4.7 Hazards and Hazardous Materials

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
7.	**HAZARDS AND HAZARDOUS MATERIALS Would the project:**				
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☒	☐	☐	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☒	☐	☐	☐
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☒	☐	☐	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f)	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h)	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☒	☐	☐	☐

4.7.1 Setting

This section describes existing conditions at the project sites and identifies potential hazardous materials impacts associated with historical land uses, construction activities, and proposed land uses and operations. Of primary importance are hazards associated with large-scale mining operations. An overview of hazardous materials regulations is also included.

Materials and waste may be considered hazardous if they are poisonous (toxicity), can be ignited by open flame (ignitability), corrode other materials (corrosivity), or react violently, explode or generate vapors when mixed with water (reactivity). The term *hazardous material* is defined in Section 25501(o) of the California Health and Safety Code as any material that, because of its

quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment. Technical descriptions of characteristics that would cause a soil to be classified as a hazardous waste are contained in 22 California Code of Regulations (CCR) 66261.20 *et seq*.

Historical Land Uses and Current Site Conditions

Idaho-Maryland Site

Historical land uses at the project site consist of gold mining and lumber mill operations. Gold mining operations ceased in 1956. Surface structures associated with historic mining operations have since been removed, although some ground-level foundations and debris may still be present but covered by vegetation. With the exception of an area at the intersection of Idaho-Maryland Road and Whispering Pines Lane which is currently occupied by a lumber mill, the majority of the project site is vacant. Existing structures associated with the historic Lausman Mill may include a timber storage area, a sawdust storage area, and the mill and associated buildings. Some portions of the Idaho-Maryland site appear to have been previously graded and covered with waste rock, presumably associated with past hard rock mining. In the vicinity of the proposed ceramics plant, the waste rock is piled up to 10 feet in height.

Round Hole Site

The Round Hole site consists of a 300-foot long access road and a 300-foot diameter circular area. The Round Hole site provided access to the Idaho-Maryland mine via an underground shaft. The underground shaft is now covered and the site is generally vacant. Remnants of a concrete structure and waste rock are located in the northern part of the site.

New Brunswick Site

Remnant structures associated with historical mining operations at the New Brunswick site include two 40-foot high reinforced concrete towers that were used for the distribution and storage of ore, concrete slabs-on-grade, and the covered New Brunswick mine shaft. In the northwestern portion of this site are concrete walls and waste rock piles associated with a neighboring mine shaft, presumably the Union Hill shaft.

Potential Sources of Contamination

Historical Gold Mining Operations

Historical gold mining operations represent a potential source of soil and groundwater contamination at the project site. Historical gold mining operations typically involved the use of cyanide and/or mercury (quicksilver) to recover gold.

The process of extracting gold from ore using cyanide is called cyanidation. In cyanidation, excavated ore is pulverized into fine powder to free the gold from the surrounding ore. It is then treated with water to create a muddy mix called slurry. The slurry is then treated with a cyanide solution to dissolve and extract the gold from the ore. Cyanide can leach into soil and groundwater and cause contamination.

Liquid mercury is used in gold mining as an amalgamate to separate fine gold particles from other mineral components in processed ore/gravel. When added to riffles and troughs in a typical sluice, the high density of mercury will allow the gold and gold-mercury amalgam to sink while sand and gravel passes over the mercury and through the sluice. Mercury lost during processing can accumulate in sediments in mine sites, leach into groundwater, or be discharged to downstream environments.

Additional hazardous materials associated with mining activities include fuel, lubricants, and hydraulic fluid for operation of the excavation equipment as well as blasting materials.

Lumber Mill Operations

Wood preservatives and treatment chemicals used during lumber milling represent a potential source of soil, surface water, and groundwater contamination. The two general forms of wood preservation used by the lumber mill industry are surface treatment and wood treatment. Surface treatment of lumber is commonly used to provide short-term cosmetic protection against mold and sap stains. Surface treatment chemicals are often applied by using dip tanks and spraying operations. Wood treatment generally involves the penetration of preservative solutions into wood to provide longer-term protection from the damaging effects of fungi and insects. Both treatment methods are considered to be highly toxic. Treatment and preservation chemicals commonly associated with lumber mills include Pentachlorophenol ("PCP"), Tetrachlorophenol ("TCP"), and Chromated Copper Arsenate (CCA). CCA is a mixture consisting of arsenic, chromium, and copper.

