PHASE I/II ENVIRONMENTAL SITE ASSESSMENT

BRUNSWICK INDUSTRIAL SITE

APNs 006-441-003, -004, -005, -034 and 009-630-037, -039

GRASS VALLEY, CALIFORNIA

JUNE 16, 2020

PREPARED FOR:

RISE GRASS VALLEY INC.
333 CROWN POINT CIRCLE, SUITE 215
GRASS VALLEY, CALIFORNIA

N|V|5

792 SEARLS AVENUE
NEVADA CITY, CA 95959

PROJECT NO. 5279.05

Project No. 5279.05
June 16, 2020

Rise Grass Valley Inc.
333 Crown Point Circle, Suite 215
Grass Valley, CA 95945

Attention: Benjamin Mossman, P.Eng., President, CEO and Director

Reference: **Brunswick Industrial Site**
APNs 006-441-003, -004, -005, -034 and 009-630-037, -039
Grass Valley, California

Subject: **Phase I/II Environmental Site Assessment**

Dear Mr. Mossman:

NV5 prepared this report to present the findings of a Phase I Environmental Site Assessment (Phase I ESA) for the Brunswick Industrial Site. The site comprises Nevada County assessor parcel numbers (APNs) 006-441-003, -004, -005, -034 and 009-630-037, -039 and is located in unincorporated Nevada County approximately ½ mile southeast of the city limits of Grass Valley. The 119-acre industrial property is located in an area supporting both commercial and residential development at the southwest corner of Brunswick Road and East Bennett Road.

The Phase I ESA included review of historical records, environmental database records and findings of previous site investigation, interviews and site reconnaissance. To further characterize the nature and extent of mine waste on the property, NV5 performed a Phase II investigation consisting of 36 exploratory trenches and laboratory analysis of total arsenic concentrations. This report presents the findings of the Phase I ESA, discusses the recognized environmental conditions, and provides an opinion based on the Phase I/II findings.

Sincerely,

NV5

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Project Geologist

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TABLE OF CONTENTS

FIGURES AND SHEETS

TABLES

APPENDIX A

APPENDIX B

APPENDIX C

APPENDIX D

APPENDIX E

APPENDIX F

ACRONYMS AND ABBREVIATIONS

ABA	Acid Base Accounting
APN	assessor parcel number
ASTM	ASTM International
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene and xylenes
CFR	Code of Federal Regulations
CHHSL	California Human Health Screening Level
cy	cubic yard
DCE	1,2-Dichloroethene
DTSC	California Department of Toxic Substances Control
EPA	United States Environmental Protection Agency
ESA	Environmental Site Assessment
ESL	Environmental Screening Level
IMMC	Idaho-Maryland Mining Corporation
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
mg/kg	milligrams per kilogram
mg/m^3	milligrams per cubic meter
MSL	mean sea level
NCEHD	Nevada County Environmental Health Department
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PQL	Practical Quantitation Limit (also referred to as RL)
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition
RL	Reporting Limit (also referred to as PQL)
RWQCB	California Regional Water Quality Control Board, Central Valley Region
SDL	Soluble Designated Level
SPI	Sierra Pacific Industries, Inc.
STLC	Soluble Threshold Limit Concentration
SVOC	semi-volatile organic compound
TCLP	Toxicity Characteristic Leaching Potential
TTLC	Total Threshold Limit Concentration
USGS	United States Geological Survey
UST	underground storage tank
VCA	Voluntary Cleanup Agreement
VOC	volatile organic compound
WET	Waste Extraction Test
µg/m^3	micrograms per cubic meter
µg/dL	micrograms per deciliter
µg/L	micrograms per liter

1 INTRODUCTION

NV5 performed a Phase I Environmental Site Assessment (Phase I ESA) for the 119-acre Brunswick Industrial Site (herein referred to as the site or subject property) identified by Nevada County assessor parcel numbers (APNs) 006-441-003, -004, -005, -034 and 009-630-037, and -039. The subject property is located in unincorporated Nevada County, California, approximately ½ mile southeast of the city limits of Grass Valley. The property is owned by Rise Grass Valley Inc. (Rise) and is located in an area supporting both commercial and residential development at the southwest corner of Brunswick Road and East Bennett Road.

In addition to the Phase I ESA, NV5 performed a Phase II investigation to further characterize the nature and extent of mine waste on the property. The Phase II investigation included the excavation of 36 exploratory trenches and laboratory analysis of total arsenic concentrations. Methodology and findings of the Phase II investigation are presented in Section 9 of this report.

1.1 PURPOSE

The purpose of the Phase I ESA is to evaluate whether there is evidence of recognized environmental conditions (RECs) that may have impacted or could potentially impact the subject property. The Phase I ESA was performed in general accordance with the ASTM International (ASTM) *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* guidelines (E1527-13). The E1527-13 document has been identified in the U.S. Environmental Protection Agency publication entitled *Standards and Practices for All Appropriate Inquiries; Final Rule* (40 CFR Part 312) as an acceptable guidance document for performing Phase I ESAs that satisfies the federal requirements for the conduct of all appropriate inquiries under section 101(35) (B) of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA).

A REC as defined as the presence or likely presence of hazardous substances or petroleum products in, on, or at a property: 1) due to release to the environment; 2) under conditions indicative of a release to the environment; or 3) under conditions that pose a material threat of a future release to the environment. A REC is not intended to include *de minimis* conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

An historical REC (HREC) is a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority, or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).

A controlled REC (CREC) is a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls). For example, if a leaking underground storage tank has been cleaned up to a commercial use standard, but does not meet unrestricted residential cleanup criteria, this would be considered a controlled recognized environmental condition. The "control" is represented by the restriction that the property use remain commercial. A condition identified as a CREC does not imply that the environmental professional has evaluated or confirmed the adequacy, implementation, or continued effectiveness of the required control that has been or is intended to be implemented.

The information provided in this report is based on specific assessment tasks set forth in the ASTM guideline, and is not meant to be comprehensive, to identify all potential concerns, or to eliminate risks associated with environmental conditions. NV5 has used judgment and experience to arrive at the findings and conclusions presented in this report; therefore, the findings and conclusions are not scientific certainties. Environmental conditions may exist at the site that were not identified or encountered as a result of this Phase I ESA. Additional limitations of the Phase I ESA are discussed in the Data Gaps and Limitations sections of this report.

1.2 SCOPE OF SERVICES

The following tasks were performed during the Phase I ESA:

- Historical records such as aerial photographs, Sanborn® Fire Insurance maps, historical topographic maps, city directories, and other readily-available historical sources were evaluated, as available, to research the history of the subject property and site vicinity.
- Federal, state, and local environmental databases were reviewed to identify sites that use, store, or have released hazardous materials. The database search was performed by Environmental Data Resources, Inc. (EDR), an environmental database research firm. The EDR database report (presented as Appendix A) provides federal and state information intended to meet ASTM guidelines for Phase I ESAs. Regulatory files were reviewed for the identified sites, subject to the limitations of the ASTM guidance document.
- Readily available reports concerning previous environmental investigations at the subject property were reviewed.
- A surface reconnaissance of the site and surrounding area visible from the site boundary was performed.
- Persons with knowledge of the subject property, as identified by the client, were interviewed.
- This report was prepared describing the findings of the Phase I ESA.

1.3 GUIDING PRINCIPLES

The following principles are set forth in the ASTM guidance document and are an integral part of the Phase I ESA practice:

Uncertainty Not Eliminated — No environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with a property. Performance of this practice is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with a property, and this practice recognizes reasonable limits of time and cost.

Not Exhaustive — The practice of "all appropriate inquiries" does not mean an exhaustive assessment of a property. There is a point at which the cost of information obtained or the time required to gather it outweighs the usefulness of the information and, in fact, may be a material detriment to the orderly completion of transactions. One of the purposes of this practice is to identify a balance between the competing goals of limiting the costs and time demands inherent in performing an environmental site assessment and the reduction of uncertainty about unknown conditions resulting from additional information.

Level of Inquiry is Variable — Not every property will warrant the same level of assessment. Consistent with good commercial and customary practice, the appropriate level of environmental site assessment will be guided by the type of property subject to assessment, the expertise and risk tolerance of the user, and the information developed in the course of the inquiry. No subsurface investigation, sampling or laboratory analysis was performed as part of this Phase I ESA. Such additional investigation would tend to further reduce risks associated with environmental conditions, but at increased cost. An evaluation of business environmental risk associated with a parcel of commercial real estate may necessitate investigation beyond that identified in the ASTM guidance document. We rely on our client to assess business environmental risk, and to determine the level of assessment that is required, if any, beyond this Phase I ESA.

Comparison with Subsequent Inquiry — It should not be concluded or assumed that an inquiry was not "all appropriate inquiries" merely because the inquiry did not identify recognized environmental conditions in connection with a property. Environmental site assessments must be evaluated based on the reasonableness of judgments made at the time and under the circumstances in which they were made. Subsequent environmental site assessments should not be considered valid standards to judge the appropriateness of any prior assessment based on hindsight, new information, use of developing technology or analytical techniques, or other factors.

2 SITE DESCRIPTION

2.1 SITE LOCATION AND DESCRIPTION

The subject property is comprised of six contiguous parcels located in unincorporated Nevada County, California, approximately ½ mile southeast of the city limits of Grass Valley. A location map is presented as Figure 1. A topographic site map is presented as Sheet 1, and an aerial photograph is presented as Sheet 2.

The site is identified by the Nevada County assessor parcel numbers (APNs) listed below:

Parcel Identification

Parcel Number	Address	Owner	Acres
006-441-003-000	12503 Brunswick Rd	Rise Grass Valley Inc.	15.19
006-441-004-000	12625 Brunswick Rd	Rise Grass Valley Inc.	0.85
006-441-005-000	12791 Brunswick Rd	Rise Grass Valley Inc.	50.01
006-441-034-000	12381 Brunswick Rd	Rise Grass Valley Inc.	16.01
009-630-037-000	12603 E Bennett Rd	Rise Grass Valley Inc.	21.80
009-630-039-000	12301 Millsite Rd	Rise Grass Valley Inc.	15.07
Total			**118.93**

Data from Parcelquest online database (https://parcelquest.com/)

2.2 CURRENT SITE USES/OPERATIONS

The site is predominantly vacant except for the following recent uses:

- Senior Firewood Program. Gold Country Senior Services stores firewood at the property as part of the Senior Firewood Program, which was established in 1979 to assist low-income senior households in Nevada County to stay warm in the wintertime. Firewood is stored in a paved portion of the property near the southern entrance from Brunswick Road
- Community Green Waste Transfer. This temporary program is operated by the Nevada County Office of Emergency Services and the Fire Safe Council of Nevada County, and is supported by grant funding from the Northern Sierra Air Quality Management District. Household green waste resulting from clearing of defensible space around homes is accepted, chipped and transported off-site. The program operates in a paved portion of the property near the southern entrance from Brunswick Road
- Until February 2020, the site was used for less than one year by Par Electrical Contractors, Inc. for storage of vehicles and equipment.
- During the past two years, Rise has performed exploratory drilling on the property.

2.3 CURRENT USES ON ADJACENT PROPERTIES

The site is bordered by Brunswick Road to the east, East Bennett Road and one residential property to the north, low-density developed residential properties upslope to the south and southwest, and undeveloped, steeply-sloping, forested land to the west.

2.4 PHYSICAL SETTING

According to the United States Geological Survey Grass Valley, California 7.5-minute topographic map (USGS, 2012), the average site elevation is approximately 2730 feet above mean sea level (AMSL). The subject property sits in a valley created by South Fork Wolf Creek, with elevations as high as approximately 2900 feet AMSL in its southwest corner and approximately 2780 feet AMSL along its northeast boundary.

2.4.1 Nearest Surface Water

The nearest surface water is South Fork Wolf Creek, which flows through the property from southeast to the northwest. The creek is contained within an approximately 36-inch-diameter corrugated metal pipe culvert beneath the center of the property at the former lumber milling area, and flows over the ground surface near the southeastern property boundary and in the northwestern portion of the property.

2.4.2 Geology and Hydrogeology

The site is located within a region underlain by a complex assemblage of igneous and metamorphic rocks in the western foothills of the Sierra Nevada. The regional structure of the foothills is characterized by the north-northwest trending Foothills Fault System, a feature formed during the Mesozoic era (between approximately 65 million and 248 million years ago) in a compressional tectonic environment. A change to an extensional tectonic environment during the late Cenozoic (approximately within the last 30 million years), resulted in normal faulting which has occurred coincident with some segments of the older faults near the site.

According to the Geologic Map of the Chico Quadrangle, California (California Department of Conservation, Division of Mines and Geology, 1992) the northern and central portion of the site is underlain by massive diabase, and the southeastern portion of the site is underlain by metavolcanic rocks. Both of these units are associated with the Mesozoic Lake Combie Complex. The south and southwestern portion of the site is mapped as Miocene to Pliocene volcanics, predominantly andesitic pyroclastic rocks. The Mesozoic era spans the period of time between 525 and 66 million years before present and the Miocene to Pliocene epochs span the period of time between 23 and 2.6 million years before present.

According to the Geologic Map of the Grass Valley - Colfax Area (A. Tuminas, 1983), one inferred fault trends north-northwest through the center of the property, and four rock units are mapped as underlying the property. The eastern portion of the site is mapped as early Mesozoic Lake Combie metavolcanic rock. The northern and western-sloping flanks of the site are mapped as early Mesozoic Lake Combie massive diabase. The lower valley portion encompassing the South Fork Wolf Creek is mapped as Quaternary alluvium. Tertiary clastic strata of the volcanic Mehrten formation is mapped in the south and southwestern portion of the site.

The California Geological Survey Open File Report 96-08, Probabilistic Seismic Hazard Assessment for the State of California, and the 2002 update entitled California Fault Parameters. The documents indicate the property is located within the Foothills Fault System. The Foothills Fault System is designated as a Type C fault zone, with low seismicity and a low rate of recurrence. The 1997 edition of California Geological Survey Special Publication 42, Fault

Rupture Hazard Zones in California, describes active faults and fault zones (activity within 11,000 years), as part of the Alquist-Priolo Earthquake Fault Zoning Act. The map and document indicate the site is not located within an Alquist-Priolo active fault zone.

Shallow groundwater monitoring wells were previously installed in the southeastern portion of the site by others. The depth to perched groundwater in these wells ranged from approximately 8 to 18 feet below ground surface (bgs). Previous groundwater elevations measured by others indicated a shallow groundwater flow direction to the west and northwest, generally following the surface topography. Based on measurement of groundwater elevation in the mine workings (Emko, 2020) and ground surface elevations from LIDAR data (Aero Geomatics Ltd., May 2018), the estimated static groundwater depth in the New Brunswick Shaft, located in the northeastern portion of the site, is 259 feet bgs.

3 USER PROVIDED INFORMATION

3.1 TITLE RECORDS

A chain of title was not provided to NV5, and no chain of title was reviewed as part of this Phase I ESA.

3.2 ENVIRONMENTAL LIENS OR ACTIVITY AND USE LIMITATIONS

Research of environmental liens and Activity and Use Limitations (AULs) was not performed by NV5 as part of the Phase I ESA. As discussed in Section 5, an AUL was recorded on the property in 2006.

3.3 REASON FOR PERFORMING PHASE I ESA

NV5 performed this Phase I ESA on behalf of Rise Grass Valley Inc. to compile available previous site investigation data in an attempt to identify recognized environmental conditions related to the subject property.

4 HISTORICAL USE INFORMATION

Historical site use information was obtained through a review of readily-available historical records such as aerial photographs, historical topographic maps, historical Sanborn® Fire Insurance Maps, city directories, and regulatory agency files.

4.1 HISTORICAL SOURCES

Site use information was obtained through a review of the following list of historical sources. Copies of the historical sources are provided in Appendix B. The results of the review of these sources are summarized below.

- **Aerial Photographs:** Aerial photographs obtained from EDR were reviewed for the following years: 1939, 1947, 1952, 1962, 1963, 1973, 1975, 1984, 1987, 1998, 2006, 2009, 2012, and 2016.
- **Sanborn® Fire Insurance Maps:** Sanborn® Fire Insurance Maps were not available for the subject property area.
- **Topographic Maps:** The following maps provided by EDR were reviewed: USGS Smartsville, CA Quadrangle 30-minute series topographic maps produced in 1888, 1891, 1892, 1894 and 1895; and USGS Grass Valley, CA Quadrangle 7.5-minute series topographic maps produced in 1949, 1950, 1973, 1995, 1998, and 2012.
- **City Directories:** A search for available city directories was performed by EDR. Directories from 1970 to 2014 were searched in approximately 5-year intervals.
- **Nevada County Community Development Agency:** NV5 requested records for the subject property from the Nevada County Community Development Agency (CDA). Records provided by the CDA are described below.
- **Grass Valley Building Department:** NV5 requested records for the subject property from the Grass Valley Building Department (GVBD). GVBD, which did not require building permits prior to 1961, did not have any records for the subject property post-1961.
- **Previous Environmental Reports:** Historical information from previous environmental reports prepared for the subject property are included in the summaries below. Historical research in previous reports included review of numerous historical mining maps from the late 1800s and early 1900s. The reports are discussed in Section 5, and excerpts from some of the reports are presented in Appendix B.
- **Interviews:** Information resulting from interviews of persons with knowledge of the site history are presented in Section 8 and are included in the summaries below.

4.2 HISTORICAL REVIEW SUMMARY – SUBJECT PROPERTY

Historical site activities have included gold mining and lumber milling. Selected historical site features are depicted on Sheet 1.

<u>Mining</u>

Mining activities (predominantly lode gold mining) included the Union Hill Mine and the New Brunswick Mine.

According to records presented in Appendix B, which were previously compiled by EERG (2007), the Union Hill Mine was established circa 1854. An ore mill and hoist were constructed in 1865. Johnston (1939) maps the Union Hill Mine in the westernmost portion of the northern end of the subject property, and an inclined shaft at this location dipping to the southwest. The mine was reportedly operated until approximately 1870 to a maximum depth of approximately 300 feet bgs. The mine was reportedly reopened in 1900 and operated until 1911, extending the shaft to 600 feet bgs. The mine was again reopened in 1914 and operated until 1918. During this period, the shaft was extended to 800 feet bgs, tungsten-containing scheelite was also mined, and a new hoist, air compressor, Cornish pump driven by a 12-foot Pelton wheel, and a 20-stamp mill. Following its closure, the mine was purchased by Idaho-Maryland Mines Company, which was subsequently absorbed by The Metal Exploration Company. The 20-stamp mill was moved offsite to another mine. The Union Hill Mine was not reopened, but the subsurface workings were reportedly used by the operators of the New Brunswick Mine. Several small structures were historically associated with the Union Hill Mine operations.

According to records presented in Appendix B, which were previously compiled by EERG (2007), the New Brunswick Mine was established circa 1909. Johnston (1939) maps the Brunswick Vertical Shaft in the eastern portion of the northern end of the property, near the existing reinforced-concrete silo that remains at the site today. A railroad spur was added, extending from the existing East Bennett Road to the mine. In 1910, the mine was reportedly closed due to an inflow of water at a depth of approximately 443 feet bgs. The mine reportedly reopened in 1915, and water was reportedly drained with pumps via a cross-cut from the old Brunswick Mine. Johnston (1939) maps the portal of the Brunswick Inclined Shaft (associated with the old Brunswick Mine) approximately 1,000 feet north of the subject property, dipping towards the southwest. A new steel head frame, 20-stamp mill, and a cyanide plant were reportedly constructed at the New Brunswick Mine on the subject property. The mine closed again in 1918, by which time the shaft extended to 1,200 feet bgs. Several corrugated metal buildings were present at the mine, including an office, assay office, hoist house, mill building, carpenter shop, drying furnace building, blacksmith and machine shop, garage, transformer house, powder magazine, and store house. The mine reopened in 1922 when the shaft was again dewatered, and operated until 1927. Idaho-Maryland Mining Corporation (IMMC) reportedly acquired the New Brunswick Mine and began dewatering the mine in 1933. The shaft was extended to 3,300 feet bgs, and a Marcy mill and a regrind mill were reportedly installed. The mine did not operate during World War II but reopened after the war and continued operating until 1956. Structures have been removed from the site since that time. In 1997 the remaining concrete foundations were removed except for one reinforced concrete silo (ore bin) and the shaft collar.

Lumber Milling

Lumber milling was performed at central and southeastern portions of the subject property in the late 1950s to the early 2000s. The facility was referred to as Grass Valley Saw Mill, Bohemia Saw Mill, and Sierra Pacific Mill. Features associated with the sawmill activities included a main sawmill building, two sorter buildings (one constructed in 1987), an office building, transformer, slot feeder, conveyors, timber racks and log storage areas. Recycle ponds were used to collect and recycle surface water runoff for irrigation of logs. Prior to 1984, pesticides were used to treat wood. Structures associated with the sawmill were reportedly demolished in approximately 2004.

4.3 HISTORICAL REVIEW SUMMARY – SITE VICINITY

Notable historical mining operations were located approximately 1,000 feet to the north (the old Brunswick Mine and Brunswick Inclined Shaft) and approximately one mile to the northwest (the Idaho-Maryland Mine). Historical uses in the site vicinity included timber, agriculture and less well-known mining operations. Large portions of the site vicinity were primarily undeveloped. Beginning in the 1950s, low-density residential development was constructed in the site vicinity.

According to Bean's History of Nevada County (1867), as cited by EERG (2007), the Lucky Mine and Cambridge Mine were located on Howard Hill, on the south side of the creek opposite the Union Hill Mine. These mines used ten-stamp and 15-stamp mills, respectively, to crush ore for gold extraction. The Town Talk gravel claim, Independent claims (gravel diggings), Oxford and Frankfort Quartz Mining Company claim were also reportedly located on Howard Hill (EERG, 2007).

5 PREVIOUS INVESTIGATIONS

Previous investigations of the subject property included soil and groundwater investigations, removal and off-site disposal of contaminated soil, and a Phase I ESA. The reports are summarized below. Excerpts of selected reports are presented in Appendix B.

5.1 1987 SOIL AND GROUNDWATER INVESTIGATION

In 1987, Emcon Associates (Emcon) performed a soil and groundwater investigation at a portion of the Grass Valley Lumber Mill (Emcon, 1987). The investigation was performed on behalf of Bohemia, Inc., owner of the limber mill at that time.

According to Emcon (1987), prior to 1984, milling operations included treating wood with pesticides. Wood was dipped into a pesticide solution and transported over an area of bare soil by a conveyor (referred to as the “green chain”) to a slot feeder. Pentachlorophenol (PCP) and tetrachlorophenol (TCP) were active ingredients in the pesticide solution.

Initial investigations performed in 1986 included excavating five test pits and advancing two borings in the green chain area (see Sheet 1). Soil samples collected were analyzed for the presence of PCP and TCP. Based on the results of the investigation, the California Regional Water Quality Control Board (RWQCB) requested additional investigation to further evaluate contamination in the green chain area, and to investigation groundwater quality downgradient of the green chain area. Additionally, RWQCB requested soil samples be analyzed for the presence of dioxins, which are common in PCP and TCP solutions.

Emcon (1987) described subsurface conditions in the green chain area as three to ten feet of fill (mine tailings or mine waste rock) underlain by weathered tuff breccia bedrock. Emcon (1987) reported that groundwater was encountered approximately eight feet bgs, near the contact of the mine waste fill and native soil/rock, and observed that groundwater is sometimes perched in the artificial fill due to surface water infiltration. Emcon (1987) reported that the groundwater flow direction was to the southwest.

In 1987, Emcon performed additional investigations which included collecting 16 surface soil samples and collecting discrete-depth soil samples from five borings in the green chain area, installing six groundwater monitoring wells, and collecting groundwater samples to evaluate groundwater quality. All samples were analyzed for PCP and TCP, and selected soil samples were also analyzed for dioxins. Selected groundwater monitoring well data from Emcon (1987) are summarized below:

Well No.	**Casing Material**	**Casing Length** (ft)	**Casing Diameter** (in)	**Screened Interval** (ft bgs)	**Cement Bentonite Grout** (ft bgs)	**Bentonite Pellets** (ft bgs)
MW-1	Sch 40 PVC	30	2	10-30	0-5	5-7
MW-2	Sch 40 PVC	16	2	6-16	0-2	2-4
MW-3	Sch 40 PVC	22	2	12-22	0-7	7-9
MW-4	Sch 40 PVC	8	2	3.5-7.5	0-2	2-2.5
MW-5	Sch 40 PVC	12	2	11-23	0-7.5	7.5-9

The results of analysis of surface soil samples identified PCP and TCP as high as 42,000 and 53,000 micrograms per kilogram (µg/kg), respectively. In a sawdust sample, PCP and TCP were detected at 150,000 and 110,000 µg/kg, respectively. In subsurface soil samples, PCP and TCP were each detected as high as 340 µg/kg at a depth of approximately 7 feet bgs. No significant concentrations of dioxins were detected in the soil samples analyzed. In groundwater, PCP and TCP were detected in two monitoring wells in the green chain area at concentrations as high as 3.3 and 3.9 micrograms per liter (µg/L), respectively. Emcon reported that these groundwater concentrations were below applicable cleanup levels.

Emcon performed an evaluation of remedial alternatives, and concluded that treatment of soil was the preferred alternative. Emcon recommended that treatability studies be performed.

Emcon (1988) prepared a bioremediation plan that was not available for review at the time this Phase I ESA was performed. Emcon (1989) prepared a remedial work plan, including cleanup levels and an excavation plan, which was reportedly approved by the RWQCB with minor revisions.

5.2 1988-89 SURFACE WATER CONTROL AND POND DEVELOPMENT

In 1988, Emcon developed plans to replace existing recycling ponds with a single larger pond and to develop surface water controls (Emcon, 1988 Apr). The plans were implemented in mid-1989 (Vector, 1989).

5.3 1988-89 CONTAMINATED SOIL REMOVAL

Emcon performed remediation of contaminated soil at the Grass Valley Lumber Mill in 1989. The remediation activities were performed in accordance with a remediation plan developed in 1988 (Emcon, 1988 May, 1989 Jun). A remediation goal for PCP of 3 milligrams per kilogram (mg/kg, also referred to as parts per million, or ppm) was developed in coordination with regulatory agencies.

Emcon excavated approximately 375 cubic yards of soil to a depth of approximately 4.5 feet bgs in an iterative process, with confirmation samples collected and analyzed to confirm that soil above the PCP remediation goal had been removed.

The contaminated soil was reportedly disposed at a Class I landfill because initial treatability studies were inconclusive and because the quantity of soil removed was relatively small.

