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To: Nez Perce Tribal Executive Committee

From: Jim Kuipers P.E., Kuipers & Associates

Re: **Description of No Action Alternative Including Cleanup**

This memo responds to the Nez Perce Tribe's request to provide technical assistance in the development of an Environmental Impact Statement (EIS) level description of the No Action Alternative, including cleanup of existing historic mining contamination, as applied to the currently existing Stibnite abandoned mine site. It identifies the known sources of pollution and other past coincidental damage to the environment at the site, and suggests the remedial actions intended to address those sources and impacted areas. It also addresses areas that would be subject to natural resource damage considerations. The memo also addresses the anticipated environmental effects of the cleanup action in terms of the baseline conditions that would exist as a result of the No Action Alternative including cleanup of existing historic mine contamination as described.

The basis of this memo comes from three sources:

1. The Stibnite Gold Project Draft Environmental Impact Statement.
2. EPA's Proposed Bridge Approach for the Stibnite Mine with Phased Response Actions.
3. The author's extensive knowledge and expertise in hardrock mining cleanup including over 40 years of industry experience and 25 years working on Superfund sites, including for 15 years for EPA's Abandoned Mine Lands (AML) Program. I have worked directly on dozens of mine cleanups and have extensive knowledge as to the methods used by EPA, the Bureau of Land Management, the Forest Service and many states to remediate hardrock mining Superfund and similar sites. I have authored extensive guidance for EPA's Office of Solid Waste and Emergency Response which administers the Superfund Program that includes site characterization, source remediation, water management and treatment, long-term monitoring and maintenance and institutional controls, as well as cost estimation for mine site cleanup activities. I am also highly familiar with the Stibnite mine site going back to the 1980's, have visited the site on several occasions including recently in 2018, and have studied in detail the available information related to past site characterization activities for cleanup analysis purposes and the current geochemical and hydrological information with respect to the site.

I. Background

The DEIS in Section 2.7 describes Alternative 5, as the No Action alternative required by NEPA. As described in the DEIS, *The No Action Alternative means that no permits would be issued, and the proposed project would not be undertaken*. Also, according to the DEIS, *"No action" in this case would mean the proposed activity would not take place, and the resulting environmental effects from taking no action would be compared with the effects of permitting the proposed activity or an alternative activity to go forward (CEQ 1981).* The DEIS goes on to describe the No Action alternative with respect to the remediation of existing site conditions saying *Additionally, there would be no removal and/or relocation of legacy materials (tailings and waste rock), backfilling of the Yellow Pine pit, rebuilding of the EFSFSR, or re-establishing fish passage to the headwaters of the EFSFSR.*

As noted by the *Nez Perce Tribe's EIS Scoping Comments* (p. 25) a true no-action alternative is not that the site will remain in its present polluted/degraded condition. Instead, the no-action alternative should address the extent of remediation if Midas Gold's current environmental liabilities were addressed under relevant and applicable requirements such as the Clean Water Act (CWA) and/or Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The DEIS however, only includes alternatives, including for cleanup of the existing abandoned mine site, that assume the proposed mine is operated and closed.

As noted in the Nez Perce Tribe's comments on the SGP DEIS, the DEIS should have included an alternative that involved not only No Action in terms of the proposed mining operations, but also addressed remediation of the mine site on a stand-alone basis as an alternative activity to address the unresolved conflict of the Nez Perce Tribe's present CWA lawsuit and subsequent discussions to address the lawsuit with a CERCLA driven process for restoration of the mine site. The expectation of the lawsuit and/or CERCLA process is that remediation of the existing conditions would be performed regardless of whether mining operations were permitted, started and then stopped, or occurred to completion.

Also as noted in the Tribe's comments, the DEIS fails to recognize that the restoration of the mine site without additional mining would be expected to result in a significant improvement to existing water quality conditions as compared to baseline conditions described in the DEIS. The DEIS should have used restored rather than existing conditions to establish and compare as baseline conditions for all other alternative considered in the DEIS.

Under normal circumstances, where a mining proposal was not being considered, the CERCLA Superfund process could be expected to require some time to determine a proposed remedy. The process includes various stages including a remedial investigation where the site and past impacts are characterized and describes, and ecologic and human health risk assessments are performed. Based on this information a feasibility study is performed that develops various alternative technical approaches to remediation of the site, evaluates their technical pros and cons, determines the estimated cost for each alternative, and evaluates them relative to EPA's

Nine Criteria[1]. Based on that information EPA recommends a Proposed Remedy which once approved is set forth in a Record of Decision (ROD). Public involvement includes comment periods after the RI/FS, Proposed Plan, and draft ROD. The remedial investigation and feasibility study (RI/FS) process by itself can take years and in some cases decades such as at Superfund mega-sites such as the Bunker Hill Superfund Site in Idaho and the Butte Silver Bow – Anaconda – Milltown Superfund Sites in Montana. Even at more typical mine sites the RI/FS process can be expected to require 3-5 years and the entire process of issuing a ROD 5-10 years.

The CERCLA process for the Stibnite abandoned mine site might be expected to take a minimum of 3-5 years under ordinary circumstances. However, there are three notable aspects of the Stibnite mine site that make the ordinary approach somewhat unnecessary.

