continuous | | Potential indirect impacts to perennial streams |
| | MH 700 (Cottonwood Canyon) | Flow | Continuous | | Potential indirect impacts to perennial streams |
| | MH 701 (Cottonwood Canyon) | Flow | Continuous | | Potential indirect impacts to perennial streams |
| Kobeh Valley Springs | KV-002 (Potato Canyon) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | KV-026 (Rutabega) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts near wellfield |
| | KV-034 (Mud) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts near wellfield |
| | KV-035 (Lone Mtn) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts south of wellfield |
| | KV-044 (Hot) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | KV-015 (Unnamed) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | KV-016 (Unnamed) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | KV-020 (Unnamed) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | OT-6 (Unnamed) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |

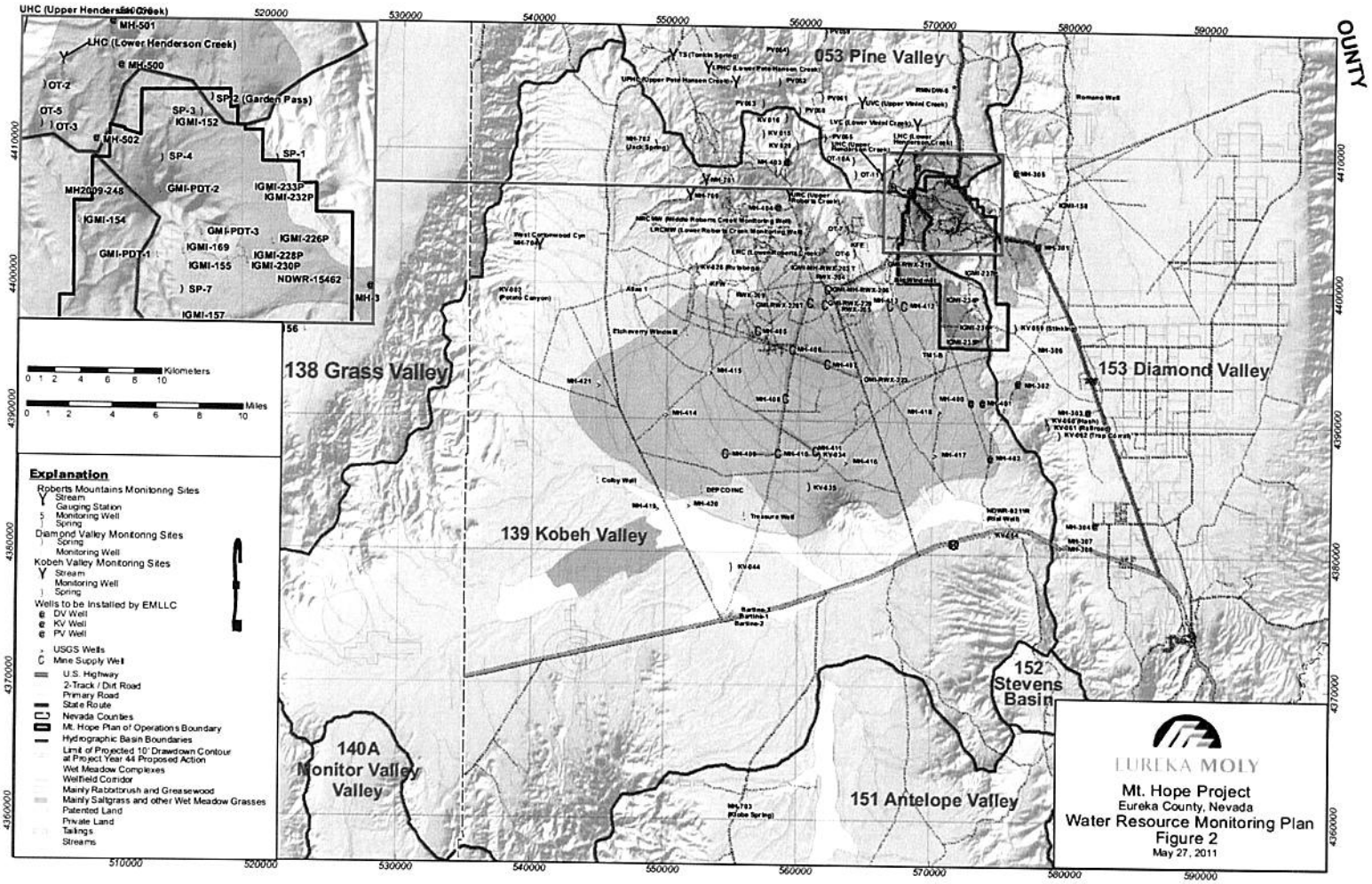
| Area | Site Name(s) | Parameters | Frequency | Formation | Rationale |
|---|---|---|---|---|---|
| | OT-7 (Nichols Spring) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | MH - 702 (Jack Spring) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts, west side of Roberts Mtn. |
| | MH – 703 (Klobe Spring) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts in Antelope Valley |
| Pine Valley Springs | PV-059 (Dry Creek headwater spring) | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | PV-060 | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | PV-061 | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | PV-062 | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | PV-063 | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | PV-064 | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | PV-065 | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| Pine Valley Springs | OT-2 | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | OT-3 | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | OT-5 | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | OT-10A | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| | OT-11 | Flow, Photograph | Quarterly | | Monitor potential indirect spring impacts |
| Pine Valley Streams | LBC (Lower Birch Cr.) | Flow Rate | Continuous | | Potential indirect impacts to perennial streams |
| | LHC (Lower Henderson | Flow Rate | Continuous | | Potential indirect impacts to |