5.4 1990 RESPONSE TO CRWQCB REGARDING RECYCLING POND

The Response Report for Groundwater Investigation and Monitoring Requirements, Bohemia's Grass Valley Mill, Nevada County, California (Vector, 1990 Sept) addressed concerns expressed by the RWQCB in August 1990, including groundwater and surface water quality related to the lumber mill and pond, a sawdust layer identified in monitoring well B-2, a survey of domestic wells, and the influence of groundwater on South Fork Wolf Creek. Vector (1990 Sept) reported that South Fork Wolf Creek to be a losing stream (surface water from the creek recharging groundwater) during the dry season (September 1990). Vector (1990 Sept) reported that no domestic groundwater wells were identified within ½ mile of the site (this does not appear to be correct). Vector (1990 Sept) did not identify conclusive evidence regarding groundwater influence from recycling pond and recommended further monitoring.

5.5 1992 CONTAMINATED SOIL REMOVAL

AC Industrial Cleaning (AC, 1992 May) reported on soil removal that was performed at three areas and proposed the removal of an additional 80 to 95 cubic yards of oil-contaminated soil, as summarized below:

- Area A: AC reportedly removed a buried electrical transformer and approximately four cubic yards of contaminated soil for offsite disposal on March 26, 1992. Verification sampling and analysis identified 17,600 ppm total oil and grease (TOG) and 0.6 ppm PCBs remaining in soil at the base of the excavation below the former transformer location, and stated that the removal of an additional 80 to 95 cubic yards of soil was necessary.
- Area B: AC investigated an alleged drum disposal area and encountered only paint cans. The excavated area was reportedly 12 feet by 9 feet by six feet deep. Approximately 25 cubic yards of soil were reportedly excavated, and no visual evidence of contamination was encountered. AC performed screening for total petroleum hydrocarbons (TPH) by EPA Method 8015M and for solvents by gas chromatograph-flame ionization detector (GC-FID). No solvents were detected, and TPH in the motor oil range was detected at 576 ppm in excavated soil and at 173 ppm in a soil sample from the base of the excavation. On April 9, 1992, AC reportedly removed an additional 3.5 vertical feet (20 cubic yards) of soil from Area B, and TPH was not detected in the subsequent base verification samples.
- Area C: AC excavated soil from the location of a surface oil spill, approximately 10 feet by 12 feet by 3 feet deep. Approximately 18 to 20 cubic yards of contaminated soil were reportedly removed for off-site disposal. Verification soil sampling and analysis at the base of the excavation reportedly did not detect TPH, BTEX or TOG.

5.6 1995 GROUNDWATER MONITORING

Vector (1996 May) issued a 1995 Fourth Quarter Ground Water Monitoring and Annual Report for Sierra Pacific Industries Brunswick Mill Site, identifying consistent and generally ‘low’ volatile organic compounds (VOC) detections in groundwater. Some VOCs were detected above the corresponding Maximum Contaminant Levels (MCLs) for drinking water. Vector (1996 May) requested that the CVRWQCB consider reducing the monitoring frequency from quarterly to once per year, during high groundwater levels in the spring.

5.7 1999 GROUNDWATER MONITORING

Sierra Pacific Industries, Inc. (SPI, 1999 Jan) issued a groundwater monitoring report presenting laboratory results for VOCs detected in groundwater in monitoring wells MW-2, MW-4 and MW-5. As depicted on Sheet 1, these wells are located immediately northeast of the former sawmill building and immediately southwest of a former shop building, near Brunswick Road.

The groundwater flow direction at this location was reportedly to the west-southwest. Contaminant concentrations in groundwater were reportedly similar to those detected during a previous (November 1998) sampling event.

No target constituents were detected in MW-1 (located cross-gradient to the area of previous contaminated soil removal). Several VOCs (some above MCLs) were detected in MW-4 and MW-5, which were closer to and down-gradient from the area of contaminated soil removal:

- MW-4: 1,1-dichloroethane (3.6 ug/L)
- MW-5: 1,1-dichloroethane (30 ug/L), 1,1-dichloroethene (8.0 ug/L), tetrachloroethene (1.1 ug/L), 1,1,1- trichloroethane (10 ug/L), trichloroethene (1.0 ug/L) and cis-1,2-dichloroethene (1.2 ug/L)

SPI (1999) reported that 1,1-dichloroethane and 1,1-dichloroethene were detected at concentrations above MCLs.

5.8 2005 GROUNDWATER SAMPLING

Carlton Engineering, Inc. (Carlton) performed hydropunch groundwater sampling at the Brunswick Lumber Mill (formerly Grass Valley Lumber Mill) site in 2005 (Carlton, 2005).

Carlton (2005) reported that VOCs had previously been identified in soil and groundwater in the vicinity of the former millwright shop that contaminated soil had been removed from the site in the early 1990s, and that groundwater had been monitored in onsite wells since 1995.

Carlton indicated that groundwater sampling performed in 2003 had detected VOCs in only one monitoring well at concentrations slightly above MCLs. This well (MW-5) was reportedly subsequently destroyed during structure demolition activities. The VOCs 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), and 1,1,1-trichloroethane (1,1,1-TCA) were detected at 24, 8.5 and 6.5 µg/L, respectively. Some of the reports describing the previous soil and groundwater investigations and soil remediation discussed in Carlton's report were not available for review during the preparation of the current Phase I ESA.

In June 2005, Carlton collected grab groundwater samples from five locations in the vicinity of former monitoring well MW-5 using a hydropunch tool. The samples locations were intended to evaluate the lateral extent of VOCs in groundwater. The VOCs 1,1-DCA, 1,1-DCE, and 1,1,1-TCA were detected in two samples at concentrations as high as 10, 1.3 and 1.1 µg/L, respectively. Acetone was also detected in three samples, but Carlton (2005) believed these detections were associated with plant or organic material in the area. Carlton (2005) concluded that the VOCs detected were below applicable regulatory limits, and that contamination was limited to approximately 50 feet up-gradient, cross-gradient and down-gradient from the former location of monitoring well MW-5.

5.9 2006 LAND USE RESTRICTION

In September 2006, RWQCB filed a Covenant and Environmental Restriction on Property (Covenant) on the SPI property where the VOC 1,1-DCA had been detected in groundwater above the drinking water MCL (RWQCB, 2006). RWQCB noted that SPI had performed an evaluation of the inhalation risk to human health from residual VOCs in groundwater which indicated that there was no significant threat to human health from vapor migration to indoor air. The Covenant has the following stipulations:

- No groundwater from the property shall be used for domestic purpose, including but not limited to use as drinking water.
- No wells will be constructed to extract water for any use, including but not limited to domestic, potable, or industrial uses unless permitted in writing by the RWQCB.

- The RWQCB shall have reasonable access to the property for the purposes of inspection, surveillance, maintenance, or monitoring.
- No actions are to be performed that will aggravate or contribute to the existing environmental conditions.
- The Covenant will run with the land.

The Covenant states that if, after any four consecutive quarters of any year within the term of the Covenant, groundwater samples collected from the property indicate levels below the MCL, then the Covenant shall terminate with written concurrence from the RWQCB.

5.10 2006 PRELIMINARY AND PHASE II INVESTIGATIONS

In 2006, Geomatrix performed a preliminary environmental evaluation of the Brunswick Lumber Mill Development on behalf of SPI (Geomatrix, 2006 Mar).

During their February 2006 site inspection, Geomatrix observed that the former sawmill area had previously been leveled with mine tailings. Geomatrix reviewed data provided by Carlton regarding testing of mine tailings, groundwater and pond water. The Carlton report was not available for NV5's review. Geomatrix obtained mine tailings samples that were analyzed for total and leachable metals including arsenic and mercury, pH, and neutralizing potential/acid generation potential (NP/AGP). Water samples were analyzed for metals, and groundwater samples were additionally analyzed for VOCs.

Analytical laboratory results for mine tailings identified the presence of arsenic in two of seven samples at concentrations exceeding the Total Threshold Limit Concentration (TTLC; 500 mg/kg), and one sample exceeded ten times the Soluble Threshold Limit Concentration (STLC; 5 mg/L). Three samples suggested acid generating potential, and four samples indicated long-term alkaline or neutral behavior.

Arsenic was detected in groundwater at concentrations up to 2.4 µg/L and in surface water at concentrations up to 2.0 µg/L. Geomatrix noted that these concentrations were below the MCL for arsenic of 10 µg/L. Geomatrix also noted that at least two of the wells were installed in bedrock rather than the mine tailings (data from other wells was not available), and the quality of that water is not known. Geomatrix noted that the water in the tailings may originate from surface water infiltration and could migrate along the bedrock interface and discharge to the creek, pond, and/or groundwater.

Based on the results of the preliminary environmental investigation (Geomatrix, 2006 Mar), Geomatrix (2006 Sept) performed a Phase II investigation including mine waste sampling and analysis; stormwater, surface water, and groundwater sampling and analysis; green chain area soil sampling and analysis; and background soil sampling and analysis.

Mine Waste

Geomatrix (2006 Sept) described the mine waste rock as cobble to boulder size clasts with gravel and smaller amounts of interstitial sand and fine grained soil. The mine waste rock reportedly originated primarily from the New Brunswick Mine portion of the Idaho-Maryland Mine, which is known to have low arsenic concentrations, and also from the Empire Mine, which is known to contain elevated arsenic concentrations.

Emko (2020) cites Johnston (1940) in describing the Brunswick mining area as occurring within the “Brunswick Porphyrite Block” (meta-andesite of variable metamorphism: amphibolite schist, porphyrite, diabase, quartz porphyrite). Tuminas (1983) maps the site as Lake Combie massive diabase. Johnston (1940) generally maps the Empire Mine as porphyrite and diabase (Lake Combie massive diabase) and granodiorite (La Barr Meadows quartz diorite).

Geomatrix (2006 Sept) reported that the deeper areas of the mine waste rock fill investigated at trench locations TP-8A, TP-9A,TP-9B, and TP-10B were unstable and contained numerous voids due to a lack of interstitial material. A relatively thick organic layer (decomposed wood waste) was encountered in the most southern trenches.

The mine waste evaluation included excavating 22 trenches to depths of 6 to 12 feet bgs. Eleven composite samples were submitted for analysis of arsenic and acid/base accounting. Five samples were additionally sampled for asbestos and gold. Nine composite samples of shallow soil were collected and submitted for analysis of arsenic.

Analysis of the mine tailings identified the presence of arsenic at concentrations up to 3,170 mg/kg. Three samples were analyzed for soluble arsenic using the Title 22 Waste Extraction Test (WET), apparently with deionized water extractant (DI-WET); all samples had concentrations exceeding the MCL for arsenic of 0.010 mg/L. The concentrations were reportedly localized at the southern and southeastern portion of the site. Results of ABA testing reportedly indicated that most of the mine tailings samples tested for ABA had a net neutralizing potential. No significant concentrations of asbestos were reportedly detected.

Mine waste analysis is summarized below by location:

- Northwest fill area: Generally representative of regional background arsenic concentrations, except for S-5 (84 mg/kg). Sample location S-5 is located between TP8A and TB8B, which had a composite arsenic concentration of 20 mg/kg (0-18 in bgs) and 6 mg/kg (1-8 ft bgs). The rock/soil tested appears to have a relatively neutral pH and is generally net acid-neutralizing.

Sample Location	**Composite ID**	**Source**	**Depth**	**Total As** (mg/kg)	**WET As** (mg/L)	**pH** (9045B/ USDA60)	**AGP**	**NP**	**NP/ AGP**
S5	S5	Carlton	unknown	84	0.35	7.7/9.42	4.95	45.2	9.13
S6	S6	Carlton	unknown	5	<0.25	7.7/8.83	12.0	80.6	6.72
TP-10A & TP-10B	TP-10AB	Geomatrix	1-9'	14	--	--	0.9	193	214
TP-10A & TP-10B	TP-10AB-S	Geomatrix	0-18"	18	--	--	--	--	--
TP-11A & TP-11B	TP-11AB	Geomatrix	1-9'	3	--	--	10	187	18.7
TP-11A & TP-11B	TP-11AB-S	Geomatrix	0-18"	15	--	--	--	--	--
TP-7A & TP-7B	TP-7AB	Geomatrix	1-10'	16	--	--	9.4	<0.3	<0.1
TP-7A & TP-7B	TP-7AB-S	Geomatrix	0-18"	12	--	--	--	--	--
TP-8A & TP-8B	TP-8AB	Geomatrix	1-8'	6	--	--	19.4	135	6.96
TP-8A & TP-8B	TP-8AB-S	Geomatrix	0-18"	20	--	--	--	--	--
TP-9A & TP-9B	TP-9AB	Geomatrix	1-12'	10	--	--	2.2	133	60.5
TP-9A & TP-9B	TP-9AB-S	Geomatrix	0-18"	13	--	--	--	--	--

- Southwest fill area: Arsenic concentrations are generally representative of regional background conditions, although one shallow composite sample (TP-3AB-S 0-1.5 feet bgs) exceeds the TTLC. The corresponding full-depth composite sample (TP-3AB, 1-10 feet bgs) had an arsenic concentration of 22 mg/kg. The trench log records mine waste in the upper two to three feet, underlain by apparently native soil. The waste rock (Carlton samples TP-1, S1 and S2) appears to have an NP/AGP ratio generally less than three, while samples of the underlying native soil and wood waste fill (the deeper composite samples obtained by Geomatrix, 2006 Sept) appear to be net acid-neutralizing.

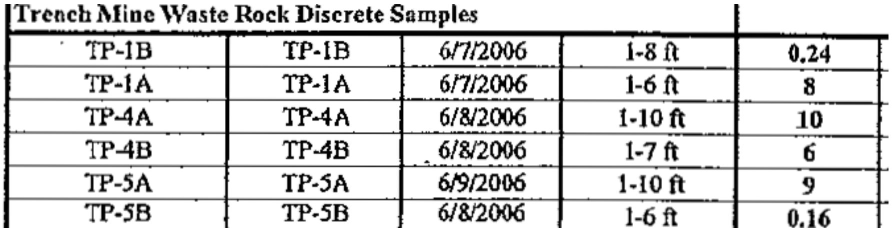
Sample Location	**Composite ID**	**Source**	**Depth**	**Total As** (mg/kg)	**WET As** (mg/l)	**pH** (9045B/ USDA60)	**AGP**	**NP**	**NP/ AGP**
TP-1	TP-1	Carlton	unknown	18	<0.25	7.7/7.78	8.00	4.65	0.58
S1	S1	Carlton	unknown	20	<0.25	7.8/5.79	20.8	3.66	0.18
S2	S2	Carlton	unknown	22	<0.25	7.5/6.65	22.4	15.5	0.69
TP-2A & TP-2B	TP-2AB	Geomatrix	1-12'	13	--	--	0.3	52.1	177
TP-3A & TP-3B	TP-3AB	Geomatrix	1-10'	22	--	--	18.1	57.3	3.17
TP-3A & TP-3B	TP-3AB-S	Geomatrix	0-18"	1260	--	--	--	--	--
TP-6A & TP-6B	TP-6AB	Geomatrix	1-9'	15	--	--	5.3	102	19.2
TP-6A & TP-6B	TP-6AB-S	Geomatrix	0-18"	47	--	--	--	--	--

- Parking lot area: The area under the paved area near the Brunswick Road site entrance, extending approximately 300 feet southwest from Brunswick Road, has consistently higher total arsenic concentrations. These elevated arsenic concentrations appear to be associated with a two-foot to three-foot layer of mine rock near the ground surface.

Sample Location	**ID**	**Source**	**Depth**	**Total As** (mg/kg)	**WET As** (mg/L)	**DI-WET As** (mg/L)	**pH** (9045B/ USDA60)	**AGP**	**NP**	**NP/ AGP**
S3	S3	Carlton	unknown	765	<0.25		7.5/7.42	16.1	55.8	3.47
S4	S4	Carlton	unknown	800	0.35		7.6/7.80	18.1	77.6	4.29
TP-1A & TP-1B	TP-1AB	Geomatrix	1-8'	3170	--	31	--	20.6	63.8	3.10
TP-4A & TP-4B	TP-4AB	Geomatrix	1-10'	1910	--	4.0	--	5.6	53.4	9.54
TP-4A & TP-4B	TP-4AB-S	Geomatrix	0-18"	4700	--		--	--	--	--
TP-5A & TP-5B	TP-5AB	Geomatrix	1-10'	547	--	1.7	--	11.6	88.5	7.63
TP-5A & TP-5B	TP-5AB-S	Geomatrix	0-18"	1120	--		--	--	--	--

Discrete samples were also analyzed for DI-WET arsenic by EPA 7060. Results are reported by Geomatrix (2006 Sept) in mg/L. All samples exceed the MCL (0.01 mg/L) for arsenic in drinking water.

DI-WET Arsenic in Discrete Waste Rock Samples (Geomatrix, 2006 Sept)



Trench Mine Waste Rock Discrete Samples				
TP-1B	TP-1B	6/7/2006	1-8 ft	0.24
TP-1A	TP-1A	6/7/2006	1-6 ft	8
TP-4A	TP-4A	6/8/2006	1-10 ft	10
TP-4B	TP-4B	6/8/2006	1-7 ft	6
TP-5A	TP-5A	6/9/2006	1-10 ft	9
TP-5B	TP-5B	6/8/2006	1-6 ft	0.16

Groundwater

Geomatrix (2006 March, 2005 Sept) included tables of groundwater and surface water data from Carlton (2004). Grab groundwater samples from monitoring wells MW-1, MW-4, MW-6 and MW-7 were analyzed for CAM 17 metals. MW-1 and MW-4 were sampled twice, in January and November 2004. MW-6 and MW-7 were sampled once in November 2004. Results are summarized below:

- Arsenic was detected at trace concentrations (below the reporting limit [RL]) in MW-1 and MW-4. The estimated concentrations for January 2004 are 0.52 ug/L and 0.59 ug/L, respectively. The Method Detection Limit (MDL) was 0.27 ug/L. The concentrations for November 2004 are 1.2 ug/L and 2.4 ug/L, respectively.
- Arsenic was detected in MW-6 and MW-7 at 1.7 and 1.5 ug/L, respectively, in November 2004.
- Barium was detected at concentrations up to 79 ug/L.
- Cadmium was not detected in MW-1 and was detected at the MDL (0.17 ug/L) in MW-4 in January 2004.
- Zinc was detected at concentrations up to 59ug/L.
- No other metals were detected.
- The reported pH values for MW-1 and MW-4 were 5.66 and 6.08, respectively.

Geomatrix (2006 Sept) collected groundwater samples from the five groundwater monitoring wells (MW-1, 3, 4, 6 and 7) present at that time, and the samples were analyzed for CAM 17 metals. Barium was detected up to 229 ug/L, and no other metals were detected. Wells MW-1,3, 4, 6 and 7 had pH values of 5.45, 6.97, 5.99, 6.35 and 5.04, respectively.

Seeps

Four water samples were collected from seeps in exploratory trenches (TP-6B, 2.5 ft bgs; TP-7A, 9.5 ft bgs; TP-8B, 2.5 ft bgs; and TP-11B, 8 ft bgs) and were analyzed for CAM 17 metals.

- Arsenic was detected by EPA Method 7060 in TP-6B (7,600 ug/L) and TP-8B (4.0 ug/L), and was not detected in other seeps. The RL was 3.0 ug/L.
- Arsenic was detected by EPA Method 6010 in TP-6B (5,890 ug/L) and was not detected in other seeps. The reporting limit was 25 ug/L.
- Barium was detected at concentrations range from 27 to 77 ug/L.
- Cobalt was detected in TP-6B at 12.6 ug/L.
- No other metals were detected.

Sample SEEP-1 was obtained from the fill slope associated with Brunswick Road near the eastern site boundary. Only barium was detected (26.4 ug/L). The pH was 6.45.

Surface Water

Geomatrix (2006 March) included a table of groundwater and surface water data from Carlton (2004). Grab groundwater samples from South Fork Wolf Creek crossing the site, at the culvert inlet (CMP-in), culvert outlet (CMP-out), and pond (Pond) were analyzed for CAM 17 metals. Results are summarized below:

- Arsenic was not detected in South Fork Wolf Creek, and was detected at an estimated trace concentration (1 ug/L, below the practical quantitation limit [PQL]) in the pond. The MDL was 0.27 ug/L.
- Barium was detected at concentrations ranging from 26 to 38 ug/L.
- No other metals were detected.
- The reported pH values for CMP-in, CMP-out and Pond were 6.94, 6.92 and 7.37, respectively.

Geomatrix (2005 Sept) obtained two surface water samples from South Fork Wolf Creek from locations upstream and downstream to the site (Wolf Creek-UG and Wolf Creek-DG). The samples were analyzed for CAM 17 metals. Only barium and cadmium were detected at maximum concentrations of 48.3 ug/L and 2.1 ug/L, respectively.

5.11 2007 PHASE I ESA

In 2007, Engineering/Remediation Resources Group, Inc. (ERRG) per formed a Phase I ESA for a portion of the subject property (APNs 009-630-037 and -039) and for a nearby property. The discussion below summarizes the Phase I ESA findings for only the parcels that are part of the subject property. The Phase I ESA was prepared on behalf of Idaho-Maryland Mining Corporation (IMMC).

ERRG interviewed IMMC personnel who reported the following:

- There are no monitoring wells at the site (subsequent site reconnaissance has identified monuments associated with monitoring wells).
- Water samples were collected from the New Brunswick mine shaft in January 2006 and analyzed for the presence of VOCs, semi-VOCs (SVOCs), pesticides, petroleum hydrocarbons, inorganic constituents, trace ions/metals, bacteria, gases, isotopes and aquatic bioassay. ERRG reviewed a summary report which indicated that mine water met primary drinking water standards (except turbidity and coliform); fish bioassays indicated 100% survival in all samples; sulfides were not detected; and neutral pH levels indicated no acid mine drainage.
- Vandals reportedly deposited hydrocarbon materials into the mine shaft. The shaft water was analyzed for contaminants, but the results were not available for EERG’s review at the time of their Phase I ESA.
- IMMC reported that there had historically been an 18-inch water line to the Union Hill mine and a 9-inch water line to the New Brunswick Mine.

ERRG reported that the property was not listed on any of the environmental databases searched. Additionally, EERG performed an environmental lien search for the property, which indicated that there were no environmental liens or land use restrictions associated with the property. A review of historical records included a partial 1940 New Brunswick Mine warehouse inventory which listed gasoline, butane, aviation fuels, kerosene, motor oils, drilling oils, bituminous road oil, copper sulfate, cresylic acid, cyanide, quicksilver mercury, zinc dust, and sulfuric acid.

During their site reconnaissance of the New Brunswick Mine area, ERRG observed a graded portion of the property where a concrete mine shaft collar secured by a steel lid, a large concrete silo and a large concrete foundation were present. A railroad spur grade was observed, and debris in the vicinity included a piece of rail, iron piping, metal cables and wood debris. Another debris pile on the site included tires, appliances, asphalt and wood. Two foundations and a collapsed wood structure were present west of the debris pile. Empty containers of diesel motor oil additive were observed near the wood structure.

At the Union Hill Mine site, EERG observed a shaft secured with an steel lid, a Pelton wheel concrete foundation, and portions of a hoist house foundation and mine waste rock. Debris consisting of tires, appliances, and trash was also observed. A dam southeast of the property (but part of the subject property for the current Phase I ESA) appeared to be constructed of mine tailings, and a prospect was observed at the toe of the dam. A concrete aboveground storage tank (AST) cradle was observed on land to the east of the property (but part of the subject property for the current Phase I ESA).

EERG noted the following environmental concerns:

- Reported past vandalism of the New Brunswick mine shaft involving the introduction of petroleum products into the shaft;
- The presence of roofing asphalt that may contain polycyclic aromatic hydrocarbons (PAHs) and asbestos;
- Naturally-occurring asbestos may be present at the site;
- Debris indicates the potential for uncontrolled dumping;
- Transformers historically used at the property may have contained PCBs;
- Previous use and storage of gasoline, diesel, oils, and lubricants;
- Previous use and storage of cyanide and mercury;
- Potential leaching from mine tailings; and
- The nearby presence of an AST cradle.

ERRG recommended additional investigations be performed at the site to evaluate the potential presence of contaminants in the surface and subsurface.

5.12 2020 GROUNDWATER HYDROLOGY AND WATER QUALITY ANALYSIS

Emko (2020) presents recent water quality data obtained in 2018 and 2019 from the following locations.

New Brunswick Shaft

The hydrologic evaluation performed by Emko (2020) finds that the New Brunswick Shaft, which is located in the northeastern portion of the site (see Sheet 1), captures local groundwater from around the site. Based on measurement of groundwater elevation in the mine workings (Emko, 2020) and ground surface elevations from LIDAR data (Aero Geomatics Ltd., May 2018), the estimated static groundwater depth in the New Brunswick Shaft is 259 feet bgs.

Groundwater samples were obtained from the water column in the New Brunswick Shaft at various depths (NBS-Pump, NBS-265, NBS-900, NBS-1300, NBS-1600, NBS-2300). Arsenic was detected in sample NBS Pump at 2.1 ug/L, and was not detected in other samples (<2.0 ug/L). Field-measured pH values for water samples from the New Brunswick shaft are relatively consistent at 6.83 to 7.20. There were no MCL exceedances for inorganics except for iron and manganese.

Emko (2020) reports that arsenic has been detected on a few occasions in water from the shaft at concentrations below the MCL for arsenic in drinking water (10 ug/L). Emko (2020) finds that the recent water quality results are similar to those previously reported by others (Condor, 1994; Walker and Associates, 2008).

Emko (2020) also analyzed water samples from the New Brunswick Shaft for organic constituents, including total petroleum hydrocarbons (TPH) in the gasoline, diesel and motor oil ranges; volatile organic compounds (VOCs); semi-volatile organic compounds (SVOCs) and polychlorinated biphenyls (PCBs). None of these constituents were detected in samples obtained from the New Brunswick Shaft samples (denoted as NBS) except for a single VOC, cis-1,2-dichloroethylene (DCE). As reported by Emko (2020), cis-1,2-DCE was detected in all samples from the New Brunswick Shaft at concentrations ranging from 1.8 ug/L to 4.2 ug/L (Emko, 2020, Tables 3.6 and 3.7). Emko (2020) finds:

> *This compound generally occurs as a breakdown product of the industrial solvent trichloroethylene (TCE) or the dry-cleaning solvent tetrachloroethylene (PCE). Neither of these parent compounds were detected in any of the water samples. The presence of cis-1,2-DCE in the water samples from the New Brunswick shaft could be due to two potential sources. One potential source is historic solvent use within the New Brunswick mine for equipment repair or maintenance. Any residual solvent could have broken down into cis-1,2-DCE within the reducing conditions that occur within the water in the mine. The second potential source is seepage of shallow groundwater into the New Brunswick shaft from the adjacent former SPI Mill site, located to the southeast. The Mill site was known to have industrial solvent impacts, including cis-1,2-DCE, in shallow groundwater in the past (SPI, 1999). The shaft has a general downward flow path to allow water seeping into the shaft from shallow depths to flow toward the other mines through tunnels at greater depths (see discussion in Section 3.5). The consistent presence and relatively uniform concentration of the cis-1,2-DCE indicates that if the source was due to historic solvent use in the New Brunswick mine, then the solvent use would have had to occur primarily within the shaft above the shallowest mine workings connected to the shaft, at the 580FT level of the mine, or occurred relatively uniformly throughout the entire mine, both of which seem unlikely. Thus, the most likely source for the cis-1,2-DCE in the New Brunswick shaft is seepage of*

> *shallow groundwater from the Mill site into the upper part of the shaft and downward movement of this seepage within the shaft.*

Emko (2020) finds that the low levels of cis-1,2-DCE are readily treatable by the oxidation and filtration steps that are currently proposed prior to discharge of the mine water.