- The history of the site is well documented and there has been extensive site characterization performed as a result of past investigations for site cleanup purposes, as well as site characterization for the currently proposed mining project, that provides a reasonable level of information for sources of contamination and related discharges into groundwater and surface water as the basis for the development of remedial alternatives.
- EPA, in negotiating a potential resolution to the Nez Perce Tribe's CWA lawsuit, developed a *Proposed Bridge Approach for the Stibnite Mine with Phased Response Actions.* The approach, further described herein, identifies actions that would be taken by Midas during various phases of the mine development and operations should mining not proceed. The actions are based on EPA's experience at other Superfund sites.
- As part of his work for EPA the author obtained and became highly familiar with a database that includes the description of cleanup activities actually taken at AML sites as a result of the Superfund process. The author is also knowledgeable as to the level of remediation in terms of improvements to water quality that might be anticipated as a result of applying remedial actions at AML sites.

[1] Nine Criteria - The analysis of alternatives under review reflects the scope and complexity of site problems and alternatives being evaluated and considers the relative significance of the factors within each criteria. The nine criteria are part of the National Contingency Plan (40CFR300.430(e)(9)). The nine evaluation criteria are as follows:
<u>Threshold Criteria</u>
1. Overall protection of human health and the environment
2. Compliance with ARARs (applicable or relevant and appropriate standards)
<u>Primary Balancing Criteria</u>
3. Long-term effectiveness and permanence
4. Reduction of toxicity, mobility or volume
5. Short-term effectiveness
6. Implementability
7. Cost
<u>Modifying Criteria</u>
8. State acceptance
9. Community acceptance

Based on this level of information and knowledge it is possible to develop a "prescriptive remedy" for the Stibnite abandoned mine site that is based on the application of cleanup actions that have taken place at other similar mine sites as part of the CERCLA Superfund process. That approach has been taken to describing the No Action Including Cleanup Alternative and the results from that action, as further described in this memo.

II. Stibnite Site Sources of Contamination

The hardrock mining legacy at the Stibnite site included mining, milling and processing activities that created extensive underground and multiple open pit mine workings, waste rock piles, tailings dumps, spent heap leach piles and other features that have resulted in the contamination of soils and impacted groundwater and surface water quality. These sources of contamination and associated impacted areas that would be expected to be addressed by the Superfund process are identified in this section.

The past and current site characterization information is contained in prior site documents that are largely identified and summarized in the SGP Draft Environmental Impact Statement (DEIS). The information in the DEIS and supporting documents identify both existing sources of contamination. The Nez Perce Tribes CWA lawsuit also identifies and provides information with respect to various sources of discharges of contamination at the site. The sources and other contaminated areas summarized in Table 1, and discussed in the following section. The sites and areas are identified in Figures 1 and 2.

As the various sites are described in the referenced documents they are not further described herein.

Table 1 – Stibnite Site Sources of Contamination

Source[1]	~Arsenic Loading (lb/year)[2]	Arsenic Loading % of Total	Included in NPT NOI[3]	Included in PRO[4]	Included in EPA ASAOC[5]	Included in SGP DEIS[6]
Open Pits						
Yellow Pine Pit/Pit Lake	1040	79.8%	Yes	Yes	No	Yes
Adits and Tunnels	-	-				
Bailey Tunnel	23	1.8%	Yes	No	Yes	No
Bonanza Adit	1	0.1%	Yes	No	Yes	No
DMEA Adit (includes DMEA Waste Rock Dump)	9	0.7%	Yes	No	Yes	No
Meadow Creek Mine Adit	6	0.5%	Yes	No	Yes	No
Monday Tunnel/North Tunnel/Cinnabar Tunnel	21	1.6%	Yes	No	Yes	No
Waste Rock	-	-				
NW Bradley Dumps & Hennessy Creek	86	6.6%	No	No	Yes	No
Bradley Mancamp Dumps	20	1.5%	No	No	Yes	No
Bradley Northeast Oxide Dumps	8	0.6%	No	No	Yes	No
Tailings						
Keyway Dam/Keyway Marsh	?	?	No	Yes	Yes	No
SODA and Bradley Tailings	28	2.1%	Yes	Yes	Yes	Yes
Hangar Flats (Pioneer) Tailings Pile and Hecla Heap Leach	61	4.7%	Yes	Yes (partial)	Yes	Yes (partial)
Meadow Creek Mill and Smelter	?	?	No	No	Yes	No

1. Sources include legacy areas included in the NP NOI, Midas and EPA proposed early actions, and PRO and represent the highest sources of arsenic loading to surface waters at the site.
2. Estimates of arsenic loading from SRK, 2017, Existing Conditions Site-Wide Water Chemistry (SWWC) Memo, November 22, 2017 memo to Piper Goessel, USFS, p. 46.
3. Alleged point sources in the Nez Perce CWA notice of intent.
4. Sources identified in Midas' Plan of Restoration and Operations (2016).
5. Sources Identified in EPA's Proposed Bridge Approach for the Stibnite Mine.
6. Sources identified in Stibnite Gold Project Draft Environmental Impact Statement (August 2020).