| Area | Site Name(s) | Parameters | Frequency | Formation | Rationale |
|---|---|---|---|---|---|
| | Cr.) | | | | perennial streams. |
| | UHC (Upper Henderson Cr.) | Flow Rate | Continuous | | Potential indirect impacts to perennial streams |
| | LPHC (Lower Pete Hanson Cr.) | Flow Rate | Continuous | | Potential indirect impacts to perennial streams. |
| | UPHC (Upper Pete Hanson Cr.) | Flow Rate | Continuous | | Potential indirect impacts to perennial streams. |
| | Tonkin Springs | Flow Rate | Continuous | | Potential indirect impacts to perennial streams |
| | LVC (Lower Vinini) | Flow Rate | Continuous | | Potential indirect impacts to perennial streams. |
| | UVC (Upper Vinini Cr. | Flow Rate | Continuous | | Potential indirect impacts to perennial streams. |
| | WC (Willow Cr.) | Flow Rate | Continuous | | Potential indirect impacts to perennial streams. |
| Pine Valley Groundwater | MH-500 | Depth to Water | Continuous | Bedrock | Sentinel well in mountain block south of Henderson Creek |
| | MH-501 | Depth to Water | Continuous | Alluvium | Henderson Creek groundwater elevations |
| | MH-502 | Depth to Water | Continuous | Bedrock | Sentinel well in mountain block east of springs in upper Henderson Creek |

## Table 2 - Biological and Meteorological Monitoring

| Area | Site Name(s) | Parameters | Frequency |
|---|---|---|---|
| Wet Meadow Complexes in Roberts Mountains | Three to five vegetation transects in each of the WMC, locations to be determined; | Species composition, species richness, and plant cover. | Semi-Annually (May and July) |
| Phreatophytic vegetation in lower Kobeh Valley | Three to five vegetation transects in each of the phreatophyte vegetation communities, locations to be determined; | Species composition, species richness, and plant cover. | Transects - Semi-Annually (April and June); |
| Phreatophytic and riparian vegetation in lower Roberts Creek | Three to five vegetation transects in the watershed, locations to be determined | Species composition, species richness, and plant cover. | Transects - Semi-Annually (April; June); |
| Phreatophytic and riparian vegetation in Henderson Creek | Three to five vegetation transects in the watershed, locations to be determined | Species composition, species richness, and plant cover. | Transects - Semi-Annually (April; June); |
| Roberts Mountain | Not applicable | Remote sensing (Aerial photography or satellite imagery) | Initially for entire mountain; Every two years for riparian areas. |
| Streams in Roberts Mountains. | Roberts Creek, Vinini Creek, Henderson Creek | Macro-invertebrate monitoring | Annually (late summer/early fall base flow) |
| Mine site | Existing Mt Hope met station | Temperature, precipitation, humidity, wind speed and wind direction | Hourly |
| Roberts Mountains | Minimum of 3 high-altitude sites in Roberts Mountains, locations to be determined. | Precipitation | To be determined |