South Fork Wolf Creek at New Brunswick Site

Surface water samples were obtained from South Fork Wolf Creek at the outlet of the 48-inch diameter culvert near the pond at the Brunswick site (SF Culvert) and near the exploration drilling pad located at the northern (downstream) end of the site (SF Pad). Arsenic was not detected (<2.0 ug/L). There were no MCL exceedances for inorganics except for iron and manganese.

Wolf Creek and Idaho Maryland Drains

Surface water samples were obtained from drains associated with the Idaho Maryland workings near Idaho-Maryland Road and Centennial Drive (D-1, ED-1, IMD-1, IMD-2), and from Wolf Creek upstream of the drains near Brunswick Road and Sutton Way (WC-Up), at Centennial Drive (WC-Mid), and downstream of the drains (WC-D).

Emko (2020) detected elevated arsenic concentrations in discharge from the drains; however, these discharges are not associated with the mine waste at the New Brunswick site. Arsenic concentrations detected in surface water samples from Wolf Creek upstream and downstream of the drains ranged from 1.3 to 4.0 ug/L.

6 RECORDS REVIEW

6.1 STANDARD ENVIRONMENTAL RECORDS SOURCES

The discussion presented in this section is based on information obtained from environmental databases and review of regulatory agency records. An EDR (2020) database report (Appendix A) lists sites located within a one-mile radius of the subject property pursuant to the ASTM E1527-13 standard. The listings are collected from computerized databases of federal, state and local environmental records. Regulatory agency databases searched and reported in the EDR report include:

- U.S. Environmental Protection Agency (U.S. EPA) – Comprehensive Environmental Response Compensation, and Liability Information System (CERCLIS)
- U.S. EPA – CERCLA NPL
- U.S. EPA – CERCLA Proposed NPL
- U.S. EPA – Federal Superfund Liens (NPL Liens)
- U.S. EPA – CERCLA No Further Remedial Action Planned Site (CERC-NFRAP)
- U.S. EPA – Resource Conservation and Recovery Information System (RCRAInfo), Treatment, Storage, or Disposal (TSD) facilities, and Small Quantity, Large Quantity, Conditionally Exempt Small Quantity and Non Generators (SQG, LQG, CESQG, and NonGen) of hazardous waste
- U.S. EPA – RCRA Corrective Action Report (CORRACTS)
- U.S. EPA – Land Use Control Information System; Engineering Controls Site List, and Sites with Institutional Controls (LUCIS, ENG CONTROLS, and INST CONTROLS)
- U.S. EPA – Emergency Response Notification System (ERNS)
- U.S. EPA – CERCLA Records of Decision (ROD)
- U.S. EPA – Facility Index System (FINDS)
- U.S. Department of Transportation – Hazardous Materials Information Reporting System (HMIRS)
- Department of Toxic Substances Control (DTSC) – Voluntary Cleanup Program (VCP)
- DTSC – EnviroStor Database (ENVIROSTOR)
- DTSC –- Facility and Manifest Data (HAZNET)
- California State Water Resources Control Board (SWRCB) – Leaking Underground Storage Tank Listing (LUST) sites, including Indian Land
- SWRCB – Solid Waste Facilities (SWF/LF)
- SWRCB – Aboveground and Underground Storage Tank (AST and UST) sites
- SWRCB – Cleanup Program Sites and Spills, Leaks, Investigations and Cleanups (CPS-SLIC)
- SWRCB – Voluntary Cleanup Sites (VCP)
- SWRCB – Waste Management Units (WMUDS/SWAT)
- SWRCB – California Integrated Water Quality System (CIWQS)
- CalEPA – California Environmental Reporting System Regulated Site Portal (CERS)
- CalEPA – CERS Hazardous Waste Generator and AST and UST sites (CERS HAZ WASTE and CERS TANKS)
- California Air Resources Board – Emissions Control Inventory (EMI)

- California Office of Emergency Services – California Hazardous Materials Incident Report System (CHMIRS).

Additionally, NV5 searched the databases below for environmental records related to the subject property:

- SWRCB's GeoTracker website: *http://geotracker.swrcb.ca.gov/*
- DTSC's EnviroStor website: *http://www.envirostor.dtsc.ca.gov/public/default.asp*

6.1.1 Subject Property Environmental Database Listings

Environmental database listings for the subject property are summarized below:

- Cambridge Quartz is listed on the Mines Mineral Resource Data System (MRDS). The database lists the site as a past producer of gold (small amount).
- Brunswick is listed on the MRDS. The database lists the site as a past producer of gold and silver.
- Sierra Pacific Industries, 12791 Brunswick Road is listed on the NPDES and CIWQS databases. Both database listings pertain to surface and stormwater runoff controls. Both permits became inactive in 1992. Sierra Pacific Industries, 12503 Brunswick Road, is listed on the ENVIROSTOR and SLIC databases. The Envirostor database indicates that the facility had been referred to the RWQCB in 1994. The database lists cleanup of soil containing PCP to a concentration of 3 parts per million (ppm), and notes that the RWQCB was providing oversight for groundwater monitoring. The SLIC database indicates that the RWQCB issued case closure for the site on December 19, 2006. Both Sierra Pacific Industries database listings pertain to the former Grass Valley Saw Mill property.
- Cutting Edge Wood Recycling – SPI, 12791 Brunswick Road, is listed on the RGA LF (Recovered Government Archives Solid Waste Facilities List) database. The year 2010 is noted in the database listing, but no further information is given.
- Brunswick Sawmill, Corner of Brunswick and Bennett, is listed on the Historical UST database. The database lists a 1,000-gallon gasoline UST installed in 1977; a 12,000-gallon diesel UST installed in 1977; and a 1,000-gallon UST with an unreported installation date.
- Bohemia Inc., Bennett & Brunswick is listed on the RCRA-SQG, DEED, HAZNET, and CERS databases. Sierra Pacific is listed as the owner/operator of the sawmill property. The RCRA-SQG database lists an application receipt date of 1992; no violations are listed. The DEED database indicates that the facility received case closure on August 17, 2006 and a land use/deed restriction was filed. The HAZNET database lists offsite disposal of unspecified oil-containing waste in 2002. The CERS database noted the site was in the RWQCB Cleanup Program.

6.1.2 Subject Property Regulatory Records Review

On February 7, 2020, NV5 reviewed records on file at the Nevada County Community Development Agency, including but not limited to the following.

Documents related to lumber mill construction, including:

- Notice of Approval of Use Permit Application, Brunswick Timber Products Corp., NC Board of Supervisors (1965 Feb).
- An application for log yard expansion August 6, 1976, which was conditionally approved
- A building permit application for lumber mill 1989 and related permits as recently as 1997.

Documents related to Waste Discharge Requirements (WDRs) for the lumber operations recycling pond, including:

- Vector (1990 Sept) response to CRWQCB concerns regarding groundwater and surface water quality related to the lumber mill and pond.
- A former WDR Order No 88-185 (CRWQCB, 1988), WDRs for Bohemia, Incorporated, Grass Valley Mill, which superseded WDR Order No. 76-257. The WDR allowed for discharge of up to 1.3 million gallons per day (MGD) from the lumber operation to a lined recycle pond, spray irrigation of logs all year long; and log deck and runoff collected for storage reuse and disposal in the pond. Groundwater monitoring was required for tannins and lignins, chemical oxygen demand (COD), color and specific conductivity.

Documents related to past fuel storage at the site, including:

- A memo from Ophir Hill Fire Department (1987 Jan) regarding inspection of the Bohemia Fuel Storage Facility, Permit No 86-91397, noting that deficiencies had been corrected.

Documents related to cleanup of PCP-impacted soil and groundwater monitoring for VOCs, including:

- Investigation and remedial action reports by Emcon (1989) and Emcon (1987) as described above in Section 5
- Vector (1996 May 2, 1995 Fourth Quarter Ground Water Monitoring and Annual Report for Sierra Pacific Industries Brunswick Mill Site

Documentation of the removal of oil-impacted soil, including:

- A report of contaminated soil removal (AC Industrial Cleaning, 1992 May), as described above in Section 5.

A memorandum from the County of Nevada (NCEHD, 1992 Jun) regarding hazardous substance and petroleum product assessment needs of the subject facility, including:

- Chemicals used in lumber the lumber processing operation (e.g. PCP, TCP, coper, 8-quinolate, etc.) where used stored, disposed (e.g., the log deck, pond and old streambed)
- Products used in the operation of the facility and its equipment (e.g., gas, diesel, oil etc.)
- Hazardous waste generated (e.g., spills, illegal disposal such as waste oil, electrical transformer, alleged spills (e.g., 10,000 gallons diesel from an AST)

The NCEHD (1992 Jun) memorandum stated that "while some of these issues have been addressed for specific areas or a specific incident" a Preliminary Endangerment Assessment (PEA) was recommended.

Reports pertaining to mineral exploration and groundwater in nearby domestic wells, including:

- Vector (1994) Mineral Exploration and Environmental Assessment for Idaho-Maryland Mine Project, Nevada County, California
- Reports from Emperor Gold (U.S.) Corp. from 1995 to 1998 regarding a domestic well monitoring program related to the Idaho-Maryland Mine
- Condor Minerals Management, Inc. (1991 Apr) Report of Mine Water Quality Studies, Phase 1a of the permitting study for mine dewatering and exploration at the Idaho-Maryland Mine
- Vector (1992 Jan) Hydrogeologic Study for the Idaho-Maryland Mine

6.1.3 Surrounding Area

Several facilities are listed on various environmental databases in the vicinity of the subject property vicinity. However, database listings did not appear to suggest that the listed nearby facilities had environmental concerns that would significantly affect the subject property.

6.1.4 Vapor Intrusion Evaluation

As discussed in Section 5, VOCs were historically detected in groundwater at the subject property. However, the RWQCB reported that an evaluation of the inhalation risk to human health from residual VOCs in groundwater had been performed which indicated that the potential threat to human health from vapor migration to indoor air was low (Section 5).

7 SITE RECONNAISSANCE

NV5 performed a site reconnaissance on February 27, 2020. The reconnaissance was performed on foot. The ground surface was not practically accessible in some densely forested portions of the property. Photographs are presented in Appendix C.

7.1 OBSERVATIONS

NV5 observed the following:

1. Features related to recent exploratory drilling:
    a. An exploratory drilling pad, measuring approximately 160 feet by 60 feet, surfaced with imported angular rock, near East Bennet Road in the northwestern end of the site.
    b. Rock-surfaced drilling pads located to the south of the former lumber pond.
    c. Recent exploration drill casings extending from the ground surface at several locations throughout the site.
    d. Drill cores and 20 55-gallon drums on pallets related to recent exploratory drilling operations by Rise and previous exploratory drilling by IMMC.
2. Features associated with historical mining operations:
    a. Concrete foundations, ore bin, steel shaft portal cover, and waste rock fill areas associated with the New Brunswick Mine in the northern and central-eastern portions of the site.
    b. Concrete foundations, hoist cable, steel shaft portal cover, and waste rock piles and fill associated with the historical Union Hill Mine location in the northwestern end of the site.
    c. Waste rock piles, excavations and foundations associated with the historical Lucky/Cambridge mining claims in the northwestern end of the site, across South Fork Wolf Creek and to the southwest of the Union Hill Mine location.
    d. Segments of riveted water conveyance pipe from the historical mining era near the Lucky/Cambridge mining claims.
    e. The former Narrow Gauge Railroad (NGRR) alignment on the northern site boundary (East Bennett Road), and a NGRR spur alignment roughly following a driveway on neighboring property an extending onto the northern portion of the site in the vicinity of the New Brunswick shaft.
    f. Abandoned earthen water conveyance ditches following the topographical contour in the forested areas near the western and southwestern edges of the site.
3. Features associated with historical petroleum storage or disposal:
    a. Former soil removal areas A, B and C as described in Section 5 of this report.
    b. A relic concrete saddle foundation, apparently associated with a historical fuel AST, located on the southern should of East Bennett Road near the northern site entrance. A metal pipe protruded from the ground surface between the concrete foundations, and may have extended to a nearby former shop structure.

4. Current and former water conveyance systems:
    a. Valves and vaults maintained by the Nevada Irrigation District for water supply.
    b. Surface features associated with an apparently abandoned underground water distribution systems associated with former lumber operations, including:
        i. An intake structure in the former lumber pond for pumping of water,
        ii. Four-inch diameter PVC pipes and valves,
        iii. A water truck refilling station with 4-inch-diameter metal pipe,
        iv. Hydrants and connection points, and
        v. Concrete drainage ditches and steel drop inlets apparently associated with collection and recycling of runoff.
5. An area of subsidence, possibly associated with underground drainage conveyance, approximately 100 feet southeast of the former intake structure at the pond, near a drop inlet and a hydrant. The subsidence was approximately eight feet in diameter and four feet deep. Large angular rock was exposed in the upper two feet of the depression side wall and was underlain by apparently native soil. This is not related to a mining feature but rather appears to be associated with a shallow culvert.
6. Fill and stockpiles:
    a. An approximately 200-foot by 300-foot area containing fill soil near the intersection of East Bennett Road and Brunswick Road. The fill was of unknown origin and may be up to approximately 20 feet deep.
    b. Four stockpiles (possibly 1,000 cubic yards) of soil and wood debris located on the southern edge of the paved area near the southern site entrance. The stockpiles contained topsoil, bark and abundant organic debris.
    c. Mine rock fill and stockpiles associated with historical mining operations as discussed above in item 2.
    d. Soil fill areas on the terraced, southwestern portion of the former lumber operations area.
7. A 36-inch diameter CMP culvert and manual gate valve near the southern site entrance to convey South Fork Wolf Creek beneath the site. The culvert outlet is located a short distance southwest of the former lumber pond.
8. An empty 55-gallon drum and dismantled auto body in a forested area near the western site boundary, approximately 450 feet west of the former lumber pond, apparently a di minimis condition.
9. Small-diameter (i.e., 2-inch) metal pipe and PVC plastic casings extending from the ground surface in the forested, southwestern portion of the site. Their purpose is not known and they may be associated with past environmental monitoring.
10. Groundwater monitoring well MW-7, located near the southeastern corner of the site, and apparent groundwater monitoring wellheads at the mapped MW-3 location and in the terraced area on the southwestern side of the former lumber operations area. Other monitoring wells were not observed.

7.2 ADJACENT PROPERTY OBSERVATIONS

NV5 observed adjacent properties from the boundary of the subject property. NV5 did not observe evidence of environmental conditions on adjacent properties that would be likely to impact the subject property other than abandoned mine features associated with the Lucky/Cambridge mining claims near the northwestern site boundary.

8 INTERVIEWS

NV5 interviewed Benjamin Mossman, representative of the property owner, Rise Grass Valley Inc. Mr. Mossman identified the past mining and lumber milling operations on the property and completed a questionnaire (Appendix D).

9 MINE WASTE SAMPLING AND ANALYSIS

NV5 performed a Phase II investigation on April 16 and 17, 2020, including excavation of 36 exploratory trenches, collection of mine waste and soil samples, and laboratory analysis for metals. Methodology and results are summarized below.

9.1 SUBSURFACE INVESTIGATION

NV5 recorded subsurface conditions encountered in 36 exploratory trenches on April 16 and 17, 2020. The trenches were excavated to depths up to ten feet below the ground surface (bgs) using a Hyundai 80CR-9A track-mounted excavator.

Exploratory trench locations were recorded with GPS equipment and are depicted approximately on Sheets 1 and 2. Subsurface conditions are summarized in Table 1. Photographs are presented in Appendix C.

9.2 SAMPLE COLLECTION

NV5 obtained 68 samples from the 36 exploratory trenches. The samples were collected as grab samples (independent, discrete samples) using new, single-use plastic scoops. Samples were placed in laboratory-supplied, resealable plastic bags and were homogenized in the bag by shaking and kneading. New nitrile gloves were donned at each sample location and whenever the cleanliness or integrity of the gloves were compromised. The disposable, single-use equipment was not decontaminated but was packaged for appropriate disposal.

9.3 LABORATORY ANALYSIS

Samples were delivered by mail under chain-of-custody documentation to ACZ Laboratories, Inc. (ACZ; ELAP No. 2935) of Steamboat Springs, Colorado. The 68 samples were analyzed for total arsenic (EPA Method 6010B). Laboratory results are summarized in Table 2. A subset of eight samples was analyzed for total concentrations of Title 22 (CAM 17) metals (EPA Methods 6010/7471) and Acid Base Accounting (ABA; Modified Sobek). Results are presented in Tables 3 and 4, respectively. Laboratory reports and chain-of-custody documentation are presented in Appendix E.

9.4 FINDINGS

9.4.1 Subsurface Investigation

Mine waste fill was observed on the northeastern and northwestern boundaries of the property, generally within 600 feet of Brunswick Road and East Bennett Road. The estimated lateral extent of the mine waste is depicted on Sheet 1.

The mine waste fill was typically described as angular diabase rock to 18 inches in greatest dimension, commonly with 10% to 80% rock in a matrix of silty sand and sandy silt, light gray (Munsell color GLEY 7/1) to greenish gray (GLEY 6/1) to brown. The mine waste was commonly mixed with soil. Geotextile fabric was observed at some locations between mine waste and underlying native soil, and sometimes within the mine waste fill. Underlying native soil was typically described as silty clay, dark reddish brown (5YR 3/4) to yellowish red (5YR 5/8) to yellow (2.5Y 7/6).

The mine waste fill was generally less than five feet deep. The depth of mine waste fill exceeded ten feet south of the New Brunswick Shaft and in the vicinity of exploratory trench locations T11, T14 and T30. The deeper mine waste fill in the vicinity of exploratory trench locations T7, T9 and T11 was described as abundant open-graded rock with little interstitial material, and was subject to caving.

9.4.2 Laboratory Analysis – Total Arsenic

Total arsenic concentrations are listed in Table 2.

Northern Portion

Total arsenic concentrations detected in samples of mine waste fill and mixed soil/rock fill encountered in the northern portion of the property (exploratory trench locations T1 through T13) were relatively low, ranging from less than 4 mg/kg to 50 mg/kg. The highest arsenic concentrations were detected in mine waste fill at locations T7 (50 mg/kg), T5 (29 mg/kg) T3 (28 mg/kg), and T12 (19 mg/kg).

Southeastern Paved Area

Arsenic concentrations were generally higher in mixed soil and rock fill beneath a five-acre paved area near the Brunswick Road entrance, within approximately 300 feet southwest of Brunswick Road, as depicted on Sheet 1. Total arsenic concentrations detected in samples of mixed fill from exploratory trench locations T14, T14A, T18, T19, T20, T21A and T23 ranged from 41 mg/kg to 2,150 mg/kg, some of which exceed the TTLC for arsenic (500 mg/kg).

The highest arsenic concentrations were detected in mixed soil and rock fill at locations T18 (2,150 mg/kg), T23 (1,540 mg/kg) and T14 (765 mg/kg). Mine waste fill at T14 was greater than 10 feet deep. Fill depth at other locations generally ranged from 2.0 to 5.5 feet.

South and West of Paved Area

Total arsenic concentrations detected in samples of mine waste fill located west of the paved area (exploratory trench locations T15, T16, T17, T22, T28, T29 and T30), as well as samples of mixed wood waste, rock and soil fill located south of the paved area (exploratory trench locations T24, T25, T26 and T27) were relatively low, ranging from less than 4 mg/kg to 106 mg/kg. The highest arsenic concentrations were detected in mixed mine waste and soil fill at location T26 (106 mg/kg), and waste rock fill at T29 (59 mg/kg), T28 (44 mg/kg), and T22 (41 mg/kg).

9.4.3 Laboratory Analysis – Total CAM 17 Metals

Total concentrations of CAM 17 metals, other than arsenic, were not detected at concentrations exceeding the commercial screening levels listed in Table 3.

9.4.4 Laboratory Analysis – Acid Base Accounting

ABA results are summarized in Table 4.

Northern Portion

Samples obtained from the northern portion of the site (T1-A and T7-C) were net acid-neutralizing (ratio of Neutralization Potential to Acid Generation Potential [NP:AGP] greater than 3), and pH values ranged from 7.3 to 8.2.

Southeastern Paved Area

NP:AGP for samples obtained from the southeastern paved area (T14A-B, T18-A, T-20A, T21-A and T23-A) ranged from 0 to 1.7. pH values ranged from 4.8 to 7.6.

10 FINDINGS AND OPINION

The subject property is comprised of six contiguous parcels (APNs 006-441-003, -004, -005, -034 and 009-630-037, and -039) located in unincorporated Nevada County, California, approximately ½ mile southeast of the city limits of Grass Valley.

The site is bordered by Brunswick Road to the east, East Bennett Road and one residential property to the north, sparsely developed residential properties upslope to the south and southwest, and undeveloped, steeply sloping, forested terrain to the west.

Historical Site Use

Historical site use includes gold mining and lumber milling.

Mining on the subject property included the Union Hill Mine and the New Brunswick Mine. The Union Hill Mine operated intermittently from the late 1800s until 1918, by which time the shaft was extended to approximately 800 feet bgs. Some of the subsurface workings were reportedly used at a later date by the operators of the New Brunswick Mine. Several small structures were historically associated with the Union Hill Mine operations.

The New Brunswick Mine operated intermittently from 1909 until 1956. The shaft reportedly extended to 3,300 feet bgs. Historical structures associated with the mine included an office, assay office, hoist house, mill building, carpenter shop, drying furnace building, blacksmith and machine shop, garage, transformer house, powder magazine, and store house. Structures were removed from the site since that time. In 1997 the remaining concrete foundations were removed except for one silo and the shaft collar.

Lumber milling was performed from the mid-1950s to the early 2000s. The facility was referred to as Grass Valley Saw Mill, Bohemia Saw Mill, and Sierra Pacific Mill. Features associated with the sawmill activities included a main sawmill building, two sorter buildings (one constructed in 1987), an office building, transformer, slot feeder, conveyors, timber racks and log storage areas. Ponds were used to collect and recycle surface water runoff from spray irrigation of logs. Prior to 1984, pesticides were used to treat wood. Structures associated with the sawmill were demolished in approximately 2004.

Previous Environmental Reports

Documents available for review at the time this Phase I ESA was performed describe previous compliance monitoring for waste discharge requirements associated with lumber operation spray irrigation and water recycling, subsurface soil and groundwater investigations, sampling and analysis of surface water, excavation and offsite disposal of contaminated soil, groundwater monitoring, and regulatory documentation. A Phase I ESA was previously performed for a portion of the subject property (EERG, 2007).

Prior to 1984, lumber milling operations reportedly included treating wood with pesticides. Wood was dipped into a pesticide solution and transported over an area of bare soil by a conveyor (referred to as the “green chain”) to a slot feeder. Pentachlorophenol (PCP) and tetrachlorophenol (TCP) were active ingredients in the pesticide solution. Previous subsurface investigations by others at the sawmill property identified PCP and TCP in soil and groundwater.

In 1989, contaminated soil was removed to a cleanup level of 3 ppm and disposed offsite. Elevated concentrations of VOCs were detected in groundwater beneath the sawmill property. The most recent groundwater analytical results were not available for review. The RWQCB reported that an evaluation of the inhalation risk to human health from residual VOCs in groundwater had been performed which indicated that there was not significant threat to human health from vapor migration to indoor air. The RWQCB issued a regulatory closure determination in 2006, and a land use control (covenant) was recorded. The covenant included stipulations prohibiting use of groundwater beneath the site, and a provision for terminating the covenant if four consecutive quarterly groundwater monitoring events showed VOC levels below MCLs.

Elevated concentrations of arsenic have been detected on the subject property in the former mining area and also in portions of the former lumber milling area.

An environmental evaluation performed on the mining property identified an incident of vandalism in which petroleum hydrocarbons were reportedly introduced into the mine shaft. Water in the mine shaft was reportedly sampled by others circa 2007 and submitted for laboratory analysis, but the results not available for review when the EERG (2007) Phase I ESA was performed, and they were not reviewed by NV5 as part of the current Phase I ESA. As discussed in Section 5.12, subsequent analysis of water samples from the New Brunswick Shaft (Emko, 2020) did not identify residual hydrocarbon impact except for low levels of cis-1,2-DCE, which appears to be related to former lumber operations as discussed in Section 5.1, 5.3, 5.6, 5.7, 5.8 and 5.9.

Although environmental database listings indicate that three USTs were historically present on the subject property, no reports regarding investigations associated with the USTs were identified.

Regulatory Agency Records

The mining property is listed in the MRDS database for historical mining activities.

The former sawmill property is listed on the NPDES and CIWQS databases for activities associated with surface and stormwater runoff controls. SPI is listed on the Envirostor and SLIC databases listing cleanup of soil containing PCP to a concentration of 3 ppm, and that the RWQCB was providing oversight for groundwater monitoring. The SLIC database indicates that the RWQCB issued case closure for the site on December 19, 2006. Brunswick Sawmill, Corner of Brunswick and Bennett, is listed on the Historical UST database. The database lists a 1,000-gallon gasoline UST installed in 1977; a 12,000-gallon diesel UST installed in 1977; and a 1,000-gallon UST with an unreported installation date. Bohemia Inc., Bennett & Brunswick is listed on the RCRA-SQG, DEED, HAZNET, and CERS databases. Sierra Pacific is listed as the owner/operator of the sawmill property. The RCRA-SQG database lists no violations. The DEED database indicates that the facility received case closure on August 17, 2006 and a land use/deed restriction was filed. The HAZNET database lists offsite disposal of unspecified oil-containing waste in 2002. The CERS database noted the site was in the RWQCB Cleanup Program.

Site Observations

NV5 observed features associated with historical mining and lumber milling, past soil cleanup locations, and areas of rock and soil fill. These observations are summarized in Sections 7 and 9 and are depicted on Sheet 1.

11 DATA GAPS / DEVIATIONS

NV5 encountered the following data gaps during the Phase I ESA:

- Although the DEED database indicates that Bohemia Inc. received case closure on August 17, 2005 and a land use/deed restriction was filed, no closure letter from the RWQCB was located for the sawmill property.
- No information was encountered regarding the termination of the covenant restricting groundwater use. Therefore, this restriction is assumed to remain in effect.
- No documentation was encountered regarding closure of the groundwater monitoring wells on the sawmill property. Well monuments were identified at the recorded locations of monitoring wells MW-7 and MW-3, and an additional well monument was observed in the terraced area on the southwestern side of the former lumber operations area. Other wells were not observed, and some were reportedly destroyed.
- No information was encountered confirming the removal or investigation of the historical USTs listed for the sawmill property. The SLIC database indicates that the RWQCB issued a case closure for a past release of petroleum products at the former Grass Valley Saw Mill on December 19, 2006.
- Laboratory results were not available for analysis of mine shaft water following the alleged past release of petroleum hydrocarbons to the shaft.
- A chain of title for the subject property was not reviewed.