Additional sources of contamination from past lumber milling activities include hydraulic fluids, oils, and diesel fuels used for heavy machinery and petrochemical lubricants commonly applied to chain-driven machines.

Leaking Underground Storage Tanks (LUST)

An environmental database review conducted for 66.9 acres of the 101-acre Idaho-Maryland site by MACTEC in May 2004 identified the Idaho-Maryland site as the location of a leaking underground storage tank (LUST). The site was listed in the LUST database and the Cortese database. The LUST database lists reported leaking underground storage tank incidents. The Cortese list contains summary information pertaining to contaminated sites in California. The Idaho-Maryland site is identified as a high priority site with underground storage tanks that have impacted groundwater with diesel and MTBE.

Results of Due Diligence Site Investigation

A *Due Diligence Site Investigation* was prepared by MACTEC Engineering and Consulting, Inc. in May 2004 to identify evidence of release of environmentally hazardous materials resulting from the historical use of the Idaho-Maryland site and determine whether the onsite use of hazardous materials warrant further evaluation. It should be noted that the *Due Diligence site Investigation* was prepared for 66.9 acres of the Idaho-Maryland site and did not include any portions of the Round Hole site or the New Brunswick site. The following recommendations

made by MACTEC to minimize further contamination of the Idaho-Maryland site and neighboring properties were modified to be applicable to the proposed project:

1. Removal of the excavated soil from the former underground storage tank (UST) located at the western portion of the Idaho-Maryland site. The soil should be remediated or disposed of to a licensed disposal facility. The stockpile requires sampling and analysis to determine the concentrations of petroleum hydrocarbons present in the stockpile.

2. Proper disposal of approximately 19, unlabelled, 55-gallon Department of Transportation (DOT) 17-H drums, some of which are leaking and staged in multiple locations on the site. They appear to be purged groundwater; however, some may contain soil or may be empty.

3. Removal of one abandoned vehicle on the property.

4. Proper closure and destruction of three onsite shallow groundwater monitoring wells. MACTEC also had a concern that none of the monitoring wells appear to be in the topographic downstream direction, which is likely to be the down gradient groundwater direction as well.

5. Closure and destruction of the deep abandoned well (black pipe) to reduce future liability.

6. Removal or the former building remnants and debris, primarily piles of wood and trash.

4.7.2 Regulatory Context

Definitions

Hazardous Materials

Hazardous materials are substances with certain physical properties that could pose a substantial present or future hazard to human health or the environment when improperly handled, disposed, or otherwise managed. Hazardous materials are grouped into the following four categories, based on their properties: toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), and reactive (causes explosions or generates toxic gases).[1] Hazardous materials have been and are commonly used in commercial, agricultural, and industrial applications, as well as in residential areas to a limited extent.

Hazardous Waste

A hazardous waste is any hazardous material that is discarded, abandoned, or is to be recycled. Hazardous materials and wastes can result in public health hazards if released to the soil, groundwater, or air.

The California Environmental Protection Agency (Cal-EPA), Department of Toxic Substances Control (DTSC) regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. In unincorporated Nevada County, investigation or remediation of releases from

[1] Title 22 of the California Code of Regulations, Division 4.5, Chapter 11, Article 3.

underground or aboveground petroleum storage tanks are performed under the direction of the local oversight agency (LOP). The Nevada County Environmental Health Department is the LOP for the area of the project site. Other types of hazardous substance release sites may be overseen by the LOP with proper notification and authorization from the California Regional Water Quality Control Board (RWQCB), Central Valley Region, and the DTSC.

Regulatory Setting

Numerous Federal, State and local laws and regulations regulate the use, storage, and disposal of hazardous materials, including management of contaminated soils and groundwater. The United States Environmental Protection Agency (U.S. EPA) is the Federal agency that administers hazardous materials and waste regulations. State agencies include the California EPA (Cal/EPA), which includes the DTSC, the Central Valley Regional Water Quality Control Board (RWQCB), the Northern Sierra Air Quality Management District (NSAQMD), and other offices. The NSAQMD has jurisdiction over the air basin, which includes this area of Nevada County. Local regulatory agencies include the Nevada County Environmental Health Department and the Nevada County Consolidated Fire District. A description of agency jurisdiction and involvement in management of hazardous materials is provided below.