Figure 1 – Stibnite Site Sources of Contamination

Figure 4-2, Past Mining and Related Activities

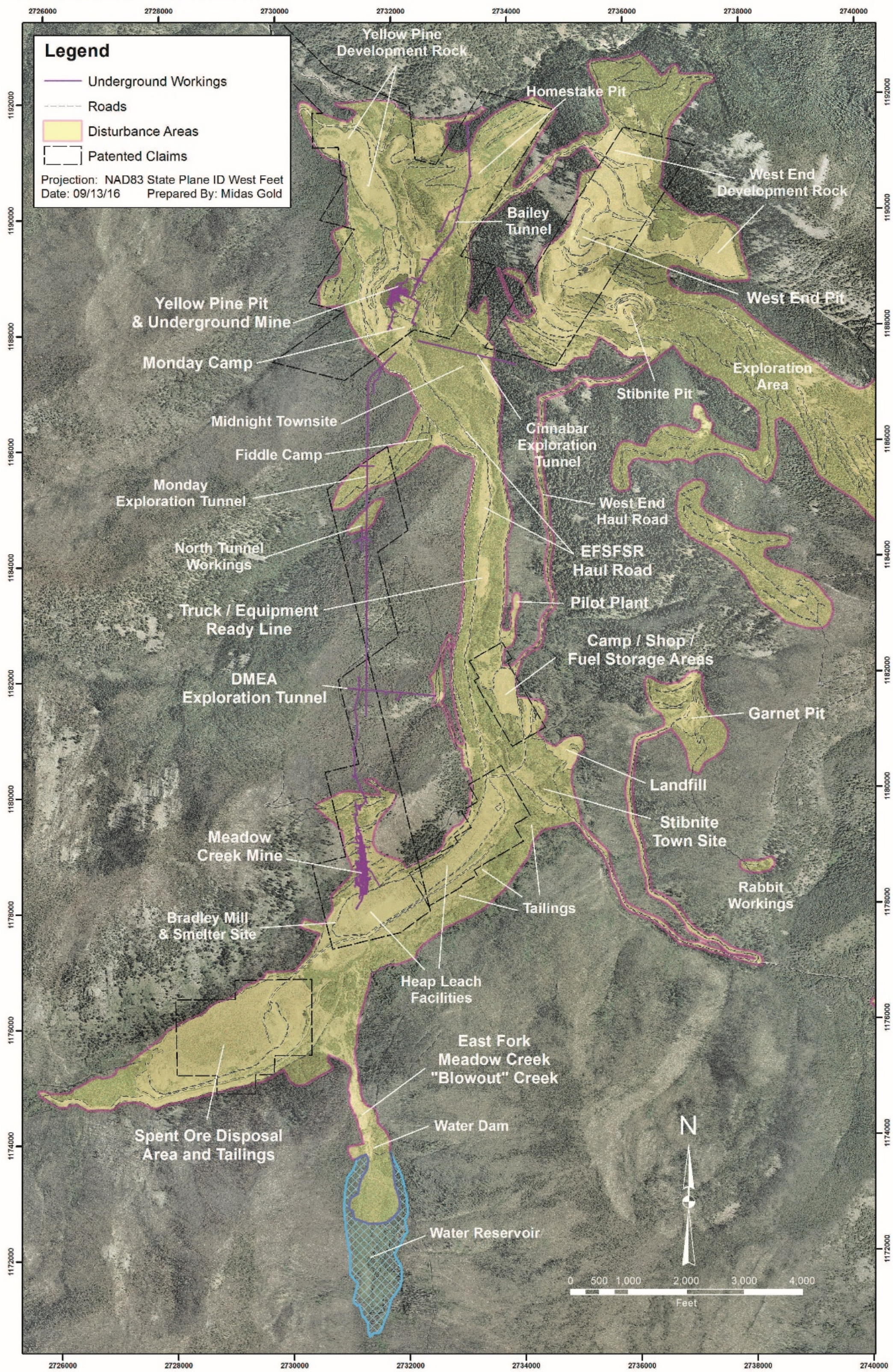
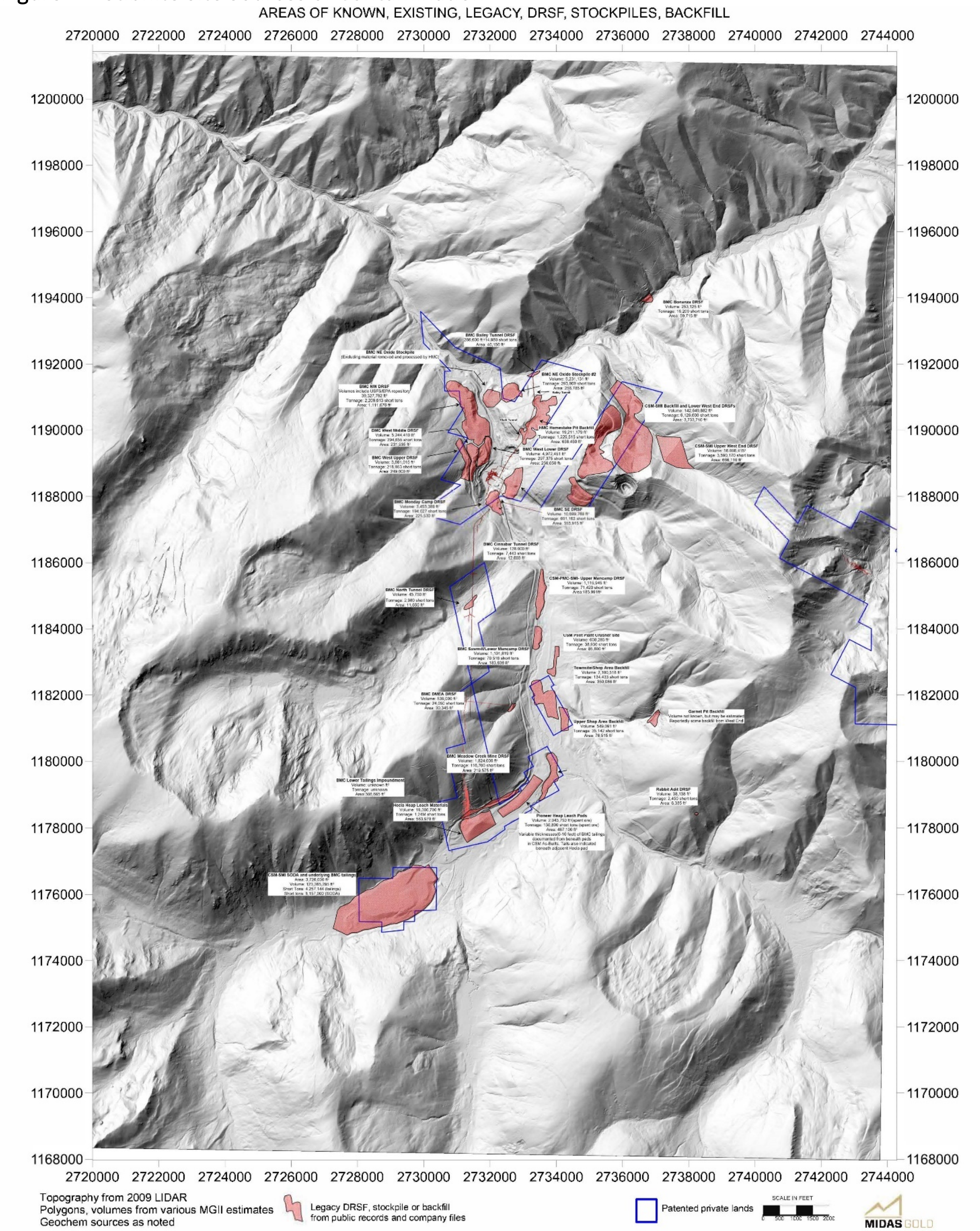