These data gaps result in uncertainty regarding the status of certain RECs but have not affected NV5’s ability to identify the RECs. Additional research (e.g., location of regulatory closure documentation and well destruction records) would be appropriate to address the uncertainties.

12 CONCLUSIONS

NV5 has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-13 of the property known as the Brunswick Industrial Site, which is comprised of six contiguous parcels (APNs 006-441-003, -004, -005, -034 and 009-630-037, and -039), located ½ mile southeast of the city limits of Grass Valley in Nevada County, California.

Any exceptions to, or deletions from, this practice are described in the "Data Gaps/Deviations" and "Limitations" sections of this report.

Recognized Environmental Conditions

This assessment has revealed evidence of the following RECs in connection with the property:

1. The results of previous subsurface investigation by others identified elevated metals concentrations (primarily arsenic) in soil and rock fill. Elevated metals concentrations may occur in mine waste as a result of natural mineralization. Mine waste originating from mafic and ultramafic rock also has the potential to contain naturally-occurring asbestos (NOA). Mine waste is present at the New Brunswick Mine location and in fill placed to the south of that location, and at the former Union Hill Mine and Lucky/Cambridge mine locations.
    a. Subsurface investigation by NV5, as described in Section 9 of this report, defines the location and depth of mine waste fill as depicted on Sheet 1. The mine waste fill was generally less than five feet deep. The depth of mine waste fill exceeded ten feet at a location south of the New Brunswick Shaft and in the vicinity of exploratory trench locations T11, T14 and T30.
    b. The laboratory analysis described in Section 9 of this report defines the extent of elevated arsenic concentrations in mine waste. Arsenic concentrations detected in mine waste samples were relatively low except for the mixed soil and rock fill located in the vicinity of the southeastern paved area as depicted on Sheet 1. This soil and rock fill with elevated arsenic concentrations was generally located beneath pavement and was typically less than five feet deep.
    c. Because the mixed soil and rock fill beneath the southeastern paved area contain total and soluble arsenic concentrations that exceed regulatory benchmarks, NV5 recommends that they be evaluated under the oversight of the California Regional Water Quality Control Board (RWQCB) or the California Department of Toxic Substances Control (DTSC) prior to development at that location. Based on the higher arsenic concentrations and anomalous ABA results for this material, the geotextile fabric incorporated into the fill, and historical aerial photographs that suggest the grading was performed after mining operations were suspended, the material was likely imported to the site and did not originate from mining operations at the New Brunswick Shaft.
    d. At locations other than the southeastern paved area, the site investigation did not detect total arsenic at concentrations that would classify the soil as hazardous waste. Total arsenic concentrations up to a maximum of 106 mg/kg were detected, and many

of the detected concentrations were within regional background concentrations. If disturbance of the mine waste is proposed, the site-specific arsenic concentration data resulting from this investigation should be furnished to contractors so that the contractor can comply with applicable health and safety requirements. NV5 recommends that the contractor retain a Certified Industrial Hygienist (CIH) to develop specific handling procedures for the mine waste, including dust mitigation. Mine waste should not be removed from the site without regulatory approval.

2. Past industrial operations included the storage and use of petroleum products. Several of these items can likely be considered historical RECs (HRECs) provided that regulatory closure records are located, or the existing test results are subjected to regulatory review:
    a. Fuel USTs were historically present at the site, and their closure status is not known. No investigation reports or other information tying the tanks to a closure determination were encountered as part of this Phase I ESA. The Historical UST database lists the Brunswick Sawmill, Corner of Brunswick and Bennett, as previously containing a 1,000-gallon gasoline UST installed in 1977; a 12,000-gallon diesel UST installed in 1977; and a 1,000-gallon UST with an unreported installation date. NV5 recommends that closure records be obtained from the RWQCB or the County of Nevada if available.
    b. Area A: AC Industrial Cleaning (AC, 1992) removed a buried electrical transformer and contaminated soil from a location west of the pond. The summary report indicated that a relatively small amount of contaminated soil remains in place at Area A. NV5 recommends that soil sampling and analysis be performed at this location under County of Nevada oversight to determine whether the contamination soil remains in place and to develop recommendations for removal and disposal of soil, if necessary.
    c. Area B: AC (1992) removed contaminated soil from the location of a former surface oil spill. The summary report indicates that the contamination was removed based on the results of verification sampling and analysis. No record of regulatory closure was encountered; however, this area would likely be considered an HREC provided that regulatory closure documentation is found or the existing records are subjected to regulatory review.
    d. Area C: AC (1992) removed contaminated soil from a former disposal area. The summary report indicates that the contamination was removed based on the results of verification sampling and analysis. No record of regulatory closure was encountered; however, this area would likely be considered an HREC provided that regulatory closure documentation is found or the existing records are subjected to regulatory review.

Historical Recognized Environmental Conditions

This assessment has revealed evidence of the following HRECs in connection with the property:

1. The SLIC database indicates that the RWQCB issued a case closure for a past release of petroleum products at the former Grass Valley Saw Mill on December 19, 2006. This

appears to be an HREC based on the regulatory case closure determination, although details of the release and cleanup were not available for review.

2. Elevated concentrations of PCP and TCP were previously identified in soil and groundwater at the sawmill property. Contaminated soil was removed in 1989 to a cleanup goal of 3 ppm. Although the DEED database indicates that Bohemia Inc. received case closure on August 17, 2005 and a land use/deed restriction was filed, no closure letter from the RWQCB was identified for the sawmill property. If a closure letter is found for the contaminated soil removal, this would likely be considered an HREC. A covenant was placed on the property to address residual groundwater contamination as described below under CRECs.

Controlled Recognized Environmental Conditions

This assessment has revealed evidence of the following CRECs in connection with the property:

1. Residual concentrations of VOCs were detected in groundwater at the sawmill site at the former green chain area, in the vicinity of monitoring well MW-5 (see Sheet 1). Based on the results of groundwater monitoring, regulatory case closure was reportedly issued in 2006, and a covenant was established to restrict groundwater use based on concentrations of the VOC 1,1-DCA remaining in groundwater at concentrations above the MCL. The covenant contains a provision for regulatory termination of the covenant if future groundwater monitoring results indicate that the covenant is no longer required. If the covenant is rescinded in the future, then the condition could likely be considered an HREC rather than a CREC.

Potential Environmental Concerns

NV5 also identified the following potential environmental concerns:

1. No documentation regarding destruction of the groundwater monitoring wells at the sawmill property was identified.
2. No investigations regarding former transformers or ASTs were identified. The features appear to have been removed. An AST saddle foundation and underground piping are located near eastern site boundary.
3. Undocumented soil fill is present on the site, including deep fill located the upper, eastern portion of the site near the intersection of Brunswick Road, stockpiles of wood chips in the southern portion of the site near the Brunswick Road site entrance, and soil fill associated with the terraced area on the southwestern side of the former lumber operations area.
4. Records indicate that chemicals were historically stored at the New Brunswick Mine. A warehouse inventory circa 1940 listed gasoline, butane, aviation fuels, kerosene, motor oils, drilling oils, bituminous road oil, copper sulfate, cresylic acid, cyanide, quicksilver mercury, zinc dust and sulfuric acid.

13 LIMITATIONS

NV5 has presented the above information as it has been presented to us and cannot assume responsibility for the completeness or accuracy of the information reviewed or received. The information provided in this report is not meant to be comprehensive, to identify all potential concerns, or to eliminate the risk involved in property acquisition.

NV5 has used judgment and experience to arrive at the findings and conclusions presented in this report. Therefore, the findings and conclusions are not scientific certainties. Environmental conditions may exist at the site that were not identified or encountered as a result of this Phase I ESA.

The scope of the Phase I ESA did not include determining the presence of asbestos-containing building materials, radon, lead-based paint, drinking water quality, wetlands, regulatory compliance, cultural and historical resources, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality, geologic hazards, biological agents and mold. This list of non-scope items is not intended to be all-inclusive.

Because research information is continually updated, the accounts presented in this report can become outdated with time. In addition, site conditions and regulatory policy can change, potentially rendering our conclusions invalid or obsolete. Therefore, we do not recommend relying on the accuracy of this report after 180 days of the date issued. At that time, we recommend updating this report to reflect any new available information. We can assist in updating this report, should this process be necessary.

NV5 prepared and issued this report for the exclusive use of our client. The information, conclusions, and recommendations presented apply only to the subject property. NV5 is not responsible for any other party's interpretations of the reported information.

NV5 performed this work in accordance with present, regional, generally accepted standards of care. This report does not represent a legal opinion. No warranty, express or implied, is intended.

14 ENVIRONMENTAL PROFESSIONAL STATEMENT

We declare that to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312.

We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquires in conformance with the standards and practices set forth in 40 CFR Part 312. Resumes of the Environmental Professionals signing this report are presented in Appendix F.

15 REFERENCES

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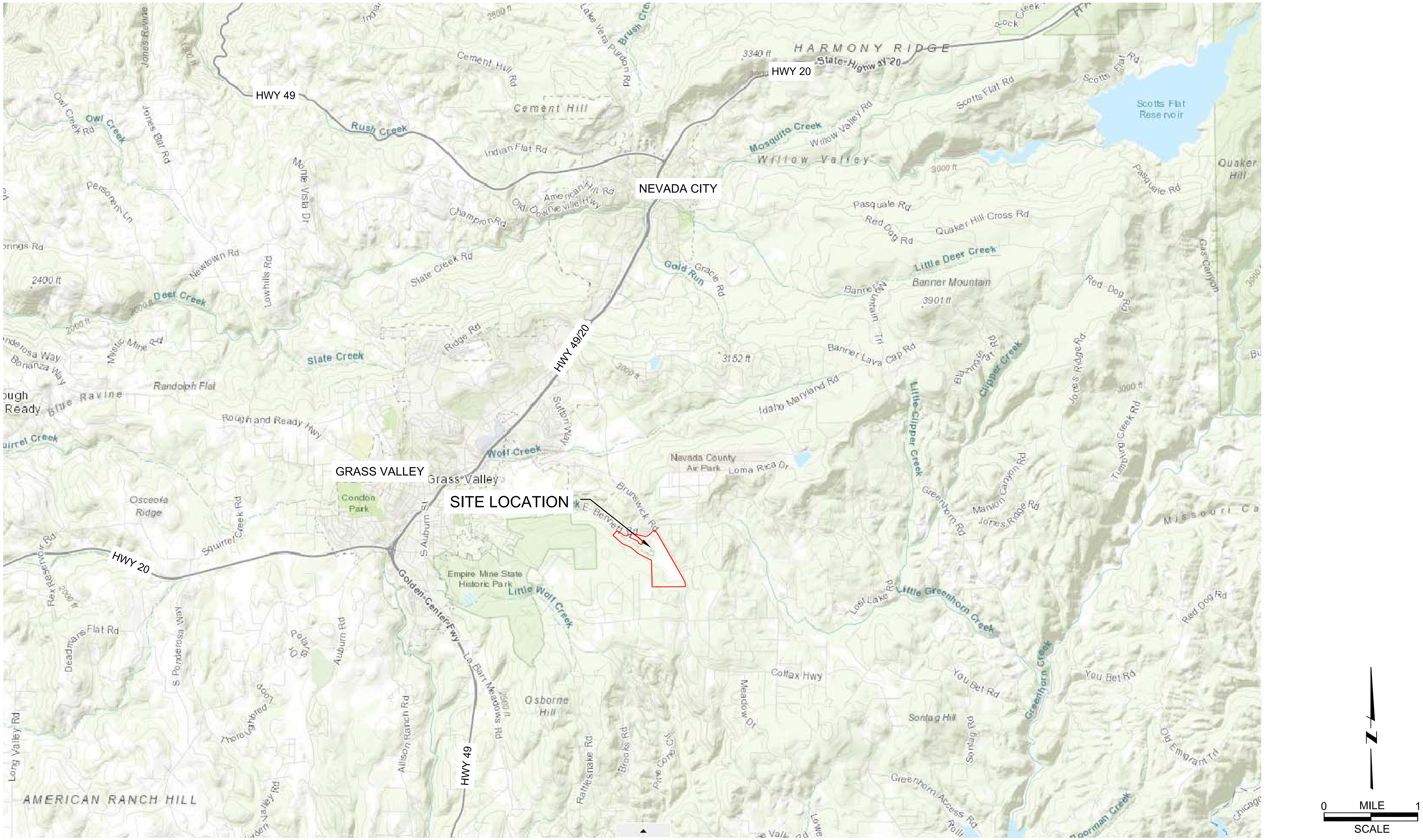
FIGURES AND SHEETS



BASE MAP FROM NEVADA COUNTY GEOGRAPHIC INFORMATION SYSTEM

LOCATION MAP

BRUNSWICK INDUSTRIAL SITE

GRASS VALLEY, CALIFORNIA

DOCKET NO.:	N/A
SITE CODE:	N/A
NV5 PROJECT:	5279.03
DATE:	FEBRUARY 2020

FIGURE
1

NV5

Base map prepared by:
Rise Grass Valley Inc.
PO Box 271, Grass Valley, CA 95945
Horizontal Datum: NAD83 (2001)
Vertical Datum: GEOID 12B, NAVD 88
Projection: California State Plane Zone 2

SITE MAP
BRUNSWICK INDUSTRIAL SITE
NEVADA COUNTY, CALIFORNIA

NO.	REVISIONS	DATE

DTSC SITE CODE.: N/A
DOCKET NO.: N/A
CHECKED BY: MUIR
NV5 PROJECT NO.: 5729.05
DATE: JUNE 2020

SHEET NO.:
1
OF 2

Base map prepared by:
Rise Grass Valley Inc.
PO Box 271, Grass Valley, CA 95945
Horizontal Datum: NAD83 (2001)
Vertical Datum: GEOID 12B, NAVD 88
Projection: California State Plane Zone 2

AERIAL PHOTOGRAPH
BRUNSWICK INDUSTRIAL SITE
NEVADA COUNTY, CALIFORNIA

NO.	REVISIONS	DATE

DTSC SITE CODE.: N/A
DOCKET NO.: N/A
CHECKED BY: MUIR
NV5 PROJECT NO.: 5729.05
DATE: JUNE 2020

SHEET NO.: 2 OF 2

TABLES

Table 1. Summary of Exploratory Trenching
Brunswick Industrial Site
Nevada County, California

Trench No.	Total Depth (feet bgs)	Water	Layer Type	Layer	Depth Interval (feet bgs)	Description
T1	5.0	dry	WR Fill	A	0.0-3.5	Mine waste fill. SP. Silty medium sand with abundant angular diabase rock (40%) to 12-inch diameter, light gray (GLEY 7/1) to greenish gray (GLEY 6/1), loose to medium dense, slightly moist.
			CL	B	3.5-5.0	Native undisturbed soil. CL. Silty clay, dark reddish brown (5YR 3/4), medium still, slightly moist.
T2	5.5	minor seepage 5.0' bgs	WR/Soil Fill	A	0.0-2.5	Mine waste fill as above (T1) 30% rock to 4-inch diameter mixed with soil fill.
			CL	B	2.5-5.5	Native undisturbed soil. CL. Silty clay, dark reddish brown (5YR 3/4), firm, slightly moist.
T3	4.0	dry	WR Fill	A	0.0-1.5	Mine waste fill. GP. Sandy gravel with angular diabase rock (30%) to 4-inch diameter. Light grey to brown, medium dense, moist.
			ML	B	1.5-4.0	Native undisturbed soil. ML. Clayey silt, yellowish red (5YR 5/8), medium, slightly moist. Completely weathered rock.
T4	5.0	dry	WR/Soil Fill	A	0.0-1.5	Mixed mine waste fill as above (T1) 15% rock to 8-inch diameter, mixed with soil fill.
			ML	B	2.5-5.0	Native undisturbed soil. ML. Clayey silt, yellow (2.5Y 7/6), medium, slightly moist. Completely weathered rock.
T5	5.5	dry	WR/Soil Fill	A	0.0-3.0	Mine waste and soil fill. GM. Clayey sandy silt with gravel and angular diabase rock (15%) to 4-inch diameter. Strong brown, soft, moist. Loose, caving.
			WR/Soil Fill	B	3.0-3.5	Mine waste and soil fill. GM. Sandy silt with gravel and angular diabase rock (5%) to 4-inch diameter. Strong brown, soft, moist.
			CL	C	3.5-5.5	Native undisturbed soil. CL. Silty clay, dark reddish brown (5YR 3/4), firm, slightly moist.
T6	5.0	seepage 2.0' bgs, standing 3.0' bgs	WR Fill	A	0.0-2.0	Mine waste fill. SP. Silty medium sand with abundant angular diabase rock (40%) to 12" diameter, light gray (GLEY 7/1) to greenish gray (GLEY 6/1), loose to medium dense, slightly moist.
			ML	B	2.0-5.0	Native undisturbed soil. ML. Clayey silt, yellowish brown(5YR 5/8). Medium stiff, slightly moist. Completely weathered rock.
T7	10.0	dry	WR/Soil Fill	A	0-2.5	Mixed Fill. GM. Silty sandy gravel with angular diabse rock (10%). Grey brown, medium dense, moist.
			WR Fill	B	2.5-6.0	Mine waste fill. GP. Angular diabase rock (80%) up to 12-inch diameter with sand and gravel. Grey brown, medium dense, moist.
			WR Fill	C	6.0-9.5	Mine waste fill. GP. Sandy gravel with angular diabase rock (30%) blue grey, medium dense, very moist to wet.
			CL	D	9.5-10.0	Native undisturbed soil. CL. Silty clay as above (T1)

Table 1. Summary of Exploratory Trenching
Brunswick Industrial Site
Nevada County, California

Trench No.	Total Depth (feet bgs)	Water	Layer Type	Layer	Depth Interval (feet bgs)	Description
T8	5.0	standing 3.5' bgs	Soil Fill	A	0.0-1.75	Mixed fill. CL/ML. Native silty clay, sandy silt and wood waste. Mottled redish brown to pale yellow, stiff, very moist
			CL	B	1.75-5.0	Native undisturbed soil. CL. Silty clay as above (T1)
T9	10.5	dry	Soil Fill	A	0.0-2.0	Mixed fill. Clayey silt (ML), sandy silt, silty sand and sandy gravel. Reddish brown to grey, medium stiff, moist.
			WR Fill	B	3.0-9.0	Mine waste fill. Sandy gravely angular diabase rock (75%) up to 8-inch diameter, grey, loose, slightly moist.
			CL	C	9.0-10.5	Native undisturbed soil. CL. Silty clay as above (T1)
T10	2.0	dry	ML	A	0.0-0.5	Native soil. Sandy organic silt. OL. Reddish brown, soft, moist.
			CL	B	0.5-2.0	Native undisturbed soil. CL. Silty clay as above (T1)
T11	10.0	dry	Mix Fill	A	0.0-0.5	Mixed fill. GM. Silty sandy gravel with concrete fragments. Pale brown to redish brown, loose, moist.
			WR Fill	B	0.5-10.0	Mine waste fill. GP. Sandy gravely angular diabase rock (80%) 4 to 18-inch diameter, grey, loose, slightly moist. Extreme caving.
T12	4.0	dry	WR Fill	A	0.0-1.5	Mine waste fill. SP. Silty medium sand with abundant angular diabase rock (40%) to 12" diameter, light gray (GLEY 7/1) to greenish gray (GLEY 6/1), loose to medium dense, slightly moist.
			CL	B	1.5-4.0	Native undisturbed soil. CL. Silty clay, dark reddish brown (5YR 3/4), firm, slightly moist.
T13	3.5	dry	Agg Base	Agg Base	0.0-0.5	Imported aggregate baserock. GP. Pea gravel with medium to fine sand. Grey, loose, slightly moist.
			ML	C	0.5-3.5	Native undisturbed soil. ML. Clayey silt, yellowish red (5YR 5/8), medium, slightly moist. Completely weathered rock.
T14	9.0	dry	WR Fill	A	0.0-4.0	Mine waste fill. GM. Silty sandy gravel with fine angular diabase rock fragments (50%) up to 4-inch diameter. Brown to grey brown, loose, moist. Geotextile fabric at 4 feet bgs.
			WR Fill	B	4.0-8.0	Mine waste fill. GP. Sandy gravely angular diabase rock (60%) up to 18-inch diameter, grey brown, medium dense, slightly moist.
			Mixed WR Fill	C	8.0-9.0	Mixed mine waste fill. GP. Mine waste (as above) with up to 50% large partially decomposed wood waste.
T14A	4.5	dry	Fill/AC	A	0.0-3.0	Mixed fill. ML. Sandy,clayey silt with angular gravel and AC fragments (10%) reddish brown to pale yellow, soft, moist.
			Soil Fill	B	3.0-4.5	Mixed fill (as above) with 5% angular gravel. Medium stiff, moist.
T15	5.0	dry	WR Fill	A	0.0-3.0	Mixed mine waste fill. OL/GM. Organic sandy silt with gravel and angular rock fragments (20%). Brown, soft/loose, moist.
			ML	B	3.0-5.0	Native undisturbed soil. ML. Clayey silt as above (T3)

Table 1. Summary of Exploratory Trenching

Brunswick Industrial Site
Nevada County, California

Trench No.	Total Depth (feet bgs)	Water	Layer Type	Layer	Depth Interval (feet bgs)	Description
T16	4.0	dry	WR Fill	A	0.0-2.5	Mine waste fill. GP. Sandy gravel with angular rock fragments (15%) to 12-inch diameter. Grey brown, medium dense, moist.
			ML	B	2.5-4.0	Native undisturbed soil. ML. Clayey silt as above (T3)
T17	6.5	dry	WR/Soil Fill	A	0.0-5.5	Mixed mine waste fill. ML. Organic clayey silt with sand, gravel, wood waste and angular rock fragments (up to 30%) up to 10-inch diameter. Dark brown to grey brown, medium dense, moist. Large wood (log) at 5 feet bgs.
			ML	B	5.5-6.5	Native undisturbed soil. ML. Clayey silt as above (T3)
T18	6.0	dry	Fill/AC	A	0.0-4.5	Mixed fill. GM. Silty sandy gravel with large AC fragments 6-inches thick (30%). Strong brown to dark brown, medium dense, slightly moist.
			ML	B	4.5-6.0	Native undisturbed soil. ML. Clayey silt as above (T3)
T19	7.0	dry	WR/ Mixed Fill	A	0.0-3.5	Mixed fill with mine waste. ML/GM. Sandy clayey silt and gravel with organics, wood waste and angular diabase rock fragments (10%) to 8-inch diameter. Brown, medium dense, moist.
			WR Fill	B	3.5-5.5	Mine waste fill. GM. Silty sandy gravel with angular rock fragments (80%) to 12-inch diameter. Dark brown, dense, slightly moist.
			ML	C	5.5-7.0	Native undisturbed soil. ML. Clayey silt as above (T3)
T20	3.5	dry	WR Fill	A	0.0-2.5	Mine waste fill. GM. Silty sandy clayey gravel with angular weathered rock fragments (20%) to 12-inch diameter. Dark brown, dense, slightly moist. Discontinuous geotextile fabric at 2 feet bgs.
			ML	B	2.5-3.5	Native undisturbed soil. ML. Clayey silt as above (T3)
T21	1.0	dry	Fill Soil	A	0.0-1.0	Soil fill stockpile. OL. Organic sandy silt. Strong brown, very soft, slightly moist.
			AC		1.0	Asphalt surface below stockpile.
T21A	4.5	dry	WR/Mix Fill	A	0.0-3.5	Mixed mine waste fill. GP. Sandy gravel with angular rock fragments (15%) to 12-inch diameter and concrete fragments. Grey brown, medium dense, slightly moist.
			ML	B	3.5-4.5	Native undisturbed soil. ML. Clayey silt as above (T3)
T22	3.0	dry	WR/Soil Fill	A	0.0-1.5	Mixed fill. ML/GP. Native sandy silt with gravel and angular diabase rock fragments (15%) up to 12-inch diameter. Reddish brown to Grey brown, medium stiff, slightly moist.
			ML	B	1.5-3.0	Native undisturbed soil. ML. Clayey silt as above (T3)
T23	5.0	dry	WR Fill	A	0.0-3.0	Mine waste fill. GP. Sandy gravely angular diabase rock (75%) to 12-inch diameter. Reddish brown to grey brown, medium dense, slightly moist.
			ML	B	3.0-5.0	Native undisturbed soil. ML. Clayey silt as above (T3)

Table 1. Summary of Exploratory Trenching

Brunswick Industrial Site
Nevada County, California

Trench No.	**Total Depth** (feet bgs)	**Water**	**Layer Type**	**Layer**	**Depth Interval** (feet bgs)	**Description**
T24	9.0	dry	Soil Fill	A	0.0-1.5	Mixed soil fill. OL. Organic sandy clayey silt, wood waste. Brown, soft, moist.
			Mixed Fill	B	1.5-3.5	Mixed soil fill. ML. Sandy silt with occasional gravel and angular rock (5%) and wood waste (20%). Greenish grey, medium stiff, moist.
			Mixed Fill	C	3.5-9.0	Mixed fill as above. Increasing wood waste and large woody debris (50%). Dark brown, medium density, moist.
T25	4.0	dry	WR/Soil Fill	A	0.0-2.5	Mixed mine waste, native soil fill. ML/GP. Sandy silt and angular diabase rock fragments (40%) occasional rock to 24-inch diameter. Yellow brown to reddish brown, medium dense, moist.
			ML	B	2.5-4.0	Native undisturbed soil. ML. Clayey silt as above (T3)
T26	9.0	dry	WR/Soil Fill	A	0.0-3.5	Mixed mine waste fill. ML/GM. Sandy silt with organics and sandy fine gravel with angular diabase rock (15%) and debris (canvas hose). Grey brown to dark brown, soft, moist.
			WR/Soil Fill	B	3.5-9.0	Mixed fill as above with occasional angular diabase rock (5%), wood waste, chared wood and large wood fragments. Dark brown, medium stiff, moist.
T27	8.0	dry	Mixed Fill	A	0.0-6.5	Mixed fill. OL/ML. Organic clayey silt and sandy silt with wood waste, metal debris (banding). Dark brown, soft, moist.
			ML	B	6.5-8.0	Native undisturbed soil. ML. Clayey silt as above (T3)
T28	4.5	dry	WR/Soil Fill	A	0.0-2.0	Mixed mine waste fill. OL/GM. Organic sandy silt with angular diabase rock fragments (20%) to 24-inch diameter. Dark brown, medium still, moist. Geotextile fabric at 2.0 feet bgs.
			Mixed Fill	B	2.0-3.0	Mixed fill. ML. Clayey silt with wood waste. Greenish grey, stiff, moist.
			ML	C	3.0-4.5	Native undisturbed soil. ML. Clayey silt as above (T3)
T29	5.0	dry	WR Fill	A	0.0-2.0	Mine waste fill. GP. Sandy graveley diabase rock fragments (75%) to 10-inch diameter. Light grey to brown, medium dense, slightly moist.
			WR Fill	B	2.0-3.5	Mine waste fill. GP. Sandy gravely weathered rock fragments (60%) to 8-inches diameter. Reddish brown, dense, slightly moist.
			ML	C	3.5-5.0	Native undisturbed soil. ML. Clayey silt. Completely weathered rock
T30	5.0	dry	WR Fill	A	0.0-2.0	Mine waste fill. GM. Silty sandy graveley weathered angular rock (60%) to 8-inches diemater. Yellowish brown, dense, slightly moist. Geotextile fabric at 2.0 feet bgs.
			WR Fill	B	2.0-5.0	Mine waste fill. GP. Sandy gravely diabase rock fragments (80%) to 12-inch diameter. Dark grey, very dense, slightly moist.
T31	2.0	wet*	ML	A	0.0-2.0	Native undisturbed soil. ML. Clayey silt as above (T3)
T32	2.0	dry	ML	A	0.0-1.5	Native undisturbed soil. ML. Clayey silt as above (T3)
T33	2.0	dry	ML	A	0.0-1.5	Native undisturbed soil. ML. Clayey silt as above (T3)