Federal

U.S. Environmental Protection Agency

The U.S. EPA is the Federal agency responsible for enforcement and implementation of Federal laws and regulations pertaining to hazardous materials. The legislation includes the Resource Conservation and Recovery Act of 1986 (RCRA), the Superfund Amendments and Reauthorization Acts of 1986 (SARA), and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). The Federal regulations are primarily codified in Title 40 of the Code of Federal Regulations (40 CFR). The U.S. EPA provides oversight and supervision for site investigations and remediation projects, and has developed land disposal restrictions and treatment standards for the disposal of certain hazardous wastes.

State

Department of Toxic Substances Control

The California Department of Toxic Substances Control works in conjunction with the U.S. EPA to enforce and implement specific laws and regulations pertaining to hazardous wastes. The California legislation, for which DTSC has primary enforcement authority, includes the Hazardous Waste Control Act and the Hazardous Substance Account Act. Most State hazardous waste regulations are contained in Title 22 of the California Code of Regulations. The California DTSC generally acts as the lead agency for soil and groundwater clean up projects, and establishes clean up and action levels for subsurface contamination that are equal to, or more restrictive than, Federal levels.

Central Valley Regional Water Quality Control Board

The project site is located in the jurisdiction of the Central Valley RWQCB. The RWQCB is authorized by the California Porter-Cologne Water Quality Act of 1969 to implement water quality protection laws. The RWQCB provides oversight for sites where the quality of groundwater or surface waters is threatened, and has the authority to require investigations and remedial actions.

California Air Resources Board and the Northern Sierra Air Quality Management District

The project site is in the North Coast Air Basin. The California Air Resources Board (CARB) and the NSAQMD and have joint responsibility for developing and enforcing regulations to achieve and maintain State and Federal ambient air quality standards in the district. CARB is responsible for enforcing the Clean Air Act and California's State Ambient Air Quality Standards. NSAQMD is responsible for regulating air emissions from stationary sources, monitoring air quality, and reviewing air quality issues in environmental documents. The Air Quality section of this MEA further describes the responsibilities of CARB and NSAQMD and potential air quality impacts associated with the proposed project.

Local

The primary agencies responsible for local enforcement of State and Federal laws controlling hazardous materials management include the Nevada County Environmental Health Department and the Nevada County Consolidated Fire District. The Nevada County Environmental Health Department is a Certified Unified Program Agency (CUPA), the local agency responsible for coordination of hazardous waste generator programs, underground fuel tank management, and hazardous materials storage. The Department is responsible for management of leaking underground storage tank site investigation and cleanup. The Nevada County Consolidated Fire District offers limited hazardous materials response.

Businesses that store, handle, or dispose of hazardous materials must submit a Hazardous Materials Business Plan (business plan) in accordance with the California Health and Safety Code Section 25504. The business plans must be updated every two years or within 30 days after a substantial change in site operations. The business plan must:

- List all the hazardous materials stored at a site
- Identify emergency response procedures for spills and personnel
- Identify evacuation plans and procedures
- Identify training records for personnel to substantiate annual refresher training.

If hazardous materials are used or stored at a site, all employees are also required to receive hazard communication training. The purpose of the training is to ensure that employees understand the nature of the hazardous materials that they handle and can safely use, store, and dispose of the materials in accordance with the California Code of Regulations Title 8. The hazard communication standard requires that employers must:

- Prepare an inventory of hazardous materials
- Make Material Safety Data Sheets available to employees
- Conduct employee training on chemical hazards and safe handling of materials
- Ensure that hazardous material containers are properly stored and labeled

Inspections of businesses that store hazardous materials are performed by Nevada County Environmental Health Department. The hazard communication requirements are enforced by Cal/OSHA.

Worker Health and Safety

At the Federal level, worker health and safety is regulated by the Federal Department of Industrial Relations and the Federal Mine Safety and Health Act (MSHA). Worker health and safety in California is regulated by the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA). California standards for workers dealing with hazardous materials are contained in CCR Title 8 and include practices for all industries (General Industry Safety Orders), and specific practices for construction, and hazardous waste operations and emergency response. Cal/OSHA conducts on-site evaluations On-site operations must meet the safety standards established by CalOSHA Standards for Underground Mines, CCR Title 8, Article 30. CalOSHA representatives regularly visit mine sites to inspect mining operations and confirm compliance with applicable regulations.

Nevada County General Plan[2]

The Safety Element of the Nevada County General Plan contains the following objective related to hazards and hazardous materials:

- Objective 10.7*:* Provide means for the identification, safe use, storage, transport, and disposal of hazardous materials.

(Nevada County, 1996).