Figure 2 – Stibnite Site Sources of Contamination



III. Stibnite Site Remedial Actions

This section describes a proposed phased bridge approach to site remediation developed by EPA that is based on the mining operations proceeding or otherwise reverting to the RI/FS process. This section also describes the No Action Including Cleanup Alternative for site remediation and the prescriptive remedy approach used to develop the alternative.

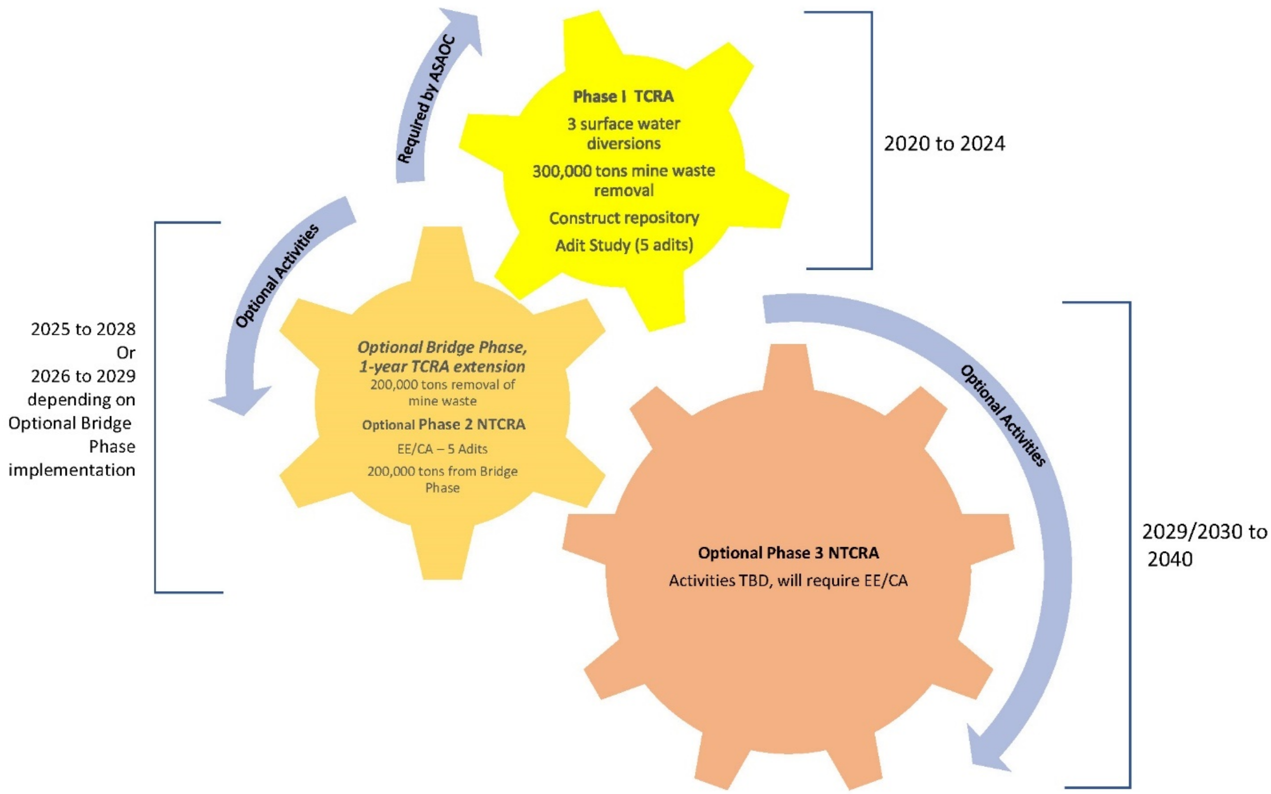
A. EPA Phased Bridge Approach

EPA has proposed an Administrative Settlement Agreement and Order on Consent (ASAOC) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for work to be performed by Midas Gold at the Stibnite Mine Site (Site) to address legacy mine wastes and associated water quality issues. As part of the ASAOC EPA proposed a “Bridge Approach” for the Stibnite Mine with Phased Response Actions. The attached Appendix A, Statement of Work for Stibnite Mine Time Critical Removal Actions and Non-Time Critical Removal Actions, Stibnite Mine Site, Valley County, Idaho describes EPA’s proposed bridge approach in detail. Table 1 and Figure 1 from the document are shown below. Table 1 lists the ASAOC phases and years, along with calendar years and the mining activities anticipated during each phase. Figure 1 shows the remedial activities that would take place during the same time periods.

Table 1 ASAOC Phases

ASAOC Phase	AOC Years	Calendar years	Mining Schedule under PRO
1	1 - 4	2020 - 2024	Mine permitting & construction (if approvals & permits received)
Bridge	5	2025	Bridge phase if permits are not received by end of Phase 1
2	Receipt of mine permits & approvals through mine year 4	2025 to 2028 or 2026 to 2029	Mine construction, mine operations
3	Mine operations year 5 through mine reclamation	2029/2030 to 2040	Mine operations and reclamation

Figure 1 ASAOC Remediation During Phases



While EPA's phased bridge approach does provide some basis for a remedial action plan in the event mining did not occur as in a No Action Including Cleanup Alternative, because it is based on Midas proposed mining actions occurring, or otherwise then initiates the RI/FS process if mining is stopped, that basis is primarily limited to the identification and characterization of the sources of contamination, and the suggestion that waste rock, tailings, spent heap leach piles and other materials should be removed from their present locations.

While any actual cleanup under a No Action Including Cleanup Alternative would be expected to go through the RI/FS process or its equivalent (EE/CA), it is possible to develop a conceptual cleanup plan based on a prescriptive remedy approach that uses remedial actions that have been taken at similar hardrock mine sites. The prescriptive remedy approach is based on the following:

- EPA Abandoned Mine Lands Superfund Site Policy and Guidance[2] including:
  - Policy on Joint Repositories at Mixed-Ownership Hardrock Mine Sites, April 2005.
  - EPA's National Hardrock Mining Framework, September 1997
  - Abandoned Mine Land Site Characterization and Cleanup Handbook, August 2000.
  - Publications on Mining Waste Management in Indian Country, July 1999.
- EPA Technical Resources on:
  - AML contamination assessment and characterization techniques;
  - Types of waste found at AMLs;
  - Technologies used to remediate contamination found at AMLs;
  - Modeling and forecasting impacts from mining; and
  - Financial and bonding studies.
- EPA Database Containing:
  - Data on 126 Hardrock Mining AML Sites
  - Techniques used for remedial actions for each site
    - Source control methods
    - Water management methods
- The Global Acid Rock Drainage Guide[3] Chapter 6.0 Prevention and Mitigation
- Personal professional knowledge over 35 years and spanning remediation and reclamation and closure planning for hundreds of hardrock mine sites in the U.S.