Table 1. Summary of Exploratory Trenching

Brunswick Industrial Site
Nevada County, California

Trench No.	Total Depth (feet bgs)	Water	Layer Type	Layer	Depth Interval (feet bgs)	Description
T34	2.0	dry	ML	A	0.0-1.5	Native undisturbed soil. ML. Clayey silt as above (T3)

Notes:

* Abandoned PVC water pipe contained water (not groundwater)

🟨	TAs 30 - 100 mg/kg
🟧	TAs 100 - 500 mg/kg
🟥	TAs > 500 mg/kg

AC= asphalt concrete pavement
bgs = below ground surface
mg/kg = milligrams per kilogram
Mixed fill = native soil, organic soil, wood waste
Native soil = native soil or weathered rock, typically silty clay (CL) or clayey silt (ML)
TAs = total arsenic concentration detected in soil/rock sample
WR = mine waste rock
WW= wood waste

Table 2. Total Arsenic in Solid Samples

Brunswick Industrial Site

Nevada County, California

Trench ID	Sample ID	Sample Date	Sample Depth (feet bgs)	Matrix	Total Arsenic (mg/kg)
T1	*T1-A*	04/16/20	0.0- 2.5	WR Fill	6
	T1-B	04/16/20	3.5- 4.0	Native CL	ND<4
T2	*T2-A*	04/16/20	0.0- 2.5	WR/Soil Fill	6
	T2-B	04/16/20	2.5- 3.0	Native CL	ND<4
T3	*T3-A*	04/16/20	0.0-1.5	WR Fill	28
	T3-B	04/16/20	2.5- 3.0	Native ML	ND<4
T4	*T4-A*	04/16/20	0.0-1.3	WR/Soil Fill	15
	T4-B	04/16/20	2.3-2.6	Native ML	ND<4
T5	*T5-A*	04/16/20	0.0-1.0	WR/Soil Fill	29
	T5-B	04/16/20	3.0-3.5	WR/Soil Fill	8
	T5-C	04/16/20	5.5-6.0	Native CL	ND<4
T6	*T6-A*	04/16/20	0.0-2.0	WR Fill	16
	T6-B	04/16/20	3.0-3.5	Native ML	ND<4
T7	*T7-A*	04/16/20	0.0-2.5	WR/Soil Fill	8
	T7-C	04/16/20	7.5-8.0	WR Fill	50
	T7-D	04/16/20	10.0-10.5	Native CL	ND<4
T8	*T8-A*	04/16/20	0.0-1.5	Soil Fill	7
	T8-B	04/16/20	2.5-3.0	Native CL	ND<4
T9	*T9-A*	04/16/20	0.0-1.0	Soil Fill	ND<4
	T9-B	04/16/20	3.0-9.0	WR Fill	ND<4
	T9-C	04/16/20	10.5-11.0	Native CL	ND<4
T10	*T10-B*	04/16/20	1.0-1.5	Native CL	ND<4
T11	*T11-B*	04/16/20	1.0-10.0	WR Fill	ND<4
T12	*T12-A*	04/16/20	0.0-1.5	WR Fill	19
	T12-B	04/16/20	2.5-3.0	Native CL	ND<4
T13	*T13-B*	04/16/20	1.0-1.5	Native ML	ND<4
T14	*T14-A*	04/16/20	0.0-3.0	WR Fill	402
	T14-B	04/16/20	4.0-8.0	WR Fill	765
	T14-C	04/16/20	8.0-9.0	Mixed WR Fill	394
T14A	*T14A-A*	04/16/20	1.0-3.0	Fill/AC fill layer	48
	T14A-B	04/16/20	4.0-4.5	Soil FIll	273
T15	*T15-A*	04/16/20	1.0-2.7	WR Fill	28
	T15-B	04/16/20	4.0-4.5	Native ML	10
T16	*T16-A*	04/16/20	0.0-2.0	WR fill	10
	T16-B	04/16/20	3.5-4.0	Native ML	ND<4
T17	*T17-A*	04/16/20	0.0-2.5	WR/Soil Fill	17
	T17-B	04/16/20	6.0-6.5	Native ML	6
T18	*T18-A*	04/16/20	0.0-4.0	Mixed Fill/AC	2150
T19	*T19-A*	04/17/20	0.0-3.0	WR/Mixed Fill	41
	T19-B	04/17/20	3.5-5.5	WR Fill	46
	T19-C	04/17/20	6.0-6.5	Native ML	ND<4
T20	*T20-A*	04/17/20	0.5-2.0	WR FIll	105
	T20-B	04/17/20	3.5-4.0	Native ML	ND<4

Table 2. Total Arsenic in Solid Samples

Brunswick Industrial Site

Nevada County, California

Trench ID	**Sample ID**	**Sample Date**	**Sample Depth** (feet bgs)	**Matrix**	**Total Arsenic** (mg/kg)
T21	*T21-A*	04/17/20	na	Stockpile above AC	ND<4
T21A	*T21A-A*	04/17/20	0.0-3.0	Mixed Fill/WR	497
	T21A-B	04/17/20	4.0-4.5	Native ML	ND<4
T22	*T22-A*	04/17/20	0.0-1.5	WR/Soil Fill	41
	T22-B	04/17/20	2.5-3.0	Native ML	ND<4
T23	*T23-A*	04/17/20	0.0-3.0	WR Fill	1540
	T23-B	04/17/20	4.0-4.5	Native ML	ND<4
T24	*T24-B*	04/17/20	1.5-3.5	Mixed Fill	ND<4
T25	*T25-A*	04/17/20	0.0-2.5	Mixed Fill	8
	T25-B	04/17/20	3.5-4.0	Native ML	ND<4
T26	*T26-A*	04/17/20	0.0-2.0	WR/Soil Fill	106
	T26-B	04/17/20	3.5-6.0	WR/Soil Fill	8
T27	*T27-A*	04/17/20	0.0-4.0	Mixed Fill	ND<4
T28	*T28-A*	04/17/20	0.0-2.0	WR/Soil Fill	44
	T28-B	04/17/20	2.0-2.5	Mixed Fill	ND<4
	T28-C	04/17/20	4.0-4.5	Native ML	ND<4
T29	*T29-A*	04/17/20	0.0-2.0	WR Fill	26
	T29-B	04/17/20	2.0-5.0	WR FIll	59
	T29-C	04/17/20	4.5-5.0	Native ML	ND<4
T30	*T30-A*	04/17/20	0.0-2.0	WR Fill	20
	T30-B	04/17/20	2.0-5.0	WR Fill	39
T31	*T31-A*	04/17/20	0.0-1.0	Native ML	7
T32	*T32-A*	04/17/20	0.0-1.0	Native ML	7
T33	*T33-A*	04/17/20	0.0-1.0	Native ML	9
T34	*T34-A*	04/17/20	0.0-1.0	Native ML	23

Notes:

🟨 TAs 30 - 100 ppm

🟧 TAs 100 - 500 ppm

🟥 TAs > 500 ppm

AC = asphalt concrete pavement

bgs = below ground surface

mg/kg = milligrams per kilogram

Mixed fill = native soil, organic soil, wood waste

Native soil = native soil or weathered rock, typically silty clay (CL) or clayey silt (ML

ND = not detected at or above the listed reporting limit

TAs = Total arsenic, USEPA Method 6010B

USEPA = United States Environmental Protection Agency

WR = mine waste rock

WW= wood waste

Table 3 - Total Metals in Solid Samples

Brunswick Industrial Site
Nevada County, California

				Results																
Sample ID	**Sample Date**	**Sample Depth** (ft)	**Sample Description**	**Antimony**	**Arsenic**	**Barium**	**Beryllium**	**Cadmium**	**Chromium**	**Cobalt**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Nickel**	**Selenium**	**Silver**	**Thallium**	**Vanadium**	**Zinc**
Chemical Identification	*USEPA Method*			*6010D*	*6010D*	*6010D*	*6010D*	*6010D*	*6010D*	*6010D*	*6010D*	*6010D*	*7471A*	*6010D*	*6010D*	*6010D*	*6010D*	*6010D*	*6010D*	*6010D*
	CAS No.			*7440-36-0*	*7440-38-2*	*7440-39-3*	*7440-41-7*	*7440-43-9*	*16065-83-1*	*7440-48-4*	*7440-50-8*	*7439-92-1*	*7439-97-6*	*7439-98-7*	*7440-02-0*	*7782-49-2*	*7440-22-4*	*7440-28-0*	*7440-62-2*	*7440-66-6*
	Unit			*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*
Reporting and Detection Limits	*Method Detection Limit*			*3.0*	*4.0*	*0.70*	*1.0*	*0.80*	*1.0*	*1.0*	*1.0*	*3.0*	*0.040*	*2.0*	*2.0*	*5.0*	*1.0-5.0*	*10*	*2.0*	*2.0*
	Reporting Limit			*20*	*20*	*4.0*	*5.0*	*3.0*	*5.0*	*5.0*	*5.0*	*20*	*0.20*	*10*	*8.0*	*30*	*3.0*	*50*	*5.0*	*5.0*
Screening Levels and Benchmark Concentrations	*Commercial Soil*			*470*	*0.36*	*220,000*	*210*	*780*	*1.8E+06*	*350*	*47,000*	*320*	*4.4*	*5,800*	*11,000*	*5,800*	*1,500*	*12*	*1,000*	*350,000*
	Basis for Screening Level			*RSL*	*DTSC-SL*	*RSL*	*DTSC-SL*	*DTSC-SL*	*RSL*	*RSL*	*RSL*	*DTSC-SL*	*DTSC-SL*	*RSL*	*DTSC-SL*	*RSL*	*RSL*	*RSL*	*DTSC-SL*	*RSL*
	TTLC (mg/kg)			*500*	*500*	*10,000*	*75*	*100*	*2,500*	*8,000*	*2,500*	*1,000*	*20*	*3,500*	*2,000*	*100*	*500*	*700*	*2,400*	*5,000*
	STLC (mg/L)			*15*	*5*	*100*	*0.75*	*1.0*	*5*	*80*	*25*	*5*	*0.2*	*350*	*20*	*1.0*	*5*	*7*	*24*	*250*
T1-A	04/16/20	0.0- 2.5	WR Fill	ND<3	12 J	22.1	ND<1	ND<0.8	309	38	97	16 J	0.28	ND<2	273	8.0 J	8.0	ND<10	101	64
T7-C	04/16/20	7.5-8.0	WR Fill	ND<3	48	6.3	ND<1	ND<0.8	960	82	87	ND<20	0.29	ND<2	1370	10 J	7.0	ND<10	63	17
T14-B	04/16/20	4.0-8.0	WR Fill	ND<3	1260	32.2	ND<1	ND<0.8	849	38	80	7.0 J	0.21	ND<2	436	5.0 J	7.0	ND<10	73	32
T14A-B	04/16/20	4.0-4.5	Soil FIll	ND<3	285	187	ND<1	ND<0.8	503	52	84	ND<20	ND<0.04	ND<2	115	8.0 J	6.0	ND<10	120	45
T18-A	04/16/20	0.0-4.0	Mixed Fill/AC	ND<3	1080	96.8	ND<1	ND<0.8	95	29	73	10 J	0.06 J	ND<2	87.3	ND<5.0	9.0	ND<10	110	54
T20-A	04/17/20	0.5-2.0	WR FIll	ND<3	109	107	ND<1	ND<0.8	65	26	112	17 J	0.27	ND<2	40.5	ND<5.0	10	ND<10	197	52
T21A-A	04/17/20	0.0-3.0	Mixed Fill/WR	ND<3	523	45.4	ND<1	ND<0.8	62	17	32	5.0 J	ND<0.04	ND<2	48.4	ND<5.0	5.0	ND<10	70	30
T23-A	04/17/20	0.0-3.0	WR Fill	ND<3	2440	95	ND<1	ND<0.8	53	40	81	ND<20	0.13 J	ND<2	34	ND<30	ND<5.0	ND<10	176	80

Notes:
1 Total chromium (CAS No. 7440-47-3) results compared to RSLs for Chromium III (CAS No. 16065-83-1).
CAS No. = Chemical Abstracts Service registry number
DTSC-SL = California Department of Toxic Substances Control Screening Level (Human Health Risk Assessment Note 3 (DTSC, 2020)
J = concentration is estimated (detected below the RL but above or equal to the MDL
MDL = method detection limit
mg/kg = milligrams per kilogram, or parts per million (ppm)
ND = not detected above listed MDL
RL = reporting limit, or pratical quantitation limit
RSL = USEPA Region 9 Regional Screening Level
STLC = Soluble Threshold Limit Concentration
TTLC = Total Threshold Limit Concentration

Table 4. Acid Base Accounting for Solid Samples

Brunswick Industrial Site

Nevada County, California

					Results							
Parameter	**Method**	**Units**	**MDL**	**RL**	**T1-A**	**T7-C**	**T14-B**	**T14A-B**	**T18-A**	**T20-A**	**T21A-A**	**T23-A**
Date					*04/16/20*	*04/16/20*	*04/16/20*	*04/16/20*	*04/16/20*	*04/17/20*	*04/17/20*	*04/17/20*
Depth (ft)					*0.0- 2.5*	*7.5-8.0*	*4.0-8.0*	*4.0-4.5*	*0.0-4.0*	*0.5-2.0*	*0.0-3.0*	*0.0-3.0*
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	t CaCO3/Kt	*0.31*	*3.1*	2.81 J	4.06	11.6	0.94 J	10.6	7.5	7.5	4.69
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	t CaCO3/Kt	1	5	103	97	104	1	18	3	8	0
Neutralization Potential as $CaCO_3$	M600/2-78-054 3.2.3	%	0.1	0.5	10.3	9.7	10.4	0.1 J	1.8	0.3 J	0.8	ND<0.1
Ratio NP:AGP	--	--	--	--	37	24	9.0	1.1	1.7	0.4	1.1	0
pH, Saturated Paste	EPA 600/2-78-054 sec	units	0.1	0.1	8.3	8.2	7.3	7.4	7.6	6.2	7.1	4.8
Sulfur Organic Residual	M600/2-78-054 3.2.4	%	0.01	0.1	0.09 J	0.08 J	0.18	0.02 J	0.14	0.11	0.14	0.1
Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	%	0.01	0.1	0.04 J	0.02 J	0.15	ND<0.01	0.19	0.1	0.04 J	0.02 J
Sulfur Sulfate	M600/2-78-054 3.2.4	%	0.01	0.1	ND<0.01	0.03 J	0.04 J	0.01 J	0.01 J	0.03 J	0.06 J	0.03 J
Sulfur Total	M600/2-78-054 3.2.4	%	0.01	0.1	0.09 J	0.13	0.37	0.03 J	0.34	0.24	0.24	0.15
Total Sulfur minus Sulfate	M600/2-78-054 3.2.4	%	0.01	0.1	0.13	0.1	0.33	0.02 J	0.33	0.21	0.18	0.12

Notes:

AGP = Acid Generation Potential

J = estimated trace value was detected between RL and MDL

MDL = method detection limit

ND = not detected above listed MDL

NP = Neutraliztaion Potential

RL = reporting limit

APPENDIX A

The EDR Radius Map™ Report with GeoCheck®
The EDR Aerial Photo Decade Package
Certified Sanborn® Map Report
EDR Historical Topographic Map Report
The EDR-City Directory Image Report

Brunswick Industrial Site
East Bennett Rd
Grass Valley, CA 95945

Inquiry Number: 5940744.2s
January 21, 2020

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION **PAGE**

GEOCHECK ADDENDUM

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

EAST BENNETT RD
GRASS VALLEY, CA 95945

COORDINATES

Latitude (North):	39.2093590 - 39˚ 12' 33.69''
Longitude (West):	121.0160810 - 121˚ 0' 57.89''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	671295.0
UTM Y (Meters):	4341676.5
Elevation:	2732 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5603376 GRASS VALLEY, CA
Version Date:	2012
East Map:	5630285 CHICAGO PARK, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140713
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
EAST BENNETT RD
GRASS VALLEY, CA 95945

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	CAMBRIDGE QTZ.		MINES MRDS	Lower	1 ft.
A2	SIERRA PAC IND	12791 BRUNSWICK RD	NPDES, CIWQS	Higher	1 ft.
A3	CUTTING EDGE WOOD RE	12791 BRUNSWICK ROAD	RGA LF	Higher	1 ft.
4	BRUNSWICK		MINES MRDS	Higher	1 ft.
B5	EAST GRASS VALLEY CO	12524 BRUNSWICK	SWEEPS UST, HIST UST	Higher	30, 0.006, North
B6	BRUNSWICK SAWMILL	CORNER OF BRUNSWICK	HIST UST	Higher	69, 0.013, NNW
B7	BRUNSWICK SAWMILL	CORNER OF BRUNSWICK	HIST UST	Higher	69, 0.013, NNW
B8	BOHEMIA INC	BENNETT & BRUNSWICK	SEMS-ARCHIVE, RCRA-SQG, DEED, HAZNET, CERS	Higher	93, 0.018, NNW
B9	SIERRA PACIFIC INDUS	12503 BRUNSWICK ROAD	ENVIROSTOR, CPS-SLIC	Higher	93, 0.018, NNW
10	FARBER PROPERTY	12110 BENNETT RD	CUPA Listings	Lower	406, 0.077, WNW
11	RISE GRASS VALLEY IN	12381 BRUNSWICK RD	CUPA Listings	Higher	790, 0.150, NNW
12	PACIFIC BELL	23337 HWY 49	UST	Higher	1055, 0.200, North
C13	COULTER RESIDENCE	13192 BRUNSWICK ROAD	LUST	Higher	1488, 0.282, SSE
C14	PRIVATE RESIDENCE	PRIVATE RESIDENCE	LUST	Higher	1499, 0.284, SSE
C15	KINGDOM HALL	15254 BRUNSWICK	LUST, HIST CORTESE, CERS	Higher	1554, 0.294, SSE
16	VALMONT CORPORATION	13421 GRASS VALLEY A	ENVIROSTOR, HIST UST	Higher	1842, 0.349, NNE
17	ART'S CEDAR RIDGE GA	12685 HWY 174	LUST, HIST CORTESE	Higher	2474, 0.469, SSW
18	LANMARK CIRCUITS INC	400 CROWN POINT CIRC	ENVIROSTOR, CUPA Listings, NPDES	Higher	2491, 0.472, NW
19	LOMA RICA RANCH	12280 LOMA RICA DRIV	ENVIROSTOR, VCP	Higher	2586, 0.490, North
20	LANMARK CIRCUITS, IN	12520 LOMA RICA	RCRA-VSQG, ENVIROSTOR, FINDS, ECHO	Higher	3426, 0.649, NNE
D21	AGATE SALES INC	11429 EAST BENNETT S	ENVIROSTOR, CPS-SLIC, CERS	Lower	4003, 0.758, WNW
D22	LAUSMANN LUMBER	11452 EAST BENNETT R	ENVIROSTOR	Lower	4109, 0.778, WNW
23	ELEMENTARY SCHOOL SI	11722 COLFAX HIGHWAY	ENVIROSTOR, SCH	Lower	4297, 0.814, WSW
E24	FAMILIAN PIPE AND SU	10403 IDAHO MARYLAND	EDR MGP	Lower	4915, 0.931, NW
E25	FAMILIAN PIPE AND SU	10403 IDAHO MARYLAND	ENVIROSTOR	Lower	4915, 0.931, NW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL	National Priority List
Proposed NPL	Proposed National Priority List Sites
NPL LIENS	Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL	National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY	Federal Facility Site Information listing
SEMS	Superfund Enterprise Management System

Federal RCRA CORRACTS facilities list

CORRACTS	Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF	RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG	RCRA - Large Quantity Generators
RCRA-VSQG	RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS	Land Use Control Information System
US ENG CONTROLS	Engineering Controls Sites List
US INST CONTROL	Sites with Institutional Controls

Federal ERNS list

ERNS	Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE	State Response Sites

State and tribal landfill and/or solid waste disposal site lists

SWF/LF	Solid Waste Information System

State and tribal leaking storage tank lists

INDIAN LUST	Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST	Underground Storage Tank Listing
AST	Aboveground Petroleum Storage Tank Facilities
INDIAN UST	Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP	Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS	Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS	A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT	Waste Management Unit Database
SWRCY	Recycler Database
HAULERS	Registered Waste Tire Haulers Listing
INDIAN ODI	Report on the Status of Open Dumps on Indian Lands
ODI	Open Dump Inventory
DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS	Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL	Delisted National Clandestine Laboratory Register
HIST Cal-Sites	Historical Calsites Database
SCH	School Property Evaluation Program
CDL	Clandestine Drug Labs
CERS HAZ WASTE	CERS HAZ WASTE
Toxic Pits	Toxic Pits Cleanup Act Sites
US CDL	National Clandestine Laboratory Register
PFAS	PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

CERS TANKS	California Environmental Reporting System (CERS) Tanks

CA FID UST	Facility Inventory Database

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
ECHO	Enforcement & Compliance History Information
UXO	Unexploded Ordnance Sites
DOCKET HWC	Hazardous Waste Compliance Docket Listing
FUELS PROGRAM	EPA Fuels Program Registered Listing

EXECUTIVE SUMMARY

CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
ICE	ICE
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
CERS	CERS
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Auto	EDR Exclusive Historical Auto Stations
EDR Hist Cleaner	EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LUST	Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

STANDARD ENVIRONMENTAL RECORDS

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

A review of the SEMS-ARCHIVE list, as provided by EDR, and dated 10/25/2019 has revealed that there is 1 SEMS-ARCHIVE site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BOHEMIA INC Site ID: 0901701 EPA Id: CAD098862808	***BENNETT & BRUNSWICK***	***NNW 0 - 1/8 (0.018 mi.)***	***B8***	***15***

Federal RCRA generators list

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 12/16/2019 has revealed that there is 1 RCRA-SQG site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BOHEMIA INC EPA ID:: CAD098862808	***BENNETT & BRUNSWICK***	***NNW 0 - 1/8 (0.018 mi.)***	***B8***	***15***

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 10/28/2019 has revealed that there are 9 ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SIERRA PACIFIC INDUS Facility Id: 29240001 Status: Refer: RWQCB	***12503 BRUNSWICK ROAD***	***NNW 0 - 1/8 (0.018 mi.)***	***B9***	***18***
VALMONT CORPORATION Facility Id: 29350001 Status: No Further Action	***13421 GRASS VALLEY A***	***NNE 1/4 - 1/2 (0.349 mi.)***	***16***	***26***
LANMARK CIRCUITS INC Facility Id: 71003084 Status: Inactive - Needs Evaluation	***400 CROWN POINT CIRC***	***NW 1/4 - 1/2 (0.472 mi.)***	***18***	***30***
LOMA RICA RANCH Facility Id: 29100023 Status: Inactive - Action Required	***12280 LOMA RICA DRIV***	***N 1/4 - 1/2 (0.490 mi.)***	***19***	***44***
LANMARK CIRCUITS, IN Facility Id: 29360008 Status: Refer: Other Agency	***12520 LOMA RICA***	***NNE 1/2 - 1 (0.649 mi.)***	***20***	***48***

Lower Elevation	Address	Direction / Distance	Map ID	Page
AGATE SALES INC Facility Id: 29240011 Status: Refer: Other Agency	***11429 EAST BENNETT S***	***WNW 1/2 - 1 (0.758 mi.)***	***D21***	***51***
LAUSMANN LUMBER Facility Id: 29240012 Status: Refer: RWQCB	11452 EAST BENNETT R	WNW 1/2 - 1 (0.778 mi.)	D22	53
ELEMENTARY SCHOOL SI Facility Id: 29820003 Status: No Action Required	***11722 COLFAX HIGHWAY***	***WSW 1/2 - 1 (0.814 mi.)***	***23***	***54***
FAMILIAN PIPE AND SU Facility Id: 29490005 Status: Refer: RWQCB	10403 IDAHO MARYLAND	NW 1/2 - 1 (0.931 mi.)	E25	57

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there are 4 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
COULTER RESIDENCE Database: LUST REG 5, Date of Government Version: 07/01/2008	13192 BRUNSWICK ROAD	SSE 1/4 - 1/2 (0.282 mi.)	C13	21

Status: Case Closed

PRIVATE RESIDENCE	PRIVATE RESIDENCE	SSE 1/4 - 1/2 (0.284 mi.)	C14	22

Database: LUST, Date of Government Version: 09/09/2019
Status: Completed - Case Closed
Global Id: T0605784100

KINGDOM HALL	***15254 BRUNSWICK***	***SSE 1/4 - 1/2 (0.294 mi.)***	***C15***	***24***

Database: LUST REG 5, Date of Government Version: 07/01/2008
Database: LUST, Date of Government Version: 09/09/2019
Status: Completed - Case Closed
Status: Pollution Characterization
Global Id: T0605700031

ART'S CEDAR RIDGE GA	***12685 HWY 174***	***SSW 1/4 - 1/2 (0.469 mi.)***	***17***	***28***

Database: LUST REG 5, Date of Government Version: 07/01/2008
Database: LUST, Date of Government Version: 09/09/2019
Status: Completed - Case Closed
Status: Case Closed
Global Id: T0605700131

CPS-SLIC: Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the CPS-SLIC list, as provided by EDR, has revealed that there is 1 CPS-SLIC site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SIERRA PACIFIC INDUS	***12503 BRUNSWICK ROAD***	***NNW 0 - 1/8 (0.018 mi.)***	***B9***	***18***

Database: SLIC REG 5, Date of Government Version: 04/01/2005
Database: CPS-SLIC, Date of Government Version: 09/09/2019
Facility Status: Completed - Case Closed
Global Id: SL0605738327

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, has revealed that there is 1 UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PACIFIC BELL	23337 HWY 49	N 1/8 - 1/4 (0.200 mi.)	12	21

Database: UST, Date of Government Version: 09/09/2019
Facility Id: 29-000-057450

EXECUTIVE SUMMARY

State and tribal voluntary cleanup sites

VCP: Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC’s costs.