053 Pine Valley
153 Diamond Valley
138 Grass Valley
Steiner Creek
Detailed Labeling of Monitoring Sites
Within This Area Depicted in Figure 2
139 Kobeh Valley
152
Stevens
Basin
MH-703
(Klobe Hot Spring)
B Big Smoky Valley
Allison Creek
LANDER COUNTY
EUREKA COUNTY
151 Antelope Valley
NYE COUNTY
140A Monitor Valley
140B Monitor Valley
Pine Creek
150 Little Fish Lake Valley
Explanation
Roberts Mountains Monitoring Sites
Stream
Gauging Station
Monitoring Well
Spring
Diamond Valley Monitoring Sites
Spring
Monitoring Well
Kobeh Valley Monitoring Sites
Stream
Monitoring Well
Spring
Wells to be Installed by EMLLC
DV Well
KV Well
PV Well
USGS Wells
Mine Supply Well
Regional Monitoring Sites
Spring
Stream
Perrenial Streams Occupied by Lahontan Cutthroat Trout
U.S. Highway
2-Track / Dirt Road
Primary Road
State Route
Nevada Counties
Mt. Hope Plan of Operations Boundary
Hydrographic Basin Boundaries
Limit of Projected 10' Drawdown Contour at Project Year 44 Proposed Action
Wet Meadow Complexes
Wellfield Corridor
Mainly Rabbitbrush and Greasewood
Mainly Saltgrass and other Wet Meadow Grasses
Patented Land
Private Land
Tailings
Streams
EUREKA MOLY
Mt. Hope Project
Eureka County, Nevada
Water Resource Monitoring Plan
Figure 1
May 27, 2011


UHC (Upper Henderson Creek)
MH-501
LHC (Lower Henderson Creek)
MH-500
OT-2
OT-5
OT-3
SP-3
SP-2 (Garden Pass)
IGMI-152
MH-502
SP-4
SP-1
MH2009-248
GMI-PDT-2
IGMI-233P
IGMI-232P
IGMI-154
GMI-PDT-3
IGMI-226P
GMI-PDT-1
IGMI-169
IGMI-228P
IGMI-155
IGMI-230P
NDWR-15462
SP-7
IGMI-157
MH-3
053 Pine Valley
138 Grass Valley
153 Diamond Valley
139 Kobeh Valley
152 Stevens Basin
140A Monitor Valley Valley
151 Antelope Valley
Kilometers
Miles
Explanation
Roberts Mountains Monitoring Sites
Stream
Gauging Station
Monitoring Well
Spring
Diamond Valley Monitoring Sites
Spring
Monitoring Well
Kobeh Valley Monitoring Sites
Stream
Monitoring Well
Spring
Wells to be Installed by EMLLC
DV Well
KV Well
PV Well
USGS Wells
Mine Supply Well
U.S. Highway
2-Track / Dirt Road
Primary Road
State Route
Nevada Counties
Mt. Hope Plan of Operations Boundary
Hydrographic Basin Boundaries
Limit of Projected 10' Drawdown Contour at Project Year 44 Proposed Action
Wet Meadow Complexes
Wellfield Corridor
Mainly Rabbitbrush and Greasewood
Mainly Saltgrass and other Wet Meadow Grasses
Patented Land
Private Land
Tailings
Streams
EUREKA MOLY
Mt. Hope Project
Eureka County, Nevada
Water Resource Monitoring Plan
Figure 2
May 27, 2011

# APPENDIX D

# MOUNT HOPE PROJECT
# MITIGATION SUMMARY PLAN

# MOUNT HOPE PROJECT
# MITIGATION SUMMARY PLAN

# MOUNT HOPE PROJECT
# MITIGATION PLAN

## TABLE OF CONTENTS



### ATTACHMENTS

# 1 INTRODUCTION

This Mitigation Plan includes mitigation by resource from the Environmental Impact Statement (EIS) prepared for the Mount Hope Project (Project). The following four Bureau of Land Management (BLM) approved mitigation plans are included as attachments following this Mitigation Plan: Pony Express Trail Access Mitigation Plan (Attachment 1); Wild Horse and Wildlife Water Source Mitigation Plan (Attachment 2); Greater Sage-Grouse Conservation Measures (Attachment 3); and Mitigation Strategy for Protecting Important Roosting Colonies of Townsend's Big-eared Bats at the Mount Hope Mine (Attachment 4).

# 2 AUDITORY RESOURCES

**Mitigation Measure 1:** Construction in the vicinity of the Roberts Creek Ranch house and greater sage-grouse leks would be limited to daylight hours and would be limited during lekking periods (see Appendix D, Attachment 3). Construction equipment used in the vicinity of residences would be fitted with the best available technology manufacturers' noise control equipment, including engine exhaust silencers and acoustical enclosures. Noise control equipment would be maintained in good working order. Implementation of this mitigation measure would result in a less than significant impact.