B. No Action Including Cleanup Alternative

Based on the prescriptive remedy approach previously described, the following remediation actions, summarized in Table 2, are proposed for the No Action Including Cleanup Alternative:

[2] https://www.epa.gov/superfund/abandoned-mine-lands-policy-and-guidance
[3] http://www.gardguide.com/index.php?title=Main_Page

Table 2 – Stibnite Site Remedial Action Plan

Source	Type of Action No Action Including Cleanup Alternative
Open Pits	
Yellow Pine Pit/Pit Lake	Isolate EFSFSR from sources, backfill pit lake, collect and treat groundwater and pit wall runoff sources
Adits and Tunnels	
Bailey Tunnel	Collect discharge stream (surface and subsurface) and treat, bulkhead opening
Bonanza Adit	
DMEA Adit (includes DMEA Waste Rock Dump)	
Meadow Creek Mine Adit	
Monday Tunnel/North Tunnel/Cinnabar Tunnel	
Waste Rock	
NW Bradley Dumps & Hennessy Creek	Remove all contaminated waste rock and subsurface soils and locate in repository, collect and treat leachate.
Bradley Mancamp Dumps	
Bradley Northeast Oxide Dumps	
Tailings	
Keyway Dam/Keyway Marsh	Remove all contaminated tailings, heap leached materials and subsurface soils and locate in repository, collect and treat leachate.
SODA and Bradley Tailings	
Hangar Flats (Pioneer) Tailings Pile and Hecla Heap Leach	
Meadow Creek Mill and Smelter	Remove all contaminated tailings and locate in repository, collect and treat leachate.

1. Open Pits - Yellow Pine Pit/Pit Lake

Given the Yellow Pine pit/pit lake is the primary (~80% of total) source of arsenic contamination its remediation is a key aspect of this plan. It is also the most challenging aspect of the plan given that the EFSFSR runs through the pit, a pit lake is formed before spilling out, and primary sources of contamination are dispersed and include the pit walls, previously backfilled material, lake sediment, and upstream sources. While this is not unusual as an overall site characteristic at hardrock mine sites, open pit sources are typically not the primary source of contamination. However, where open pits are a source of contamination the typically methodology used is to control the inflow of surface water and groundwater into and through the pit, and to collect any remaining contaminated surface water and groundwater by establishing the pit as a hydraulic sink, and to remove and treat contaminated water as necessary. Where surface water features go through a pit, they are typically instead routed around the pit to avoid their contamination, including placing the water in a lined channel if necessary. Unless the size is prohibitive, pit lakes are typically eliminated, unless they become part of a functional stream system or in some cases water management and treatment system.

The proposed action would start by routing the EFSFSR through the pit by construction of a new channel that would be protected from contaminated surface water and groundwater in the pit by surface water and groundwater controls. Surface water controls to prevent contaminated surface water in the pit from entering the EFSFSR would consist of stormwater run-on diversions designed for at least a 200-yr 24 hr precipitation event. Contaminated groundwater would be prevented entering the EFSFSR by lining the new channel. The new channel would be constructed to allow fish passage as described in Section IV of this memo.

Contamination resulting from the pit walls would be reduced by installing surface water run-on diversions around the pit to divert stormwater designed for at least a 200-yr 24 hr precipitation event. Surface water as a result of stormwater falling in the pit or from springs or seeps from the pit walls would be collected or otherwise diverted to the bottom of the pit. The bottom of the pit would be converted into a surface water/groundwater collection sump and backfilled with coarse materials so as to allow for seasonal surface water storage and prevent a pit lake from forming. The groundwater collection sump would be operated as a groundwater hydraulic control, and any additional groundwater emanating from the pit not captured by the control would be captured and managed additionally if necessary. All contaminated surface water and groundwater would be collected and treated at a central water treatment plant using active treatment methods for as long as is necessary to meet objectives that are described in Section V of this memo.

2. Adits and Tunnels

The Bailey Tunnel, Bonanza Adit, DMEA Adit (includes DMEA Waste Rock Dump), Meadow Creek Mine Adit and Monday/North/Cinnabar Tunnels combined account for approximately 5% of the total source load of arsenic contamination. Best practices for remedial actions for remediation of mines with underground workings have recently been developed by EPA as a result of the Gold King Mine release in 2015.[4] The report's best practices emanate from: (I) existing technical resources and publications. (2) lessons learned from relevant incidents, and

[4] Planning for Response Actions at Abandoned Mines with Underground Workings: Best Practices for Preventing Sudden, Uncontrolled Fluid Mining Waste Releases. https://semspub.epa.gov/work/HQ/176382.pdf

(3) technical contributions from professionals with mine waste characterization and mitigation expertise. The author was a contributor to the guidance.

The proposed action would characterize and then determine the nature of the mine pool associated with each adit or tunnel at the Stibnite site. A mine pool management plan would then be developed for each source or a combination of sources if hydrologically connected that would manage the mine pool and any discharge emanating either as surface water or groundwater. At the Stibnite site it is not anticipated that any of the underground workings would result in pressurized mine pools and that the formation of any pressurized pools such as might be caused by bulkheading would be deemed not desirable. As a result, the remedial plan would consist of isolation of the surface flows from the adits and tunnels so that they can be gathered and conveyed for treatment and construction of groundwater capture systems such as cutoff walls and/or groundwater wells and conveyances. All contaminated surface water and groundwater would be collected and treated at a central water treatment plant using active treatment methods for as long as is necessary to meet objectives that are described in Section V of this memo.