A review of the VCP list, as provided by EDR, and dated 10/28/2019 has revealed that there is 1 VCP site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
LOMA RICA RANCH Status: Inactive - Action Required Facility Id: 29100023	***12280 LOMA RICA DRIV***	***N 1/4 - 1/2 (0.490 mi.)***	***19***	***44***

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Registered Storage Tanks

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990’s. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is 1 SWEEPS UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EAST GRASS VALLEY CO Comp Number: 43350	***12524 BRUNSWICK***	***N 0 - 1/8 (0.006 mi.)***	***B5***	***12***

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 3 HIST UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EAST GRASS VALLEY CO Facility Id: 00000043350	***12524 BRUNSWICK***	***N 0 - 1/8 (0.006 mi.)***	***B5***	***12***
BRUNSWICK SAWMILL	CORNER OF BRUNSWICK	NNW 0 - 1/8 (0.013 mi.)	B6	13
BRUNSWICK SAWMILL Facility Id: 00000051578	CORNER OF BRUNSWICK	NNW 0 - 1/8 (0.013 mi.)	B7	14

Local Land Records

DEED: The use of recorded land use restrictions is one of the methods the DTSC uses to protect the public from unsafe exposures to hazardous substances and wastes .

A review of the DEED list, as provided by EDR, and dated 09/03/2019 has revealed that there is 1 DEED site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BOHEMIA INC Status: COMPLETED - CASE CLOSED Envirostor ID: SL0605738327	***BENNETT & BRUNSWICK***	***NNW 0 - 1/8 (0.018 mi.)***	***B8***	***15***

Other Ascertainable Records

CUPA Listings: A listing of sites included in the county’s Certified Unified Program Agency database. California’s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

A review of the CUPA Listings list, as provided by EDR, has revealed that there are 2 CUPA Listings sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
RISE GRASS VALLEY IN Database: CUPA NEVADA, Date of Government Version: 10/30/2019 Facility Id: FA0005520	12381 BRUNSWICK RD	NNW 1/8 - 1/4 (0.150 mi.)	11	21

Lower Elevation	Address	Direction / Distance	Map ID	Page
FARBER PROPERTY Database: CUPA NEVADA, Date of Government Version: 10/30/2019 Facility Id: FA0000582	12110 BENNETT RD	WNW 0 - 1/8 (0.077 mi.)	10	20

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there are 2 HIST CORTESE sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
KINGDOM HALL Reg Id: 290047	***15254 BRUNSWICK***	***SSE 1/4 - 1/2 (0.294 mi.)***	***C15***	***24***
ART’S CEDAR RIDGE GA Reg Id: 290164	***12685 HWY 174***	***SSW 1/4 - 1/2 (0.469 mi.)***	***17***	***28***

EXECUTIVE SUMMARY

NPDES: A listing of NPDES permits, including stormwater.

A review of the NPDES list, as provided by EDR, and dated 11/11/2019 has revealed that there is 1 NPDES site within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SIERRA PAC IND	***12791 BRUNSWICK RD***	***0 - 1/8 (0.000 mi.)***	***A2***	***9***

CIWQS: The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

A review of the CIWQS list, as provided by EDR, and dated 09/03/2019 has revealed that there is 1 CIWQS site within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SIERRA PAC IND	***12791 BRUNSWICK RD***	***0 - 1/8 (0.000 mi.)***	***A2***	***9***

MINES MRDS: Mineral Resources Data System

A review of the MINES MRDS list, as provided by EDR, and dated 04/06/2018 has revealed that there are 2 MINES MRDS sites within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BRUNSWICK		0 - 1/8 (0.000 mi.)	4	11

Lower Elevation	Address	Direction / Distance	Map ID	Page
CAMBRIDGE QTZ.		0 - 1/8 (0.000 mi.)	1	8

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

A review of the EDR MGP list, as provided by EDR, has revealed that there is 1 EDR MGP site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
FAMILIAN PIPE AND SU	10403 IDAHO MARYLAND	NW 1/2 - 1 (0.931 mi.)	E24	57

EXECUTIVE SUMMARY

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

A review of the RGA LF list, as provided by EDR, has revealed that there is 1 RGA LF site within approximately 0.001 miles of the target property.

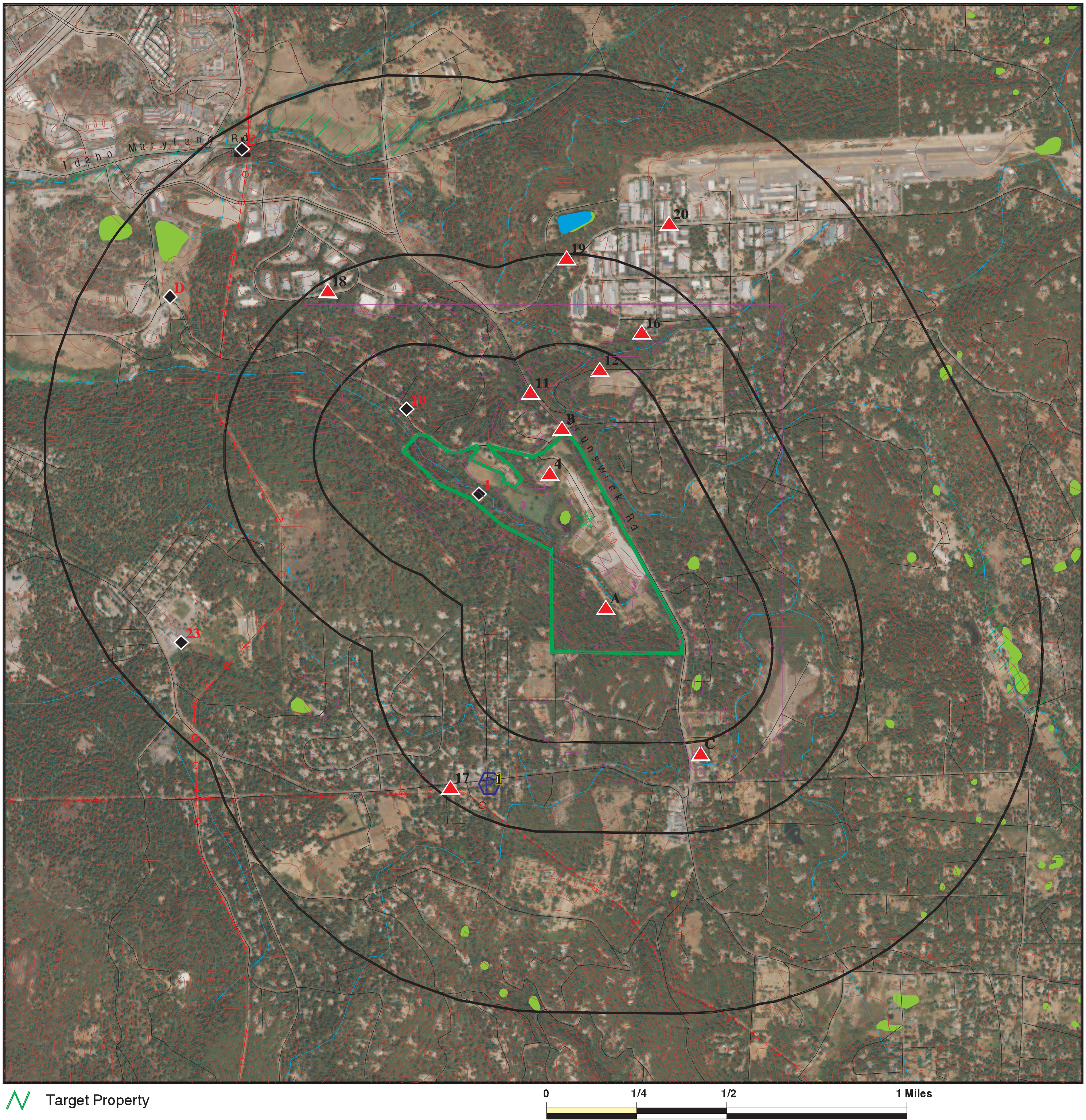
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CUTTING EDGE WOOD RE Facility ID: 29-AA-0017	12791 BRUNSWICK ROAD	0 - 1/8 (0.000 mi.)	A3	11

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 3 records.

Site Name	Database(s)
CENTENNIAL M-1 PROPERTY	ENVIROSTOR, VCP
CALTRANS RIGHT-OF-WAY	CPS-SLIC
LOMA RICA ADMINISTRATION SITE	ENVIROSTOR

OVERVIEW MAP - 5940744.2S



- Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

- Indian Reservations BIA
- Power transmission lines
- ▨ Special Flood Hazard Area (1%)
- ▨ 0.2% Annual Chance Flood Hazard
- 🟩 National Wetland Inventory
- State Wetlands

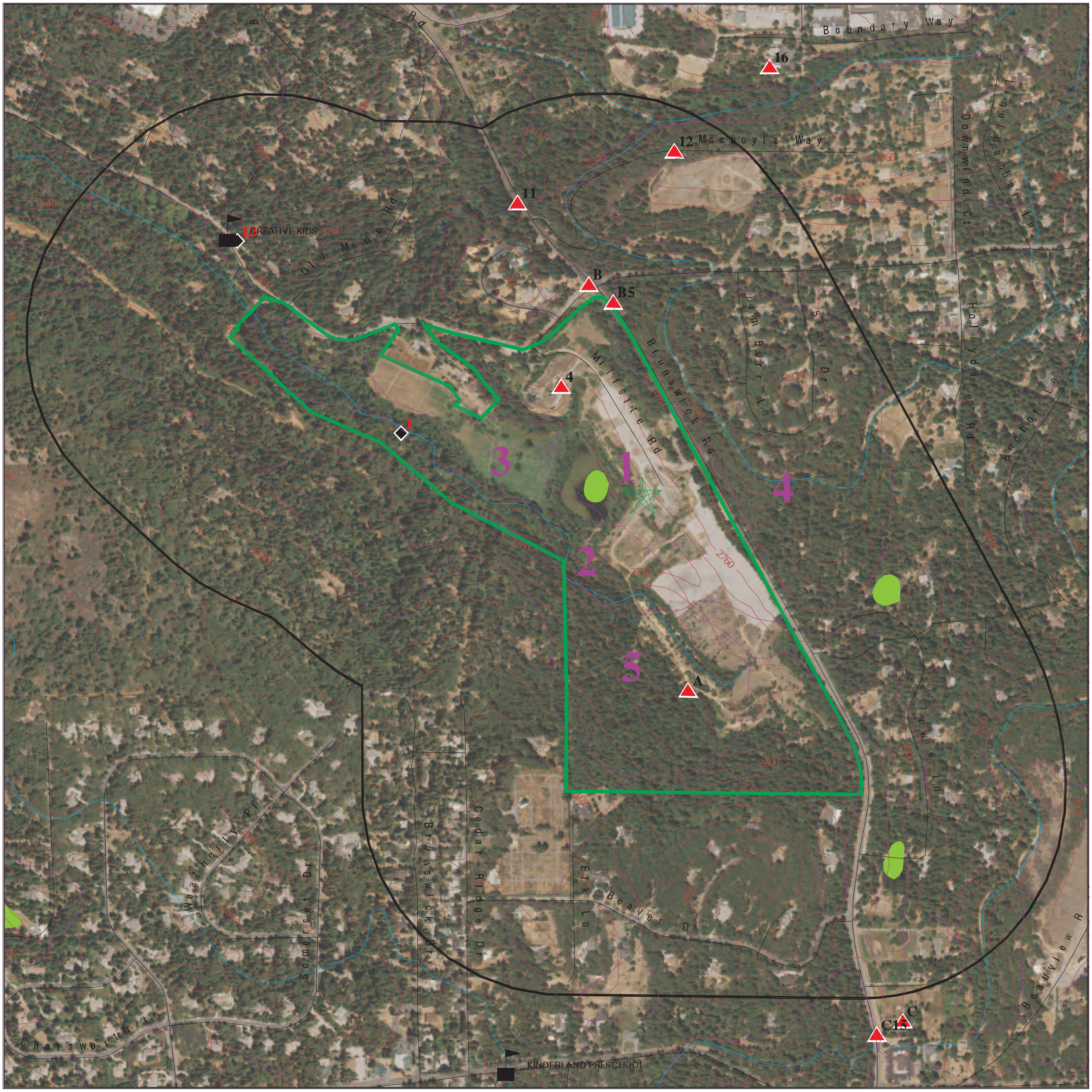
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Brunswick Industrial Site
ADDRESS: East Bennett Rd
Grass Valley CA 95945
LAT/LONG: 39.209359 / 121.016081

CLIENT: Holdrege & Kull Consultants
CONTACT: Julie Turnross
INQUIRY #: 5940744.2s
DATE: January 21, 2020 12:48 pm

DETAIL MAP - 5940744.2S



0 1/8 1/4 1/2 Miles

- Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- ▨ National Priority List Sites
- ▨ Dept. Defense Sites
- ▨ Indian Reservations BIA
- ▨ Special Flood Hazard Area (1%)
- ▨ 0.2% Annual Chance Flood Hazard
- 🟩 National Wetland Inventory
- 🟩 State Wetlands
- ▦ Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Brunswick Industrial Site
ADDRESS: East Bennett Rd
Grass Valley CA 95945
LAT/LONG: 39.209359 / 121.016081

CLIENT: Holdrege & Kull Consultants
CONTACT: Julie Turnross
INQUIRY #: 5940744.2s
DATE: January 21, 2020 12:52 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		1	0	0	NR	NR	1
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		1	0	NR	NR	NR	1
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		1	0	3	5	NR	9
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	4	NR	NR	4

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		1	0	0	NR	NR	1
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	1	NR	NR	NR	1
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	1	NR	NR	1
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		1	0	NR	NR	NR	1
HIST UST	0.250		3	0	NR	NR	NR	3
CERS TANKS	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		1	0	0	NR	NR	1
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		1	1	NR	NR	NR	2

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	2	NR	NR	2
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		1	NR	NR	NR	NR	1
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		1	NR	NR	NR	NR	1
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
MINES MRDS	0.001		2	NR	NR	NR	NR	2
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	1	NR	1
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		1	NR	NR	NR	NR	1
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	15	2	10	6	0	33

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1	**CAMBRIDGE QTZ.**	**MINES MRDS**	**1025517398** **N/A**
< 1/8 **1 ft.**	**GRASS VALLEY, CA 95945**		

Relative:
Lower

Actual:
2682 ft.

MINES MRDS:

Name:	CAMBRIDGE QTZ.
Address:	Not reported
Deposit identification Number:	10007497
City,State,Zip:	GRASS VALLEY, CALIFORNIA 95945
URL:	https://mrdata.usgs.gov/mrds/show-mrds.php?dep_id=10007497
MRDS Identification Number:	C011374
MAS/MILS Identification Number:	Not reported
Region:	NA
Country:	United States
Primary Commodities:	Gold
Secondary Commodities:	Not reported
Tertiary Commodities:	Not reported
Operation Type:	Unknown
Deposit Type:	Not reported
Production Size:	S - Small amount of material produced (we do not know what criteria are used to make this determination)
Development Status:	Past Producer
Ore Minerals or Materials:	Not reported
Gangue Minerals or Materials:	Quartz
Other Minerals or Materials:	Not reported
Ore Body Form:	Not reported
Workings Type:	Not reported
Mineral Deposit Model:	Not reported
Alteration Processes:	Not reported
Concentration Processes:	Not reported
Previous Names:	Not reported
Ore Controls:	Not reported
Reporter:	Bowman, J. And Albers, J.
Host Rock Unit Name:	Not reported
Host Rock Type:	Not reported
Associated Rock Unit Name:	Not reported
Associated Rock Type Code:	Not reported
Structural Characteristics:	Not reported
Tectonic Setting:	Not reported
References:	Not reported
First Production Year:	Not reported
Began Before/After FPY:	Not reported
Last Production Year:	Not reported
Ended Before/After LPY:	Not reported
Year Discovered:	Not reported
Found Before/After YD:	Not reported
Production History:	Not reported
Discovery Information:	Not reported
Latitude:	39.21045
Longitude:	-121.02159

A2	**SIERRA PAC IND**	**NPDES**	**S117710765**
	12791 BRUNSWICK RD	**CIWQS**	**N/A**
< 1/8	**GRASS VALLEY, CA 95945**		
1 ft.			
	Site 1 of 2 in cluster A		

Relative:
Higher

Actual:
2782 ft.

NPDES:

Name:	SIERRA PAC IND
Address:	12791 BRUNSWICK RD
City,State,Zip:	GRASS VALLEY, CA 95945
Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	5S29I001763
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Terminated
Status Date:	03/30/1992
Operator Name:	Sierra Pacific Industries R5S
Operator Address:	680 PO Box
Operator City:	Camino
Operator State:	California
Operator Zip:	95709

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	5S
Regulatory Measure ID:	269924
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	5S29I001763
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	03/30/1992
Status:	Terminated

SIERRA PAC IND (Continued) **S117710765**

Status Date:	03/30/1992
Place Size:	79
Place Size Unit:	Acres
Contact:	Gary Cantrell
Contact Title:	Not reported
Contact Phone:	916-645-1631
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Sierra Pacific Industries R5S
Operator Address:	680 PO Box
Operator City:	Camino
Operator State:	California
Operator Zip:	95709
Operator Contact:	Gary Cantrell
Operator Contact Title:	Not reported
Operator Contact Phone:	916-645-1631
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	916-645-1631
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Little Wolf Creek
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	2421-Sawmills and Planing Mills, General
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

CIWQS:

Name:	SIERRA PAC IND

SIERRA PAC IND (Continued)   **S117710765**

Address: 12791 BRUNSWICK RD
City,State,Zip: GRASS VALLEY, CA 95945
Agency: Sierra Pacific Industries R5S
Agency Address: 680 PO Box, Camino, CA 95709
Place/Project Type: Industrial - Sawmills and Planing Mills, General
SIC/NAICS: 2421
Region: 5S
Program: INDSTW
Regulatory Measure Status: Terminated
Regulatory Measure Type: Storm water industrial
Order Number: 2014-0057-DWQ
WDID: 5S29I001763
NPDES Number: CAS000001
Adoption Date: Not reported
Effective Date: 03/30/1992
Termination Date: Not reported
Expiration/Review Date: Not reported
Design Flow: Not reported
Major/Minor: Not reported
Complexity: Not reported
TTWQ: Not reported
Enforcement Actions within 5 years: 0
Violations within 5 years: 0
Latitude: Not reported
Longitude: Not reported

A3   **CUTTING EDGE WOOD RECY.-SPI BOHEMIA MILL**   **RGA LF**   **S114726982**
12791 BRUNSWICK ROAD   **N/A**
< 1/8   **GRASS VALLEY, CA**
1 ft.

Site 2 of 2 in cluster A

Relative:
Higher

Actual:
2782 ft.

RGA LF:
Name: CUTTING EDGE WOOD RECY.-SPI BOHEMIA MILL
Address: 12791 BRUNSWICK ROAD
City: GRASS VALLEY
State: GRASS VALLEY
2010   CUTTING EDGE WOOD RECY.-SPI BOHEMIA MILL   12791 BRUNSWICK ROAD

---

4   **BRUNSWICK**   **MINES MRDS**   **1025645892**
N/A
< 1/8   **GRASS VALLEY, CA 95945**
1 ft.

Relative:
Higher

Actual:
2752 ft.

MINES MRDS:
Name: BRUNSWICK
Address: Not reported
Deposit identification Number: 10164420
City,State,Zip: GRASS VALLEY, CALIFORNIA 95945
URL: https://mrdata.usgs.gov/mrds/show-mrds.php?dep_id=10164420
MRDS Identification Number: C011234
MAS/MILS Identification Number: 0060570352
Region: NA
Country: United States
Primary Commodities: Gold
Secondary Commodities: Not reported

BRUNSWICK (Continued) **1025645892**

Tertiary Commodities: Silver
Operation Type: Surface-Underground
Deposit Type: Not reported
Production Size: Not reported
Development Status: Past Producer
Ore Minerals or Materials: Not reported
Gangue Minerals or Materials: Not reported
Other Minerals or Materials: Not reported
Ore Body Form: Not reported
Workings Type: Not reported
Mineral Deposit Model: Not reported
Alteration Processes: Not reported
Concentration Processes: Not reported
Previous Names: New Brunswick
Ore Controls: Not reported
Reporter: Unknown
Host Rock Unit Name: Not reported
Host Rock Type: Not reported
Associated Rock Unit Name: Not reported
Associated Rock Type Code: Not reported
Structural Characteristics: Not reported
Tectonic Setting: Not reported
References: Not reported
First Production Year: Not reported
Began Before/After FPY: Not reported
Last Production Year: Not reported
Ended Before/After LPY: Not reported
Year Discovered: Not reported
Found Before/After YD: Not reported
Production History: Not reported
Discovery Information: Not reported
Latitude: 39.21129
Longitude: -121.01793

B5 **EAST GRASS VALLEY CONGREGRATIO** **SWEEPS UST** **U001617007**
North **12524 BRUNSWICK** **HIST UST** **N/A**
< 1/8 **GRASS VALLEY, CA 95945**
0.006 mi.
30 ft. **Site 1 of 5 in cluster B**

Relative:
Higher

Actual:
2797 ft.

SWEEPS UST:
Name: JEHOVAHS WITNESS - KINGDOM HAL
Address: 12524 BRUNSWICK
City: GRASS VALLEY
Status: Not reported
Comp Number: 43350
Number: Not reported
Board Of Equalization: 44-015598
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 29-000-043350-000001
Tank Status: Not reported
Capacity: 500
Active Date: Not reported
Tank Use: M.V. FUEL
STG: PRODUCT

EAST GRASS VALLEY CONGREGRATIO (Continued) **U001617007**

Content: DIESEL
Number Of Tanks: 1

HIST UST:
Name: EAST GRASS VALLEY CONGREGRATIO
Address: 12524 BRUNSWICK
City,State,Zip: GRASS VALLEY, CA 95945
File Number: 0001F084
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0001F084.pdf
Region: STATE
Facility ID: 00000043350
Facility Type: Other
Other Type: Not reported
Contact Name: Not reported
Telephone: 9162731918
Owner Name: EAST GRASS VALLEY CONGREGRATIO
Owner Address: 12524 BRUNSWICK
Owner City,St,Zip: GRASS VALLEY, CA 95945
Total Tanks: 0001

Tank Num: 001
Container Num: 1
Year Installed: 1974
Tank Capacity: 00000500
Tank Used for: PRODUCT
Type of Fuel: DIESEL
Container Construction Thickness: Not reported
Leak Detection: Pressure Test

Click here for Geo Tracker PDF:

B6 **BRUNSWICK SAWMILL** **HIST UST** **S118408165**
NNW **CORNER OF BRUNSWICK AND BENNETT** **N/A**
< 1/8 **GRASS VALLEY, CA 95945**
0.013 mi.
69 ft. **Site 2 of 5 in cluster B**

Relative:
Higher

Actual:
2802 ft.

HIST UST:
Name: BRUNSWICK SAWMILL
Address: CORNER OF BRUNSWICK AND BENNETT
City,State,Zip: GRASS VALLEY, CA 95945
File Number: 0001F042
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0001F042.pdf
Region: Not reported
Facility ID: Not reported
Facility Type: Not reported
Other Type: Not reported
Contact Name: Not reported
Telephone: Not reported
Owner Name: Not reported
Owner Address: Not reported
Owner City,St,Zip: Not reported
Total Tanks: Not reported

Tank Num: Not reported
Container Num: Not reported
Year Installed: Not reported

BRUNSWICK SAWMILL (Continued) **S118408165**

Tank Capacity:	Not reported
Tank Used for:	Not reported
Type of Fuel:	Not reported
Container Construction Thickness:	Not reported
Leak Detection:	Not reported

Click here for Geo Tracker PDF:

B7
NNW
< 1/8
0.013 mi.
69 ft.

BRUNSWICK SAWMILL
CORNER OF BRUNSWICK & BENNETT
GRASS VALLEY, CA 95945

HIST UST **U001616980**
N/A

Site 3 of 5 in cluster B

Relative:
Higher

Actual:
2802 ft.

HIST UST:

Name:	BRUNSWICK SAWMILL
Address:	CORNER OF BRUNSWICK & BENNETT
City,State,Zip:	GRASS VALLEY, CA 95945
File Number:	Not reported
URL:	Not reported
Region:	STATE
Facility ID:	00000051578
Facility Type:	Other
Other Type:	SAWMILL
Contact Name:	JERRY ROGERS
Telephone:	9162739572
Owner Name:	BOHEMIA INC.
Owner Address:	CORNER OF BRUNSWICK & BENNETT
Owner City,St,Zip:	GRASS VALLEY, CA 95945
Total Tanks:	0003

Tank Num:	001
Container Num:	2
Year Installed:	1977
Tank Capacity:	00001000
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	Stock Inventor

Tank Num:	002
Container Num:	4
Year Installed:	1977
Tank Capacity:	00012000
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	7/8
Leak Detection:	Stock Inventor

Tank Num:	003
Container Num:	101
Year Installed:	Not reported
Tank Capacity:	00001000
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	Not reported
Leak Detection:	Stock Inventor

B8	**BOHEMIA INC**	**SEMS-ARCHIVE**	**1015732819**
NNW	**BENNETT & BRUNSWICK**	**RCRA-SQG**	**CAD098862808**
< 1/8	**GRASS VALLEY, CA 95945**	**DEED**	
0.018 mi.		**HAZNET**	
93 ft.	**Site 4 of 5 in cluster B**	**CERS**	

Relative:
Higher

Actual:
2805 ft.