City of Grass Valley General Plan

The Safety Element of the City of Grass Valley General Plan contains the following relevant policies and implementation strategy related to hazards and hazardous materials:

- Policy 4-SP: Based on location or probable need, require development plans in mined areas to include in-depth assessments of potential safety, including mining-related excavations, and health hazards and accompanying mitigation measures.

- Policy 6-SP: Incorporate fire hazard reduction considerations into land use plans/patterns, both public and private.

[2] Under the proposed project, Nevada County plans and policies would only apply to the New Brunswick site, which would not be annexed into the City of Grass Valley as part of this proposed project.

- Policy 7-SP: Identify, maintain, and mark evacuation routes for use in case of disasters or emergencies.

- Implementation Strategy 13-SI: Require new developments located on officially identified hazardous waste sites to conduct appropriate investigations, submit results to the City, and prepare a mitigation plan as part of the project review process.

(City of Grass Valley, 1999).

4.7.3 Impacts Discussion

Methods

The effort to identify potential impacts related to hazards and hazardous materials included a review of the Nevada County General Plan; the City of Grass Valley General Plan; and the *Due Diligence Site Investigation* (MACTEC, 2004) which identified land use and current site conditions at the Idaho-Maryland site. The MACTEC report included the results of a site reconnaissance, review of available historical and topographic maps and aerial photographs, and a summary of the results of an environmental database review conducted by Environmental Data Resources, Inc (EDR).

For the Round Hole Site and the New Brunswick Site, the potential for historical land uses to have resulted in hazardous materials conditions at the these sites was based on the historical site information provided in the project description, which was developed from the Application for Mineral Exploration and Mining Use Permit submitted by the Idaho-Maryland Mine Corporation to the City of Grass Valley, and an assessment of the typical activities associated with those identified land uses.

Future hazardous material issues associated with proposed land uses at all three sites was based on the project description.

Results

For discussion regarding fire response impacts, please see Section 4.12, *Public Services*.

Impact 4.7-1: The proposed project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. This would be a potentially significant impact.

At the Idaho-Maryland site, ore processing would involve using a combination of flotation and cyanidation technologies. Less than 15 percent of the ore would be treated with an intensive cyanidation process where small quantities of sodium cyanide (NaCN) solution would be used as a reagent in a closed loop system to extract gold from the ore and gold concentrate. Therefore, site operations would require the transport of NaCN to the site. To prevent human health hazards, the NaCN would be transported in granular or powder form in "super sacks" which are 1 or 2 ton, lined unbreakable nylon sacks to be handled by forklifts. To prevent formation of lethal hydrogen

cyanide gas (HCN), acids would not be kept in the same storage area. Personnel handling the material would be equipped with respirators, safety glasses and gloves to avoid dust inhalation and skin contact. The handling and reagent mixing/makeup area would be well ventilated as another precaution. The frequency of unloading operations would be minimized as much as possible with large, covered storage hoppers. No hazardous materials would be used in the ceramics manufacture.

The sodium cyanide would dissolve the gold into a chemical solution in a highly monitored and closed processing circuit, which would allow for the economic recovery of the gold through the use of electrowinning (electroplating). All unreacted cyanide solution would be recovered and recycled back into the process. A detailed description of the sodium cyanide processing circuit is provided in Section 3.9.1, *Mining Operations*. There may be trace amounts of cyanide contained in some of the tailings, which would be reacted with sulfur dioxide gas to destroy the cyanide prior to final dewatering and transfer to the ceramics plant.

Other hazardous materials to be used onsite include: lime, Ca(OH2), sodium hydroxide (NaOH), dilute hydrochloric acid (HCl) for pH control; lead nitrate (PbN03) to enhance gold leaching kinetics; hydrogen peroxide or sulfur dioxide (S02) for cyanide destruction; sodium isobutyl xanthate as a collector; methylisobutylcarbinol (MIBC) as a frother; and soluble starch to depress the talc and mica. All Material Safety Data Sheets (MSDS) would be kept on-site and all chemical handling would be performed in accordance with the site Emergency Response Plan/Health and Safety Plan (ERP/HSP) that would be developed upon conclusion of the permit process.

Explosives would be stored on the surface until an isolated, secured underground storage room is constructed, which is anticipated to occur during Phase I of the project. The explosives would then be stored long-term underground. These temporary surface storage facilities would be examined by California Occupational Safety and Health Administration (Cal/OSHA) state mine inspectors and by U. S. Mine Safety and Health Administration (MSHA) federal mine inspectors. The MSHA inspectors would also perform an inspection compliant with the U. S. Department of Alcohol, Tobacco, and Firearms (ATF) protocol, as a courtesy to that sister federal agency. The Cal/OSHA would inspect the storage magazines at the beginning of the job and every 2 months thereafter. The MSHA would inspect the storage magazines at the beginning of the job and every three months thereafter.