3. Waste Rock

The NW Bradley Dumps & Hennessy Creek, Bradley Mancamp Dumps, Bradley Northeast Oxide Dumps combined account for approximately 9% of the total source load of arsenic contamination at the Stibnite site. Best practices for waste rock remediation at hardrock mines are the application of source control measures, either in-place or after relocation to an alternative location. Source control measures prevent run-on of stormwater and minimize infiltration of stormwater through the waste rock. If the waste rock is left in place source control measures are limited to engineered covers to address stormwater, and groundwater infiltration through waste rock is not addressed. If the waste rock is removed to a repository which is not located adjacent to wetlands, riparian areas, or with shallow groundwater (defined for the purpose of this memo as the groundwater level being >100ft from the surface level), it is also placed on an engineered liner in additional to having an engineered cover. Typical liners include synthetic geomembrane liner such as HDPE and clay/geomembrane composite liners and incorporate leak detection and evacuation systems. In-situ source control engineered covers can be expected to function at a relatively high level of efficiency (<95%) in terms of reduction of infiltration from stormwater, however any seepage through the liner as well as any groundwater infiltration through the waste rock would not be addressed, so the approach is typically only applied at relatively dry locations without shallow groundwater. If a repository is constructed purposefully for the removal of waste materials then in addition to having the benefits of reducing infiltration from surface stormwater, it also has the benefits of no groundwater infiltration and capture of any seepage through the cover liner, resulting in a high level of efficiency (>99%). To maintain the efficiency as designed it is necessary for any cover and cover/liner system to be monitored, maintained, and operated for as long as necessary to meet the objectives of the remedy.

The proposed action for the Stibnite site, because they are predominately located in areas subject to groundwater infiltration and in close proximity to riparian areas and wetlands, or surface water, would remove the waste rock piles and relocate them to a central site repository (described later). Following excavation of the waste rock material the subsurface soils would be sampled, and if contaminated, also removed and placed in the repository. After removal of all contaminated material the area would be recontoured, any riparian, wetland and stream areas restored, and the area covered with suitable growth medium and revegetated with site appropriate native species. Long-term monitoring and maintenance of the reclaimed areas is discussed later in this memo.

4. Tailings

The Keyway Dam/Keyway Marsh, SODA and Bradley Tailings, Hangar Flats (Pioneer) Tailings Pile and Hecla Heap Leach combined account for about 7% of the total source load of arsenic contamination at the Stibnite site. Best practices for tailings and spent heap leach pile remediation are similar to those at hardrock mines and are the application of source control measures, either in-place or after relocation to an alternative location.

The proposed action for the Stibnite site, because they are predominately located in areas subject to groundwater infiltration and in close proximity to riparian areas and wetlands, or surface water, would remove the tailings and spent heap leach piles and relocate them to a central site repository (described later). Following excavation of the waste rock material the subsurface soils would be sampled, and if contaminated, also removed and placed in the repository. After removal of all contaminated material the area would be recontoured, any riparian, wetland and stream areas restored, and the area covered with suitable growth medium and revegetated with site appropriate native species. Long-term monitoring and maintenance of the reclaimed areas is discussed later in this memo.

5. Meadow Creek Mill and Smelter

Any contaminated materials identified at Meadow Creek Mill and Smelter would be removed and placed in a central repository. After removal of all contaminated material the area would be recontoured, the area covered with suitable growth medium and revegetated with site appropriate native species. Long-term monitoring and maintenance of the reclaimed areas is discussed later in this memo.

6. Ancillary Facilities

In addition to the remedial tasks associated with the sources of contamination as previously described, the No Action Including Cleanup Alternative would include a central repository for the management of the waste rock, tailings, heap leach, mill and smelter contaminated materials removed from their present locations as described in the previous sections. Also, the remedial plan would include water management and treatment as well as discharge features to treat any contaminated water that is captured from tunnels, adits, open pit dewatering, surface runoff and from repository seepage collection.

a) Repository

The repository would need to have an estimated capacity of up to 15 million tons in order to hold all the waste rock, tailings, heap leach and other materials, including contaminated subsoil, from the Stibnite site that has been identified in this plan. If the materials are assumed to have a density of 120 lbs/cu ft and are placed at an average height of 50 ft depth, the area of the repository would be approximately 115 acres in size. A suitable location, depending on capacity, could be the West Pit area.

The repository would be designed with engineered liner in additional to having an engineered cover. The repository liner would consist of a prepared subgrade, and a clay geomembrane composite liner overlain by a leak detection network that in turn is overlain by a geomembrane liner. The repository would incorporate both a leak detection and evacuation system and also a system for detection and removal of any seepage that collects within the waste materials on top of the geomembrane liner. The engineered cover would be the same as has been described in Alternative 2 of the SGP DEIS.

b) Water Management and Treatment

The water management and treatment system for this plan includes all groundwater and surface water points of capture, conveyances including pumps and piping to a centralized water holding/equilibrium pond, and an active water treatment system for the removal or arsenic, antimony, mercury and other contaminants to meet objectives. The water treatment system would be an active system as described in Alternative 2 of the SGP DEIS. The plan would not anticipate conversion in the future to a semi-passive (sic passive) water treatment system as at this time the approach is unproven and speculative as compared to the ability to conduct active water treatment.