SEMS Archive:

Site ID:	0901701
EPA ID:	CAD098862808
Cong District:	14
FIPS Code:	06057
FF:	N
NPL:	Not on the NPL
Non NPL Status:	NFRAP-Site does not qualify for the NPL based on existing information

SEMS Archive Detail:

Region:	09
Site ID:	0901701
EPA ID:	CAD098862808
Site Name:	BOHEMIA INC
NPL:	N
FF:	N
OU:	00
Action Code:	SI
Action Name:	SI
SEQ:	1
Start Date:	Not reported
Finish Date:	1985-05-01 05:00:00
Qual:	N
Current Action Lead:	EPA Perf

Region:	09
Site ID:	0901701
EPA ID:	CAD098862808
Site Name:	BOHEMIA INC
NPL:	N
FF:	N
OU:	00
Action Code:	VS
Action Name:	ARCH SITE
SEQ:	1
Start Date:	Not reported
Finish Date:	1985-05-01 05:00:00
Qual:	Not reported
Current Action Lead:	EPA Perf In-Hse

Region:	09
Site ID:	0901701
EPA ID:	CAD098862808
Site Name:	BOHEMIA INC
NPL:	N
FF:	N
OU:	00
Action Code:	PA
Action Name:	PA
SEQ:	1
Start Date:	Not reported
Finish Date:	1985-05-01 05:00:00
Qual:	H
Current Action Lead:	EPA Perf

BOHEMIA INC (Continued) **1015732819**

Region: 09
Site ID: 0901701
EPA ID: CAD098862808
Site Name: BOHEMIA INC
NPL: N
FF: N
OU: 00
Action Code: DS
Action Name: DISCVRY
SEQ: 1
Start Date: 1985-01-01 06:00:00
Finish Date: 1985-01-01 06:00:00
Qual: Not reported
Current Action Lead: EPA Perf

RCRA-SQG:
Date form received by agency: 1992-10-09 00:00:00.0
Facility name: SIERRA PACIFIC IND
Facility address: 12503 BRUNSWICK RD
GRASS VALLEY, CA 95945
EPA ID: CAD098862808
Contact: GARY CANTRELL
Contact address: P O BOX 670
LINCOLN, CA 95648
Contact country: US
Contact telephone: 916-645-1631
Contact email: Not reported
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:
Owner/operator name: SIERRA PACIFIC IND
Owner/operator address: P O BOX 496011
REDDING, CA 96049
Owner/operator country: Not reported
Owner/operator telephone: 916-365-3721
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: NOT REQUIRED
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: 415-555-1212
Owner/operator email: Not reported

BOHEMIA INC (Continued) **1015732819**

Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

DEED:

Name:	SIERRA PACIFIC INDUSTRIES - GRASS VALLEY MILL
Address:	12503 BRUNSWICK ROAD
City,State,Zip:	GRASS VALLEY, CA 95945
Envirostor ID:	SL0605738327
Area:	Not reported
Sub Area:	Not reported
Site Type:	SLIC
Status:	COMPLETED - CASE CLOSED
Agency:	SWRCB
Covenant Uploaded:	Y
Deed Date(s):	08/17/2006
File Name:	Geotracker Land Use/Deed Restrictions

HAZNET:

Name:	SIERRA PACIFIC IND
Address:	12503 BRUNSWICK RD
City,State,Zip:	GRASS VALLEY, CA 959450000
Year:	2002
GEPAID:	CAD098862808
Contact:	UNDELIVERABLE SURVEY 1-25-95LH
Telephone:	9162722297
Mailing Name:	Not reported
Mailing Address:	12503 BRUNSWICK RD
Mailing City,St,Zip:	GRASS VALLEY, CA 959450000
Gen County:	Nevada
TSD EPA ID:	CAT080013352
TSD County:	Los Angeles
Tons:	2.085
CA Waste Code:	223-Unspecified oil-containing waste
Method:	R01-Recycler

BOHEMIA INC (Continued) **1015732819**

Facility County: Nevada

CERS:

Name:	SIERRA PACIFIC INDUSTRIES - GRASS VALLEY MILL
Address:	12503 BRUNSWICK ROAD
City,State,Zip:	GRASS VALLEY, CA 95945
Site ID:	194261
CERS ID:	SL0605738327
CERS Description:	Cleanup Program Site

Affiliation:

Affiliation Type Desc:	Regional Board Caseworker
Entity Name:	zzz - CENTRAL VALLEY RWQCB (REGION 5S)
Entity Title:	Not reported
Affiliation Address:	11020 SUN CENTER DRIVE #200
Affiliation City:	RANCHO CORDOVA
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Local Agency Caseworker
Entity Name:	DAVID HUFF - NEVADA COUNTY
Entity Title:	Not reported
Affiliation Address:	950 MAIDU AVENUE
Affiliation City:	NEVADA CITY
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	5302651767

B9
NNW
< 1/8
0.018 mi.
93 ft.

SIERRA PACIFIC INDUSTRIES - GRASS VALLEY MILL
12503 BRUNSWICK ROAD
GRASS VALLEY, CA 95945

Site 5 of 5 in cluster B

ENVIROSTOR **1000206011**
CPS-SLIC **N/A**

Relative:
Higher

Actual:
2805 ft.

ENVIROSTOR:

Name:	BOHEMIA, INC
Address:	BETWEEN BENNETT AND BRUNSWICK STREET
City,State,Zip:	GRASS VALLEY, CA 95945
Facility ID:	29240001
Status:	Refer: RWQCB
Status Date:	11/16/1994
Site Code:	Not reported
Site Type:	Evaluation
Site Type Detailed:	Evaluation
Acres:	1
NPL:	NO
Regulatory Agencies:	NONE SPECIFIED
Lead Agency:	NONE SPECIFIED
Program Manager:	Not reported
Supervisor:	Referred - Not Assigned
Division Branch:	Cleanup Sacramento
Assembly:	Not reported
Senate:	Not reported
Special Program:	Not reported

SIERRA PACIFIC INDUSTRIES - GRASS VALLEY MILL (Continued) **1000206011**

Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not reported
Latitude:	0
Longitude:	0
APN:	NONE SPECIFIED
Past Use:	NONE SPECIFIED
Potential COC:	* OIL/WATER SEPARATION SLUDGE * Pesticides - Wastes From Production * UNSPECIFIED ACID SOLUTION * UNSPECIFIED SOLVENT MIXTURES
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	CAD098862808
Alias Type:	EPA Identification Number
Alias Name:	110002665973
Alias Type:	EPA (FRS #)
Alias Name:	29240001
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Screening
Completed Date:	12/13/1989
Comments:	SITE SCREENING DONE. CONTAMINATED SOILS REMOVED TO 3PPM PCP. CURRENTLY MONITORING GROUNDWATER; RWQCB PROVIDED OVERSIGHT FOR CLEANUP. RECOMMEND NO FURTHER ACTION.

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Screening
Completed Date:	03/28/1988
Comments:	SITE SCREENING DONE. SITE ON EPA CERCLIS. EPA CONDUCTED SITE INSPECTION ON 5/1/85. EMCON CURRENTLY INVESTIGATING GROUNDWATER AND SOIL FOR BOHEMIA APN 6-441-3, 4, 5, 29, 30 S31 T16N R9E

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Assessment Report
Completed Date:	01/31/1988
Comments:	PRELIMINARY ASSESSMENT DONE.

Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SLIC REG 5:

Name:	Sierra Pacific Industries (Former Bohemia-Grass Valley Mill)
Address:	12503 Brunswick Rd
City:	Grass Valley
Region:	5
Facility Status:	Remediation Underway

SIERRA PACIFIC INDUSTRIES - GRASS VALLEY MILL (Continued) **1000206011**

Unit: Facility is a Spill or site
Pollutant: VOCs
Lead Agency: ST
Date Filed: / /
Report Date: / /
Date Added: Not reported
Date Closed: Not reported

CPS-SLIC:
Name: SIERRA PACIFIC INDUSTRIES - GRASS VALLEY MILL
Address: 12503 BRUNSWICK ROAD
City,State,Zip: GRASS VALLEY, CA 95945
Region: STATE
Facility Status: **Completed - Case Closed**
Status Date: 12/19/2006
Global Id: SL0605738327
Lead Agency: CENTRAL VALLEY RWQCB (REGION 5S)
Lead Agency Case Number: Not reported
Latitude: 39.213116
Longitude: -121.017229
Case Type: Cleanup Program Site
Case Worker: ZZZ
Local Agency: NEVADA COUNTY
RB Case Number: 20539
File Location: Not reported
Potential Media Affected: Not reported
Potential Contaminants of Concern: Not reported
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

10
WNW
< 1/8
0.077 mi.
406 ft.

FARBER PROPERTY
12110 BENNETT RD
GRASS VALLEY, CA 95945

CUPA Listings **S117038102**
N/A

Relative:
Lower

Actual:
2686 ft.

CUPA NEVADA:
Name: FARBER PROPERTY
Address: 12110 BENNETT RD
City,State,Zip: GRASS VALLEY, CA 95945
Region: NEVADA
Facility Id: FA0000582
CERS ID: Not reported
Program Element: 2235 HazMat Storage Low Risk
Billing Status: Inactive
APN: 09-600-04

11
NNW
1/8-1/4
0.150 mi.
790 ft.

RISE GRASS VALLEY INC
12381 BRUNSWICK RD
GRASS VALLEY, CA 95945

CUPA Listings **S123640249**
N/A

Relative:
Higher

Actual:
2781 ft.

CUPA NEVADA:
Name: RISE GRASS VALLEY INC
Address: 12381 BRUNSWICK RD
City,State,Zip: GRASS VALLEY, CA 95945
Region: NEVADA
Facility Id: FA0005520
CERS ID: 10792774
Program Element: 2235 HazMat Storage Low Risk
Billing Status: Inactive
APN: 06-441-34

12
North
1/8-1/4
0.200 mi.
1055 ft.

PACIFIC BELL
23337 HWY 49
GRASS VALLEY, CA 95945

UST **U004049562**
N/A

Relative:
Higher

Actual:
2918 ft.

UST:
Name: PACIFIC BELL
Address: 23337 HWY 49
City,State,Zip: GRASS VALLEY, CA 95945
Facility ID: 29-000-057450
Permitting Agency: NEVADA COUNTY
Latitude: 39.21547
Longitude: -121.01535

C13
SSE
1/4-1/2
0.282 mi.
1488 ft.

COULTER RESIDENCE
13192 BRUNSWICK ROAD
GRASS VALLEY, CA 95945

Site 1 of 3 in cluster C

LUST **S105557370**
N/A

Relative:
Higher

Actual:
2843 ft.

LUST REG 5:
Name: COULTER RESIDENCE
Address: 13192 BRUNSWICK ROAD
City: GRASS VALLEY
Region: 5
Status: Case Closed
Case Number: 290195
Case Type: Drinking Water Aquifer affected
Substance: DIESEL
Staff Initials: MTS
Lead Agency: Regional
Program: LUST
MTBE Code: N/A

C14 **SSE** **1/4-1/2** **0.284 mi.** **1499 ft.**	**PRIVATE RESIDENCE** **PRIVATE RESIDENCE** **GRASS VALLEY, CA 95945** **Site 2 of 3 in cluster C**	**LUST**	**S110654802** **N/A**

Relative:
Higher

Actual:
2844 ft.

LUST:

Name:	PRIVATE RESIDENCE
Address:	PRIVATE RESIDENCE
City,State,Zip:	GRASS VALLEY, CA 95945
Lead Agency:	CENTRAL VALLEY RWQCB (REGION 5S)
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0605784100
Global Id:	T0605784100
Latitude:	39.199976
Longitude:	-121.010165
Status:	Completed - Case Closed
Status Date:	01/02/2003
Case Worker:	VJF
RB Case Number:	290195
Local Agency:	NEVADA COUNTY
File Location:	Regional Board
Local Case Number:	Not reported
Potential Media Affect:	Aquifer used for drinking water supply
Potential Contaminants of Concern:	Diesel
Site History:	Not reported

LUST:

Global Id:	T0605784100
Contact Type:	Local Agency Caseworker
Contact Name:	DAVID HUFF
Organization Name:	NEVADA COUNTY
Address:	950 MAIDU AVENUE
City:	NEVADA CITY
Email:	david.huff@co.nevada.ca.us
Phone Number:	5302651767
Global Id:	T0605784100
Contact Type:	Regional Board Caseworker
Contact Name:	VERA J. FISCHER
Organization Name:	CENTRAL VALLEY RWQCB (REGION 5S)
Address:	11020 SUN CENTER DRIVE #200
City:	RANCHO CORDOVA
Email:	vera.fischer@waterboards.ca.gov
Phone Number:	Not reported

LUST:

Global Id:	T0605784100
Action Type:	Other
Date:	06/17/2002
Action:	Leak Discovery
Global Id:	T0605784100
Action Type:	Other
Date:	06/17/2002
Action:	Leak Stopped
Global Id:	T0605784100
Action Type:	REMEDIATION

PRIVATE RESIDENCE (Continued) **S110654802**

Date:	06/17/2002
Action:	Excavation
Global Id:	T0605784100
Action Type:	Other
Date:	06/26/2002
Action:	Leak Reported
Global Id:	T0605784100
Action Type:	ENFORCEMENT
Date:	09/19/2002
Action:	Staff Letter
Global Id:	T0605784100
Action Type:	ENFORCEMENT
Date:	01/02/2003
Action:	Closure/No Further Action Letter
Global Id:	T0605784100
Action Type:	ENFORCEMENT
Date:	08/15/2002
Action:	Staff Letter
Global Id:	T0605784100
Action Type:	ENFORCEMENT
Date:	08/15/2002
Action:	Staff Letter
Global Id:	T0605784100
Action Type:	ENFORCEMENT
Date:	10/24/2002
Action:	Site Visit / Inspection / Sampling
Global Id:	T0605784100
Action Type:	RESPONSE
Date:	09/30/2002
Action:	Soil and Water Investigation Workplan
Global Id:	T0605784100
Action Type:	RESPONSE
Date:	11/12/2002
Action:	Soil and Water Investigation Report
Global Id:	T0605784100
Action Type:	ENFORCEMENT
Date:	01/02/2003
Action:	Closure/No Further Action Letter
Global Id:	T0605784100
Action Type:	RESPONSE
Date:	09/30/2002
Action:	Soil and Water Investigation Workplan

LUST:

Global Id:	T0605784100
Status:	Open - Case Begin Date
Status Date:	06/17/2002

PRIVATE RESIDENCE (Continued) **S110654802**

Global Id: T0605784100
Status: Completed - Case Closed
Status Date: 01/02/2003

C15
SSE
1/4-1/2
0.294 mi.
1554 ft.

KINGDOM HALL
15254 BRUNSWICK
GRASS VALLEY, CA 95945

LUST
HIST CORTESE
CERS

S100273458
N/A

Site 3 of 3 in cluster C

Relative:
Higher

Actual:
2851 ft.

LUST:

Name:	KINGDOM HALL
Address:	15254 BRUNSWICK RD
City,State,Zip:	GRASS VALLEY, CA 95945
Lead Agency:	NEVADA COUNTY
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0605700031
Global Id:	T0605700031
Latitude:	39.1988386
Longitude:	-121.0107771
Status:	Completed - Case Closed
Status Date:	01/08/2010
Case Worker:	GE
RB Case Number:	290047
Local Agency:	NEVADA COUNTY
File Location:	Local Agency
Local Case Number:	RO0000028
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Diesel
Site History:	Not reported

LUST:

Global Id:	T0605700031
Contact Type:	Local Agency Caseworker
Contact Name:	GRANT EISEN
Organization Name:	NEVADA COUNTY
Address:	950 MAIDU LANE
City:	NEVADA CITY
Email:	grant.eisen@co.nevada.ca.us
Phone Number:	5302651469

Global Id:	T0605700031
Contact Type:	Regional Board Caseworker
Contact Name:	VERA J. FISCHER
Organization Name:	CENTRAL VALLEY RWQCB (REGION 5S)
Address:	11020 SUN CENTER DRIVE #200
City:	RANCHO CORDOVA
Email:	vera.fischer@waterboards.ca.gov
Phone Number:	Not reported

LUST:

Global Id:	T0605700031
Action Type:	Other
Date:	06/04/1991
Action:	Leak Reported

Global Id:	T0605700031

KINGDOM HALL (Continued) **S100273458**

Action Type:	ENFORCEMENT
Date:	06/18/2009
Action:	Notice to Comply
Global Id:	T0605700031
Action Type:	Other
Date:	06/21/1990
Action:	Leak Discovery

LUST:

Global Id:	T0605700031
Status:	Open - Case Begin Date
Status Date:	06/21/1990
Global Id:	T0605700031
Status:	Open - Site Assessment
Status Date:	06/21/1990
Global Id:	T0605700031
Status:	Open - Site Assessment
Status Date:	06/04/1991
Global Id:	T0605700031
Status:	Open - Inactive
Status Date:	06/18/2009
Global Id:	T0605700031
Status:	Open - Remediation
Status Date:	10/08/2009
Global Id:	T0605700031
Status:	Completed - Case Closed
Status Date:	01/08/2010

LUST REG 5:

Name:	KINGDOM HALL
Address:	15254 BRUNSWICK RD
City:	GRASS VALLEY
Region:	5
Status:	Pollution Characterization
Case Number:	290047
Case Type:	Soil only
Substance:	DIESEL
Staff Initials:	MTS
Lead Agency:	Local
Program:	LUST
MTBE Code:	N/A

HIST CORTESE:

edr_fname:	KINGDOM HALL
edr_fadd1:	15254 BRUNSWICK
City,State,Zip:	GRASS VALLEY, CA 95945
Region:	CORTESE
Facility County Code:	29
Reg By:	LTNKA

KINGDOM HALL (Continued) **S100273458**

Reg Id:	290047

CERS:

Name:	KINGDOM HALL
Address:	15254 BRUNSWICK RD
City,State,Zip:	GRASS VALLEY, CA 95945
Site ID:	234533
CERS ID:	T0605700031
CERS Description:	Leaking Underground Storage Tank Cleanup Site

Affiliation:

Affiliation Type Desc:	Regional Board Caseworker
Entity Name:	VERA J. FISCHER - CENTRAL VALLEY RWQCB (REGION 5S)
Entity Title:	Not reported
Affiliation Address:	11020 SUN CENTER DRIVE #200
Affiliation City:	RANCHO CORDOVA
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Local Agency Caseworker
Entity Name:	GRANT EISEN - NEVADA COUNTY
Entity Title:	Not reported
Affiliation Address:	950 MAIDU LANE
Affiliation City:	NEVADA CITY
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	5302651469

16
NNE
1/4-1/2
0.349 mi.
1842 ft.

VALMONT CORPORATION
13421 GRASS VALLEY AVE
GRASS VALLEY, CA 95945

ENVIROSTOR **U001617083**
HIST UST **N/A**

Relative:
Higher

Actual:
2946 ft.

ENVIROSTOR:

Name:	AABURCO INCORPORATED
Address:	13421 GRASS VALLEY AVENUE
City,State,Zip:	GRASS VALLEY, CA 95945
Facility ID:	29350001
Status:	No Further Action
Status Date:	08/28/1990
Site Code:	Not reported
Site Type:	Historical
Site Type Detailed:	* Historical
Acres:	Not reported
NPL:	NO
Regulatory Agencies:	NONE SPECIFIED
Lead Agency:	NONE SPECIFIED
Program Manager:	Not reported
Supervisor:	Not reported
Division Branch:	Cleanup Sacramento
Assembly:	01
Senate:	01
Special Program:	* Rural County Survey Program

VALMONT CORPORATION (Continued) **U001617083**

Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 39.21696
Longitude: -121.0131
APN: 06-620-20
Past Use: UNKNOWN
Potential COC: Chromium VI Nickel
Confirmed COC: NONE SPECIFIED
Potential Description: CSS
Alias Name: VALMONT, INC
Alias Type: Alternate Name
Alias Name: 06-620-20
Alias Type: APN
Alias Name: 29350001
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Site Inspection (SI) Report
Completed Date: 08/28/1990
Comments: SAMPLE RESULTS SAMPLES TESTED FOR METALS. NICKEL LEVELS SLIGHTLY ELEVATED. SITE INSP DONE SITE INSPECTION WITH SAMPLING CONCLUDES NO FURTHER ACTION NECESSARY.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 07/26/1988
Comments: SITE SCREENING DONE HEAVY METAL WASTES, BUBBLING OVER IN STORAGE. SEND Q

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 05/31/1988
Comments: FACILITY IDENTIFIED DHS INITIAL PROP 65 LIST, COMPLAINT FILE

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

HIST UST:
Name: VALMONT CORPORATION
Address: 13421 GRASS VALLEY AVE
City,State,Zip: GRASS VALLEY, CA 95945
File Number: 0001F0AF
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0001F0AF.pdf
Region: STATE
Facility ID: 00000004480

VALMONT CORPORATION (Continued) **U001617083**

Facility Type: Other
Other Type: BUSINESS
Contact Name: J.A. BURGARD
Telephone: 9162739353
Owner Name: JOSEPH A. BURGARD
Owner Address: 13421 GRASS VALLEY AVE
Owner City,St,Zip: GRASS VALLEY, CA 95945
Total Tanks: 0002

Tank Num: 001
Container Num: 1
Year Installed: 1980
Tank Capacity: 00000550
Tank Used for: PRODUCT
Type of Fuel: DIESEL
Container Construction Thickness: Not reported
Leak Detection: Visual

Tank Num: 002
Container Num: 2
Year Installed: 1982
Tank Capacity: 00001000
Tank Used for: PRODUCT
Type of Fuel: REGULAR
Container Construction Thickness: Not reported
Leak Detection: None

Click here for Geo Tracker PDF:

17
SSW
1/4-1/2
0.469 mi.
2474 ft.

ART'S CEDAR RIDGE GAS
12685 HWY 174
CEDAR RIDGE, CA 95924

LUST **S105023154**
HIST CORTESE **N/A**

Relative:
Higher

Actual:
2888 ft.

LUST:
Name: ART'S CEDAR RIDGE GAS
Address: 12685 HWY 174
City,State,Zip: CEDAR RIDGE, CA 95924
Lead Agency: CENTRAL VALLEY RWQCB (REGION 5S)
Case Type: LUST Cleanup Site
Geo Track: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0605700131
Global Id: T0605700131
Latitude: 39.1986541551441
Longitude: -121.023068413492
Status: Completed - Case Closed
Status Date: 12/03/1999
Case Worker: VJF
RB Case Number: 290164
Local Agency: NEVADA COUNTY
File Location: Not reported
Local Case Number: Not reported
Potential Media Affect: Soil
Potential Contaminants of Concern: Diesel
Site History: Not reported

LUST:
Global Id: T0605700131

ART'S CEDAR RIDGE GAS (Continued) **S105023154**

Contact Type:	Local Agency Caseworker
Contact Name:	TRACY GIDEL
Organization Name:	NEVADA COUNTY
Address:	950 MAIDU AVENUE
City:	NEVADA CITY
Email:	Not reported
Phone Number:	Not reported
Global Id:	T0605700131
Contact Type:	Regional Board Caseworker
Contact Name:	VERA J. FISCHER
Organization Name:	CENTRAL VALLEY RWQCB (REGION 5S)
Address:	11020 SUN CENTER DRIVE #200
City:	RANCHO CORDOVA
Email:	vera.fischer@waterboards.ca.gov
Phone Number:	Not reported

LUST:

Global Id:	T0605700131
Action Type:	ENFORCEMENT
Date:	12/03/1999
Action:	Closure/No Further Action Letter
Global Id:	T0605700131
Action Type:	Other
Date:	11/30/1998
Action:	Leak Discovery
Global Id:	T0605700131
Action Type:	Other
Date:	07/20/1999
Action:	Leak Reported

LUST:

Global Id:	T0605700131
Status:	Open - Case Begin Date
Status Date:	11/30/1998
Global Id:	T0605700131
Status:	Open - Site Assessment
Status Date:	11/30/1998
Global Id:	T0605700131
Status:	Completed - Case Closed
Status Date:	12/03/1999

LUST REG 5:

Name:	ART'S CEDAR RIDGE GAS
Address:	12685 HWY 174
City:	CEDAR RIDGE
Region:	5
Status:	Case Closed
Case Number:	290164
Case Type:	Soil only
Substance:	DIESEL

ART'S CEDAR RIDGE GAS (Continued) **S105023154**

Staff Initials: MTS
Lead Agency: Regional
Program: LUST
MTBE Code: N/A

HIST CORTESE:
edr_fname: ART'S CEDAR RIDGE GAS
edr_fadd1: 12685 174
City,State,Zip: CEDAR RIDGE, CA 95924
Region: CORTESE
Facility County Code: 29
Reg By: LTNKA
Reg Id: 290164

---

18 **NW** **1/4-1/2** **0.472 mi.** **2491 ft.**	**LANMARK CIRCUITS INC** **400 CROWN POINT CIRCLE** **GRASS VALLEY, CA 95945**	**ENVIROSTOR** **CUPA Listings** **NPDES**	**S110493994** **N/A**

Relative:
Higher

Actual:
2813 ft.