# 3 CULTURAL RESOURCES

**Mitigation Measure 1:** EML would develop, and submit to the BLM for approval, a treatment plan to address the potential direct impacts to the 83 officially eligible sites within the Project APE. EML would implement the treatment plan prior to any surface disturbance of eligible sites within the area of direct impacts. All adverse effects under the NHPA and direct and indirect impacts under the NEPA to known-eligible properties indentified within the Project APE would be mitigated in accordance with the PA and the treatment plan prepared for the Project. Any previously unknown-eligible properties that may be discovered during construction activities would be mitigated in accordance with the PA. No residual adverse effects are anticipated, as all known-eligible sites would be mitigated in accordance with the PA and the treatment plan prepared for the Project. Any previously unknown-eligible properties that may be discovered during construction activities would be mitigated in accordance with the PA.

**Mitigation Measure 2:** In the case of inadvertent discovery of human remains, the BMDO Policy for the Discovery of Human Remains (IM NV-2010-001) – notification procedures would be followed. If the remains are determined to be native, NAGPRA inadvertent discovery procedures would be adhered to. Under the NAGPRA, section (3)(d)(1), it states that the discovering individual must notify the land manager in writing of such a discovery. If the discovery occurs in connection with an authorized use, the activity, which caused the discovery, is to cease and the materials are to be protected until the land manager can respond to the situation. Tribes, tribal organizations, possible lineal descendants, and individuals would then be contacted to determine cultural affiliation and subsequent transfer of custody procedures would begin.

# 4 HAZARDOUS MATERIALS

**Mitigation Measure 1:** EML would maintain their existing Emergency Response Plan located in the Plan of Operations (EML 2006; Appendix 11).

# 5 HISTORIC TRAILS

**Mitigation Measure 1:** As part of the Historic Treatment Plan, mitigation for the historic trail would include photo documentation to capture the setting and feel of the Pony Express Trail adjacent to the Project that would be visually impacted. The Treatment plan would also include off-site mitigation in the form of GPS mapping and surveying of off-site portions of the Pony Express Trail located on public land. Segments would be selected at a 1:1 ratio of linear mileage based on the length of segments of the trail that would be impacted by the Project and are considered eligible as discussed in Section 3.21.3 of the EIS. Additionally, Mitigation Measure 1, Visual Resources, would reduce visual impacts to users of the Pony Express Trail.

**Mitigation Measure 2:** EML would implement the mitigation plan included in Appendix D, Attachment 1 to provide access through the Project Area during the annual Pony Express re-ride, which generally occurs in June. This mitigation would allow for independent (non-NPEA) re-riders to follow the trail through the Project Area at other times of the year, subject to 30-day advance notice and certain safety restrictions, and subject to EML's approval, and to provide for an alternative route for trail riders during other times of the year, weather permitting.

# 6 LAND USE

**Mitigation Measure 1:** EML would, in consultation with the BLM and authorized holders of the affected ROWs, reestablish the structures that would be altered or removed, as appropriate.

# 7 LIVESTOCK GRAZING AND PRODUCTION

**Mitigation Measure 1:** The BLM would monitor for changes to forage productivity as a result of ground water drawdown associated with Project-related ground water pumping. If the BLM detects a loss of forage productivity attributed to the Project, the BLM would develop and provide EML with a list of appropriate seed mixes for those areas within and outside the Project Area impacted by water table drawdown that should be seeded. The nature of the seed mix may vary depending on the conditions encountered as a result of the drawdown. If the BLM determines reseeding to be necessary, the BLM would coordinate the conditions for reseeding (including a possible two-year grazing closure) with local permittees in order to reduce impacts to AUMs. Mitigation for the potential loss of water available for livestock from stock water rights and other surface waters are described in the Water Resources - Water Quantity impacts discussion (Mitigation Measures 1, 2, 3, 4, 5, 6, Water Quantity). Mitigation for loss of water available would also mitigate the loss of vegetation (livestock forage).

**Mitigation Measure 2:** Mitigation for the potential loss of water availability for livestock from stock water rights and other surface waters are described in the Water Resources - Water Quantity impacts discussion (Mitigation Measures 1, 2, 3, 4, 5, and 6, Water Resources).