7. Long-Term Monitoring, Maintenance and Operations, and Institutional Controls

The Stibnite site remedial plan would include long-term monitoring, maintenance, operations, and an institutional control program. Long-term monitoring would be intended to demonstrate the effectiveness of the remedy by monitoring water quality and quantity as well as aquatic life in the areas where waste rock, tailings, heap leach and other materials have been removed in addition to the effectiveness of the repository and Yellowpine pit and in surface water downstream of the site. Monitoring would also need to be performed for erosion, stormwater controls, and revegetation. Maintenance would need to be performed on the repository cover system, stormwater controls and water management features, as well as on any remediated areas as required. Water treatment operations would need to be continued until no longer necessary. An Institutional Controls program would be developed and implemented to protect the remedy from development or other unintended impacts. Financial assurance to ensure that long-term activities will be conducted in perpetuity would be included as part of this plan.

IV. Other Areas Impacted by Mining Activities

Both the main stem of Meadow Creek and its East Fork tributary have been severely impacted by past mining activity. The East Fork of Meadow Creek, locally known as “Blowout Creek”, is today one of the largest sources of sediment for this part of the Salmon River. “Blowout Creek” got its name from a water dam that failed in the 1960s with a washout that scarified an erosional channel and drained the meadow and the productive wetlands above. The erosional and dewatering effects continue today, with sediment being rushed downstream with every spring melt and every summer rainstorm, the finer sediments choking the spawning grounds of the Salmon River.

As part of the No Action Alternative Including Cleanup Blowout Creek would be restored as part of a Natural Resources Damage claim. The restoration would be performed similar to that described in the SGP DEIS.

The EFSFSR, a branch of the Salmon River headwaters, currently runs though the old Yellow Pine pit (sometimes referred to locally as the “Glory Hole”). First mined in 1938 and abandoned in the late 1950s, the pit has since filled with river water and formed a lake. While recreationists currently camp on the old mine benches within the open pit and catch fish in the un-reclaimed pit lake, anadromous and local fish populations have not been able to migrate upstream from this point since 1938. The fish passage would be restored as part of the diversion of the EFSFSR as previously described for the Yellow Pine Pit in this memo.

V. Anticipated Environmental Effects

The anticipated environmental effects from any Superfund or other mine cleanup or even modern mine reclamation are difficult to predict, however it is nearly always predicted that the effect will be to meet the applicable water quality standards, with some exceptions. The objective of the Stibnite Mine No Action Including Cleanup Alternative would be to capture and treat all mine influenced water so as to meet applicable water quality objectives, and if possible, to restore baseline water quality as well as other conditions to the site.

The assumption for the Stibnite Mine No Action Including Cleanup Alternative is that water quality would be improved by 90% for key contaminants such as antimony and arsenic. The effect of this as it pertains to the SPG DEIS is shown in Table 3. Table 3 shows the current conditions as baseline conditions, and Alternative 2, the Agency Alternative, from the DEIS. It also shows the current conditions, improved by 90% removal or antimony and arsenic as a result of the No Action Including Cleanup Alternative. As indicated by the data in the table, the Alternative 2 Agency Alternative might result in some improvement of existing water quality if all the predictions contained therein were correct, which they rarely if ever are[5], and instead tend to over-predict water quality protection at modern mine sites. The results as compared to the existing conditions only represent a modest improvement and show the limits of the proposed action in terms of leaving the site in a degraded condition under the best circumstances predicted post-mining. The No Action Including Cleanup Alternative on the other hand shows that if current mining contamination was addressed significant improvements to water quality would be expected to result, meeting applicable water quality standards and returning the site to near historic baseline conditions.

Table 3 – Comparison of Water Quality Changes for SGP DEIS Alternatives and No Action Including Cleanup Alternative.

Description		SGP DEIS		No Action Including Cleanup Alternative
		No Action Baseline	Alternative 2 Agency Alternative	
Antimony	Low	0.012	0.009	0.001
(ppm)	High	0.031	0.026	0.003
Arsenic	Low	0.025	0.016	0.003
(ppm)	High	0.063	0.049	0.006

In summary, had the No action Including Cleanup Alternative been included in the SGP DEIS, it would have revealed the existing contaminated nature of the site that the DEIS portrays as

[5] See Kuipers and Maest 2006 Comparison of Predicted and Actual Water Quality in EISs.
https://earthworks.org/publications/comparison_of_predicted_and_actual_water_quality_at_hardrock_mines/
EPA External Peer Review at https://ofmpub.epa.gov/eims/eimscomm.getfile?p_download_id=513568

baseline conditions is incorrect and in fact represents the contaminated nature of the existing site, and that if the existing site were remediated significantly improved water quality would be expected to result. Additional, by comparing the alternatives, it is clear that unlike the present portrayal in the DEIS that Alternative 2 would actually improve water quality if compared to present contaminated conditions, Alternative 2 would result in significant degradation of water quality as compared to the No Action Including Cleanup Alternative. This should result in the No Action Including Cleanup Alternative being recognized as the least environmentally damaging alternative and therefore the only alternative that can be recommended as a result of the NEPA analysis, if it is properly performed.