Other hazardous and flammable materials that would be used on-site would include explosives, fuel, lubricants, and cleaning solvents. All material safety data sheets would be maintained onsite and all chemical handling proposed by the applicant would be performed in accordance with a site Emergency Response Plan/Health and Safety Plan (ERP/HSP) that would be developed upon occupancy. A more site-specific Emergency Action Plan for the proposed project is required to adequately determine potential impacts.

Impact 4.7-2: The proposed project could result in the accidental release of hazardous materials into the environment. This would be a potentially significant impact.

Hazardous materials would be transported to, used, handled, and disposed of at the project site. Accidental release of these hazardous materials represents a potentially significant impact.

Historical land uses associated with gold mining and lumber milling represent a potential source of soil contamination at the project site. It is possible that dredge tailings and sediment in the vicinity of the mine contain toxic levels of hazardous materials associated with gold processing and lumber milling. Phase I Environmental Site Assessments have not been completed for all portions of the project site. Phase I Environmental Site Assessments could identify additional sources of potential contamination at the project site. Subsurface investigations and chemical analyses of soil and groundwater have not been conducted at the project site. Without laboratory analysis of soil and groundwater conditions, proposed land uses could result in the release of contaminated soil and groundwater into the environment.

According to the D*ue Diligence Site Investigation*, the excavation pit of the former underground storage tank (UST) has a distinct petroleum odor near it. The excavation pit is poorly secured with chain link fencing. The status of past releases associated with the UST is unknown as well as the condition of potentially contaminated soil surrounding the former UST and contaminated groundwater. Thus, this impact would be potentially significant.

Impact 4.7-3: The Idaho-Maryland site is listed as a hazardous material site and thus, the proposed project could result in a significant hazard to the public or environment. This would be a potentially significant impact.

The Idaho-Maryland site is listed in the LUST and Cortese databases as the location of a LUST. An underground tank had been removed by the previous owner in 2002. The status of remediation activities and case status are unknown at this time. Until additional information regarding the LUST is available, and the case is closed, the LUST represents a potentially significant hazard.

The proposed project would not be located within one-quarter mile of a school site, would not result in a hazard associated with its proximity to a private airstrip or an airport, and would not physically interfere or impair implementation of an adopted emergency response/evacuation plan.

The three project sites are located approximately 1.5 miles from the Nevada County Airstrip, which is located at the intersection of Loma Rica and Nevada City Avenue, to the east of the project sites. However, this would not result in a safety hazard, since the airport is a relatively small airport with infrequent general aviation activity. The project sites are not located within the vicinity of a private airstrip.

In addition, there are no existing or proposed schools within one-quarter mile of any of the project sites and because of its relatively remote location; the project would not interfere with an existing emergency plan. Thus, no impact would occur.

4.7.4 Data Gaps

1. The estimated amount of hazardous materials that would be generated, stored, used, transported, and handled at the project site are needed. This information would be included in the Material Safety Data Sheets and the Emergency Response Plan/Health and Safety Plan. The existing Emergency Action Plan is generic and does not provide sufficient information for emergency response.

2. Information regarding past land uses for all of the project sites, including areas of the Idaho-Maryland Mine site not covered by the Due Diligence site Investigation, and the New Brunswick and Round Hole site, should be compiled. This information should be delineated by parcel. Existing environmental conditions at these sites, including any past hazardous material releases, LUSTs, or historical land uses associated with hazardous materials should be identified.

3. Laboratory results for soil and groundwater analysis are needed for all portions of the project site where historical land uses could have potentially affected the site. The analysis should evaluate the integrity of the site with respect to the presence of metals (cyanide, arsenic, mercury, and lead), petroleum hydrocarbons, chlorinated hydrocarbons, and pentachlorophenol.

References – Hazards and Hazardous Materials

City of Grass Valley, 1999. *City of Grass Valley 2020 General Plan*, November 23, 1999.

MACTEC Engineering & Consulting, Inc., 2004. *Due Diligence Site Investigation, Former Lausman Property, Grass Valley, California*, May 6, 2004.

Nevada County, 1996. *Nevada County General Plan*, 1996.