ENVIROSTOR:
Name: LANMARK CIRCUITS, INC.
Address: 400 CROWN POINT CIR
City,State,Zip: GRASS VALLEY, CA 95945
Facility ID: 71003084
Status: Inactive - Needs Evaluation
Status Date: Not reported
Site Code: Not reported
Site Type: Tiered Permit
Site Type Detailed: Tiered Permit
Acres: Not reported
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: Not reported
Division Branch: Cleanup Sacramento
Assembly: 01
Senate: 01
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 39.21908
Longitude: -121.0295
APN: NONE SPECIFIED
Past Use: NONE SPECIFIED
Potential COC: NONE SPECIFIED
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: CAD982493009
Alias Type: EPA Identification Number
Alias Name: 110000898896
Alias Type: EPA (FRS #)
Alias Name: 71003084
Alias Type: Envirostor ID Number

LANMARK CIRCUITS INC (Continued) **S110493994**

Completed Info:

Completed Area Name:	Not reported
Completed Sub Area Name:	Not reported
Completed Document Type:	Not reported
Completed Date:	Not reported
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

CUPA NEVADA:

Name:	LANMARK CIRCUITS INC
Address:	400 CROWN POINT CIR
City,State,Zip:	GRASS VALLEY, CA 95945
Region:	NEVADA
Facility Id:	FA0000263
CERS ID:	10154119
Program Element:	2222 HazMat Storage High Risk
Billing Status:	Inactive
APN:	Not reported
Name:	LANMARK CIRCUITS INC
Address:	400 CROWN POINT CIR
City,State,Zip:	GRASS VALLEY, CA 95945
Region:	NEVADA
Facility Id:	FA0000263
CERS ID:	10154119
Program Element:	2511 Hazardous Waste-Small Quantity Generator
Billing Status:	Inactive
APN:	Not reported
Name:	LANMARK CIRCUITS INC
Address:	400 CROWN POINT CIR
City,State,Zip:	GRASS VALLEY, CA 95945
Region:	NEVADA
Facility Id:	FA0000263
CERS ID:	10154119
Program Element:	2731 Permit By Rule (PBR)
Billing Status:	Inactive
APN:	Not reported

NPDES:

Name:	LANMARK CIRCUITS INC
Address:	400 CROWN POINT CIRCLE
City,State,Zip:	GRASS VALLEY, CA 95945
Facility Status:	Terminated
NPDES Number:	CAS000001
Region:	5S
Agency Number:	0

LANMARK CIRCUITS INC (Continued) **S110493994**

Regulatory Measure ID:	464696
Place ID:	Not reported
Order Number:	97-03-DWQ
WDID:	5S29NEC002528
Regulatory Measure Type:	Enrollee
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	09/22/2016
Termination Date Of Regulatory Measure:	11/15/2017
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	400 Crown Point Circle
Discharge Name:	Lanmark Circuits Inc
Discharge City:	Grass Valley
Discharge State:	California
Discharge Zip:	95945
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	5S
Regulatory Measure ID:	464696
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	5S29NEC002528
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	10/27/2015
Processed Date:	09/22/2016
Status:	Active
Status Date:	09/22/2016
Place Size:	74408
Place Size Unit:	SqFt
Contact:	Gary Arnold
Contact Title:	Vice President
Contact Phone:	530-272-7280
Contact Phone Ext:	Not reported
Contact Email:	gary@lanmarkcircuits.com
Operator Name:	Lanmark Circuits Inc
Operator Address:	400 Crown Point Circle
Operator City:	Grass Valley
Operator State:	California

LANMARK CIRCUITS INC (Continued) **S110493994**

Operator Zip:	95945
Operator Contact:	Gary Arnold
Operator Contact Title:	Vice President
Operator Contact Phone:	530-272-7280
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	gary@lanmarkcircuits.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Steven Frank
Certifier Title:	Acting EHS Mgr
Certification Date:	27-OCT-15
Primary Sic:	3672-Printed Circuit Boards
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

NPDES Number:	CAS000001
Status:	Terminated
Agency Number:	0
Region:	5S
Regulatory Measure ID:	464696
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	5S29NEC002528
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	09/22/2016
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	11/15/2017
Discharge Name:	Lanmark Circuits Inc

LANMARK CIRCUITS INC (Continued) **S110493994**

Discharge Address:	400 Crown Point Circle
Discharge City:	Grass Valley
Discharge State:	California
Discharge Zip:	95945
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported

LANMARK CIRCUITS INC (Continued) **S110493994**

Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Name:	LANMARK CIRCUITS INC
Address:	400 CROWN POINT CIRCLE
City,State,Zip:	GRASS VALLEY, CA 95945
Facility Status:	Terminated
NPDES Number:	CAS000001
Region:	5S
Agency Number:	0
Regulatory Measure ID:	466208
Place ID:	Not reported
Order Number:	97-03-DWQ
WDID:	5S29NEC001442
Regulatory Measure Type:	Enrollee
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	11/03/2015
Termination Date Of Regulatory Measure:	12/13/2016
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	400 Crown Point Circle
Discharge Name:	LANmark Circuits Inc
Discharge City:	Grass Valley
Discharge State:	California
Discharge Zip:	95945
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

NPDES as of 03/2018:

NPDES Number:	CAS000001
Status:	Terminated
Agency Number:	0
Region:	5S
Regulatory Measure ID:	466208
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	5S29NEC001442
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	11/03/2015
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	12/13/2016
Discharge Name:	LANmark Circuits Inc
Discharge Address:	400 Crown Point Circle
Discharge City:	Grass Valley
Discharge State:	California
Discharge Zip:	95945
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported

LANMARK CIRCUITS INC (Continued) **S110493994**

Status Date: Not reported
Place Size: Not reported
Place Size Unit: Not reported
Contact: Not reported
Contact Title: Not reported
Contact Phone: Not reported
Contact Phone Ext: Not reported
Contact Email: Not reported
Operator Name: Not reported
Operator Address: Not reported
Operator City: Not reported
Operator State: Not reported
Operator Zip: Not reported
Operator Contact: Not reported
Operator Contact Title: Not reported
Operator Contact Phone: Not reported
Operator Contact Phone Ext: Not reported
Operator Contact Email: Not reported
Operator Type: Not reported
Developer: Not reported
Developer Address: Not reported
Developer City: Not reported
Developer State: Not reported
Developer Zip: Not reported
Developer Contact: Not reported
Developer Contact Title: Not reported
Constype Linear Utility Ind: Not reported
Emergency Phone: Not reported
Emergency Phone Ext: Not reported
Constype Above Ground Ind: Not reported
Constype Below Ground Ind: Not reported
Constype Cable Line Ind: Not reported
Constype Comm Line Ind: Not reported
Constype Commertial Ind: Not reported
Constype Electrical Line Ind: Not reported
Constype Gas Line Ind: Not reported
Constype Industrial Ind: Not reported
Constype Other Description: Not reported
Constype Other Ind: Not reported
Constype Recons Ind: Not reported
Constype Residential Ind: Not reported
Constype Transport Ind: Not reported
Constype Utility Description: Not reported
Constype Utility Ind: Not reported
Constype Water Sewer Ind: Not reported
Dir Discharge Uswater Ind: Not reported
Receiving Water Name: Not reported
Certifier: Not reported
Certifier Title: Not reported
Certification Date: Not reported
Primary Sic: Not reported
Secondary Sic: Not reported
Tertiary Sic: Not reported

NPDES Number: Not reported
Status: Not reported
Agency Number: Not reported

LANMARK CIRCUITS INC (Continued) **S110493994**

Region:	5S
Regulatory Measure ID:	466208
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	5S29NEC001442
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	12/13/2016
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	10/29/2015
Processed Date:	11/03/2015
Status:	Terminated
Status Date:	01/04/2017
Place Size:	74408
Place Size Unit:	SqFt
Contact:	Gary Arnold
Contact Title:	Not reported
Contact Phone:	530-272-7280
Contact Phone Ext:	Not reported
Contact Email:	gary@lanmarkcircuits.com
Operator Name:	LANmark Circuits Inc
Operator Address:	400 Crown Point Circle
Operator City:	Grass Valley
Operator State:	California
Operator Zip:	95945
Operator Contact:	Gary Arnold
Operator Contact Title:	Not reported
Operator Contact Phone:	530-272-7280
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	gary@lanmarkcircuits.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported

LANMARK CIRCUITS INC (Continued) **S110493994**

Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Gary Arnold
Certifier Title:	Vice President
Certification Date:	08-SEP-16
Primary Sic:	3672-Printed Circuit Boards
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Name:	LANMARK CIRCUITS INC
Address:	400 CROWN POINT CIRCLE
City,State,Zip:	GRASS VALLEY, CA 95945
Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	5S29NEC001442
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Terminated
Status Date:	01/04/2017
Operator Name:	LANmark Circuits Inc
Operator Address:	400 Crown Point Circle
Operator City:	Grass Valley
Operator State:	California
Operator Zip:	95945

NPDES as of 03/2018:

NPDES Number:	CAS000001
Status:	Terminated
Agency Number:	0
Region:	5S
Regulatory Measure ID:	466208
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	5S29NEC001442
Program Type:	Industrial

LANMARK CIRCUITS INC (Continued) **S110493994**

Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	11/03/2015
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	12/13/2016
Discharge Name:	LANmark Circuits Inc
Discharge Address:	400 Crown Point Circle
Discharge City:	Grass Valley
Discharge State:	California
Discharge Zip:	95945
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported

LANMARK CIRCUITS INC (Continued) **S110493994**

Dir Discharge Uswater Ind: Not reported
Receiving Water Name: Not reported
Certifier: Not reported
Certifier Title: Not reported
Certification Date: Not reported
Primary Sic: Not reported
Secondary Sic: Not reported
Tertiary Sic: Not reported

NPDES Number: Not reported
Status: Not reported
Agency Number: Not reported
Region: 5S
Regulatory Measure ID: 466208
Order Number: Not reported
Regulatory Measure Type: Industrial
Place ID: Not reported
WDID: 5S29NEC001442
Program Type: Not reported
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: 12/13/2016
Discharge Name: Not reported
Discharge Address: Not reported
Discharge City: Not reported
Discharge State: Not reported
Discharge Zip: Not reported
Received Date: 10/29/2015
Processed Date: 11/03/2015
Status: Terminated
Status Date: 01/04/2017
Place Size: 74408
Place Size Unit: SqFt
Contact: Gary Arnold
Contact Title: Not reported
Contact Phone: 530-272-7280
Contact Phone Ext: Not reported
Contact Email: gary@lanmarkcircuits.com
Operator Name: LANmark Circuits Inc
Operator Address: 400 Crown Point Circle
Operator City: Grass Valley
Operator State: California
Operator Zip: 95945
Operator Contact: Gary Arnold
Operator Contact Title: Not reported
Operator Contact Phone: 530-272-7280
Operator Contact Phone Ext: Not reported
Operator Contact Email: gary@lanmarkcircuits.com
Operator Type: Private Business
Developer: Not reported
Developer Address: Not reported
Developer City: Not reported
Developer State: California
Developer Zip: Not reported
Developer Contact: Not reported
Developer Contact Title: Not reported

LANMARK CIRCUITS INC (Continued) **S110493994**

Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Gary Arnold
Certifier Title:	Vice President
Certification Date:	08-SEP-16
Primary Sic:	3672-Printed Circuit Boards
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Name:	LANMARK CIRCUITS INC
Address:	400 CROWN POINT CIRCLE
City,State,Zip:	GRASS VALLEY, CA 95945
Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	5S29NEC002528
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Terminated
Status Date:	11/15/2017
Operator Name:	Lanmark Circuits Inc
Operator Address:	400 Crown Point Circle
Operator City:	Grass Valley
Operator State:	California

LANMARK CIRCUITS INC (Continued) **S110493994**

Operator Zip: 95945

NPDES as of 03/2018:

NPDES Number: Not reported
Status: Not reported
Agency Number: Not reported
Region: 5S
Regulatory Measure ID: 464696
Order Number: Not reported
Regulatory Measure Type: Industrial
Place ID: Not reported
WDID: 5S29NEC002528
Program Type: Not reported
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: Not reported
Discharge Name: Not reported
Discharge Address: Not reported
Discharge City: Not reported
Discharge State: Not reported
Discharge Zip: Not reported
Received Date: 10/27/2015
Processed Date: 09/22/2016
Status: Active
Status Date: 09/22/2016
Place Size: 74408
Place Size Unit: SqFt
Contact: Gary Arnold
Contact Title: Vice President
Contact Phone: 530-272-7280
Contact Phone Ext: Not reported
Contact Email: gary@lanmarkcircuits.com
Operator Name: Lanmark Circuits Inc
Operator Address: 400 Crown Point Circle
Operator City: Grass Valley
Operator State: California
Operator Zip: 95945
Operator Contact: Gary Arnold
Operator Contact Title: Vice President
Operator Contact Phone: 530-272-7280
Operator Contact Phone Ext: Not reported
Operator Contact Email: gary@lanmarkcircuits.com
Operator Type: Private Business
Developer: Not reported
Developer Address: Not reported
Developer City: Not reported
Developer State: California
Developer Zip: Not reported
Developer Contact: Not reported
Developer Contact Title: Not reported
Constype Linear Utility Ind: Not reported
Emergency Phone: Not reported
Emergency Phone Ext: Not reported
Constype Above Ground Ind: Not reported
Constype Below Ground Ind: Not reported
Constype Cable Line Ind: Not reported
Constype Comm Line Ind: Not reported

LANMARK CIRCUITS INC (Continued) **S110493994**

Constype Commertial Ind: Not reported
Constype Electrical Line Ind: Not reported
Constype Gas Line Ind: Not reported
Constype Industrial Ind: Not reported
Constype Other Description: Not reported
Constype Other Ind: Not reported
Constype Recons Ind: Not reported
Constype Residential Ind: Not reported
Constype Transport Ind: Not reported
Constype Utility Description: Not reported
Constype Utility Ind: Not reported
Constype Water Sewer Ind: Not reported
Dir Discharge Uswater Ind: Not reported
Receiving Water Name: Not reported
Certifier: Steven Frank
Certifier Title: Acting EHS Mgr
Certification Date: 27-OCT-15
Primary Sic: 3672-Printed Circuit Boards
Secondary Sic: Not reported
Tertiary Sic: Not reported

NPDES Number: CAS000001
Status: Terminated
Agency Number: 0
Region: 5S
Regulatory Measure ID: 464696
Order Number: 97-03-DWQ
Regulatory Measure Type: Enrollee
Place ID: Not reported
WDID: 5S29NEC002528
Program Type: Industrial
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: 09/22/2016
Expiration Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: 11/15/2017
Discharge Name: Lanmark Circuits Inc
Discharge Address: 400 Crown Point Circle
Discharge City: Grass Valley
Discharge State: California
Discharge Zip: 95945
Received Date: Not reported
Processed Date: Not reported
Status: Not reported
Status Date: Not reported
Place Size: Not reported
Place Size Unit: Not reported
Contact: Not reported
Contact Title: Not reported
Contact Phone: Not reported
Contact Phone Ext: Not reported
Contact Email: Not reported
Operator Name: Not reported
Operator Address: Not reported
Operator City: Not reported
Operator State: Not reported
Operator Zip: Not reported
Operator Contact: Not reported

LANMARK CIRCUITS INC (Continued) **S110493994**

Operator Contact Title: Not reported
Operator Contact Phone: Not reported
Operator Contact Phone Ext: Not reported
Operator Contact Email: Not reported
Operator Type: Not reported
Developer: Not reported
Developer Address: Not reported
Developer City: Not reported
Developer State: Not reported
Developer Zip: Not reported
Developer Contact: Not reported
Developer Contact Title: Not reported
Constype Linear Utility Ind: Not reported
Emergency Phone: Not reported
Emergency Phone Ext: Not reported
Constype Above Ground Ind: Not reported
Constype Below Ground Ind: Not reported
Constype Cable Line Ind: Not reported
Constype Comm Line Ind: Not reported
Constype Commertial Ind: Not reported
Constype Electrical Line Ind: Not reported
Constype Gas Line Ind: Not reported
Constype Industrial Ind: Not reported
Constype Other Description: Not reported
Constype Other Ind: Not reported
Constype Recons Ind: Not reported
Constype Residential Ind: Not reported
Constype Transport Ind: Not reported
Constype Utility Description: Not reported
Constype Utility Ind: Not reported
Constype Water Sewer Ind: Not reported
Dir Discharge Uswater Ind: Not reported
Receiving Water Name: Not reported
Certifier: Not reported
Certifier Title: Not reported
Certification Date: Not reported
Primary Sic: Not reported
Secondary Sic: Not reported
Tertiary Sic: Not reported

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19 **LOMA RICA RANCH** **ENVIROSTOR** **S105954470**
North **12280 LOMA RICA DRIVE** **VCP** **N/A**
1/4-1/2 **GRASS VALLEY, CA 95945**
0.490 mi.
2586 ft.

Relative:
Higher

Actual:
2949 ft.

ENVIROSTOR:
Name: LOMA RICA RANCH
Address: 12280 LOMA RICA DRIVE
City,State,Zip: GRASS VALLEY, CA 95945
Facility ID: 29100023
Status: Inactive - Action Required
Status Date: 08/19/2011
Site Code: 101581
Site Type: Voluntary Cleanup
Site Type Detailed: Voluntary Cleanup
Acres: 450

LOMA RICA RANCH (Continued) **S105954470**

NPL: NO
Regulatory Agencies: SMBRP, RWQCB 5S - Central Valley
Lead Agency: MBR
Program Manager: James Rohrer
Supervisor: Steven Becker
Division Branch: Cleanup Sacramento
Assembly: 01
Senate: 01
Special Program: Voluntary Cleanup Program
Restricted Use: YES
Site Mgmt Req: NONE SPECIFIED
Funding: Responsible Party
Latitude: 39.22024
Longitude: -121.0163
APN: NONE SPECIFIED
Past Use: LANDFILL - DOMESTIC, MINE
Potential COC: Arsenic Lead Mercury and compounds
Confirmed COC: Arsenic Lead 30357-NO
Potential Description: SOIL, SURFW
Alias Name: LOMA RICA RANCH
Alias Type: Alternate Name
Alias Name: 110033607871
Alias Type: EPA (FRS #)
Alias Name: 101581
Alias Type: Project Code (Site Code)
Alias Name: 29100023
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Removal Action Completion Report
Completed Date: 01/12/2010
Comments: Removed 16 yards from waste rock pile that was disposed of offsite.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 02/27/2006
Comments: date revised

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 11/18/2003
Comments: approval for work plan letter sent out after a revised community profile reviewed and approved by public participation staff

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Removal Action Workplan
Completed Date: 10/23/2007
Comments: final raw approved

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fieldwork
Completed Date: 09/11/2008

LOMA RICA RANCH (Continued) **S105954470**

Comments: fieldwork completed on 9/11/08 not dtsc letter needed for this

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: CEQA - Notice of Exemption
Completed Date: 10/23/2007
Comments: NOE Completed

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Amendment - Order/Agreement
Completed Date: 04/04/2005
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 04/25/2003
Comments: VCA--Finalized a Voluntary Cleanup Agreement to conduct a Preliminary Endangerment Assessment on the subject property to determine if the property has been impacted by hazardous substances. Hazardous Substances could be the result of past mining activities.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

VCP:
Name: LOMA RICA RANCH
Address: 12280 LOMA RICA DRIVE
City,State,Zip: GRASS VALLEY, CA 95945
Facility ID: 29100023
Site Type: Voluntary Cleanup
Site Type Detail: Voluntary Cleanup
Site Mgmt. Req.: NONE SPECIFIED
Acres: 450
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP, RWQCB 5S - Central Valley
Lead Agency: MBR
Lead Agency Description: Not reported
Project Manager: James Rohrer
Supervisor: Steven Becker
Division Branch: Cleanup Sacramento
Site Code: 101581
Assembly: 01
Senate: 01
Special Programs Code: Voluntary Cleanup Program
Status: Inactive - Action Required
Status Date: 08/19/2011
Restricted Use: YES
Funding: Responsible Party

LOMA RICA RANCH (Continued) **S105954470**

Lat/Long:	39.22024 / -121.0163
APN:	NONE SPECIFIED
Past Use:	LANDFILL - DOMESTIC, MINE
Potential COC:	30001, 30013, 30357
Confirmed COC:	30001,30013,30357-NO
Potential Description:	SOIL, SURFW
Alias Name:	LOMA RICA RANCH
Alias Type:	Alternate Name
Alias Name:	110033607871
Alias Type:	EPA (FRS #)
Alias Name:	101581
Alias Type:	Project Code (Site Code)
Alias Name:	29100023
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Removal Action Completion Report
Completed Date:	01/12/2010
Comments:	Removed 16 yards from waste rock pile that was disposed of offsite.

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	02/27/2006
Comments:	date revised

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Workplan
Completed Date:	11/18/2003
Comments:	approval for work plan letter sent out after a revised community profile reviewed and approved by public participation staff

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Removal Action Workplan
Completed Date:	10/23/2007
Comments:	final raw approved

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Fieldwork
Completed Date:	09/11/2008
Comments:	fieldwork completed on 9/11/08 not dtsc letter needed for this

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	CEQA - Notice of Exemption
Completed Date:	10/23/2007
Comments:	NOE Completed

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Amendment - Order/Agreement
Completed Date:	04/04/2005
Comments:	Not reported

LOMA RICA RANCH (Continued) **S105954470**

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Voluntary Cleanup Agreement
Completed Date:	04/25/2003
Comments:	VCA--Finalized a Voluntary Cleanup Agreement to conduct a Preliminary Endangerment Assessment on the subject property to determine if the property has been impacted by hazardous substances. Hazardous Substances could be the result of past mining activities.

Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

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20 **NNE** **1/2-1** **0.649 mi.** **3426 ft.**	**LANMARK CIRCUITS, INC** **12520 LOMA RICA** **GRASS VALLEY, CA 95945**	**RCRA-VSQG** **ENVIROSTOR** **FINDS** **ECHO**	**1000296133** **CAD006852693**

Relative:
Higher

Actual:
3025 ft.

RCRA-VSQG:

Date form received by agency:	1986-01-06 00:00:00.0
Facility name:	LANMARK CIRCUITS, INC
Facility address:	12520 LOMA RICA GRASS VALLEY, CA 95945
EPA ID:	CAD006852693
Contact:	LANNY NETZ
Contact address:	12520 LOMA RICA GRASS VALLEY, CA 95945
Contact country:	US
Contact telephone:	916-272-7280
Contact email:	Not reported
EPA Region:	09
Land type:	Private
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	NOT REQUIRED

LANMARK CIRCUITS, INC (Continued) **1000296133**

Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	415-555-1212
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	CHUCK VENTURA
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	415-555-1212
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

ENVIROSTOR:

Name:	LANMARK CIRCUITS, INC
Address:	12520 LOMA RICA DRIVE, UNIT 10
City,State,Zip:	GRASS VALLEY, CA 95945
Facility ID:	29360008
Status:	Refer: Other Agency
Status Date:	12/18/1995
Site Code:	Not reported
Site Type:	Historical
Site Type Detailed:	* Historical
Acres:	Not reported
NPL:	NO
Regulatory Agencies:	NONE SPECIFIED

LANMARK CIRCUITS, INC (Continued) **1000296133**

Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: Referred - Not Assigned
Division Branch: Cleanup Sacramento
Assembly: 01
Senate: 01
Special Program: * Rural County Survey Program
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 39.22138
Longitude: -120.9988
APN: NONE SPECIFIED
Past Use: NONE SPECIFIED
Potential COC: NONE SPECIFIED
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: CAD006852693
Alias Type: EPA Identification Number
Alias Name: 110002629914
Alias Type: EPA (FRS #)
Alias Name: 29360008
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 12/18/1995
Comments: No known releases or contamination. Refer to County Health for investigation as required.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 07/28/1988
Comments: Site Screening Done: Facility is planning to move. Waste is discharged to septic tank. Operation is electronic parts manufacturing. RWQCB follow-up unknown.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 06/01/1988
Comments: Facility Identified: Regional Water Quality Control Board (RWQCB) File Search. Notice of Violation issued 01/14/86 for operation of hazardous waste facility without permit and storage of hazardous waste without permit.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

LANMARK CIRCUITS, INC (Continued) **1000296133**

FINDS:

Registry ID:	110002629914

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000296133
Registry ID:	110002629914
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110002629914

D21	**AGATE SALES INC**	**ENVIROSTOR**	**S106230316**
WNW	**11429 EAST BENNETT STREET**	**CPS-SLIC**	**N/A**
1/2-1	**GRASS VALLEY, CA 95945**	**CERS**	
0.758 mi.			
4003 ft.	**Site 1 of 2 in cluster D**		

Relative:
Lower

Actual:
2567 ft.

ENVIROSTOR:

Name:	AGATE SALES INC
Address:	11429 EAST BENNETT STREET
City,State,Zip:	GRASS VALLEY, CA 95945
Facility ID:	29240011
Status:	Refer: Other Agency
Status Date:	12/04/1995
Site Code:	Not reported
Site Type:	Evaluation
Site Type Detailed:	Evaluation
Acres:	1
NPL:	NO
Regulatory Agencies:	NONE SPECIFIED
Lead Agency:	NONE SPECIFIED
Program Manager:	Not reported
Supervisor:	Referred - Not Assigned
Division Branch:	Cleanup Sacramento
Assembly:	01
Senate:	01
Special Program:	* Rural County Survey Program
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not reported
Latitude:	39.21774
Longitude:	-121.0376
APN:	09-320-01
Past Use:	NONE SPECIFIED
Potential COC:	NONE SPECIFIED
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED

AGATE SALES INC (Continued) **S106230316**

Alias Name: 09-320-01
Alias Type: APN
Alias Name: CAD981992415
Alias Type: EPA Identification Number
Alias Name: SLT5S0293070
Alias Type: GeoTracker Global ID
Alias Name: CAD981992415
Alias Type: HWTS Identification Code
Alias Name: 29240011
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 09/01/1988
Comments: SITE SCREENING DONE. SEND QUESTIONNAIRE; COUNTY PLANNER HAS INFORMATION ON SITE.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 05/10/1988
Comments: FACILITY IDENTIFIED 1987 PHONEBOOK. LUMBER MANUFACTURER.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SLIC REG 5:
Name: Agate Sales**
Address: 11429 Bennett Rd East
City: Grass Valley
Region: 5
Facility Status: Preliminary Assessment
Unit: Facility is a Spill or site
Pollutant: VOCs
Lead Agency: NEV Co.
Date Filed: 06/22/95
Report Date: / /
Date Added: Not reported
Date Closed: Not reported

CPS-SLIC:
Name: AGATE SALES
Address: 11429 EAST BENNETT ROAD
City,State,Zip: GRASS VALLEY, CA
Region: STATE
Facility Status: **Completed - Case Closed**
Status Date: 03/25/1996
Global Id: SLT5S0293070

AGATE SALES INC (Continued) **S106230316**

Lead Agency: CENTRAL VALLEY RWQCB (REGION 5S)
Lead Agency Case Number: Not reported
Latitude: 39.2183238571429
Longitude: -121.061019706845
Case Type: Cleanup Program Site
Case Worker: ZZZ
Local Agency: Not reported
RB Case Number: SLT5S029
File Location: All Files are on GeoTracker or in the Local Agency Database
Potential Media Affected: Under Investigation
Potential Contaminants of Concern: Not reported
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

CERS:
Name: AGATE SALES
Address: 11429 EAST BENNETT ROAD
City,State,Zip: GRASS VALLEY, CA
Site ID: 256075
CERS ID: SLT5S0293070
CERS Description: Cleanup Program Site

Affiliation:
Affiliation Type Desc: Regional Board Caseworker
Entity Name: zzz - CENTRAL VALLEY RWQCB (REGION 5S)
Entity Title: Not reported
Affiliation Address: 11020 SUN CENTER DRIVE #200
Affiliation City: RANCHO CORDOVA
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

D22 **LAUSMANN LUMBER** **ENVIROSTOR** **S101481363**
WNW **11452 EAST BENNETT ROAD** **N/A**
1/2-1 **GRASS VALLEY, CA 95945**
0.778 mi.
4109 ft. **Site 2 of 2 in cluster D**

Relative:
Lower

Actual:
2580 ft.

ENVIROSTOR:
Name: LAUSMANN LUMBER
Address: 11452 EAST BENNETT ROAD
City,State,Zip: GRASS VALLEY, CA 95945
Facility ID: 29240012
Status: Refer: RWQCB
Status Date: 03/16/1989
Site Code: Not reported
Site Type: Evaluation
Site Type Detailed: Evaluation
Acres: 1
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: Referred - Not Assigned
Division Branch: Cleanup Sacramento

LAUSMANN LUMBER (Continued) **S101481363**

Assembly: 01
Senate: 01
Special Program: * Rural County Survey Program
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 39.21795
Longitude: -121.0369
APN: NONE SPECIFIED
Past Use: NONE SPECIFIED
Potential COC: NONE SPECIFIED
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: T0605700132
Alias Type: GeoTracker Global ID
Alias Name: 29240012
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 03/16/1989
Comments: Site Screening Done: RWQCB tried to sample near old green chain area, but it was too wet. Site is abandoned - outcome unknown. Site is part of historic Idaho-Maryland Mine. RWQCB is the current lead.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 08/23/1988
Comments: Facility Identified:RWQCB (ID #5A292008001) for wastewater ponds. Site Location: Assessor’s Parcel Number (APN) 9-560-14, 15, 16, 17 (pond). APN 9-570-23 (pond), 44. APN 9-560-18, 19. Total Acres: 70.98. Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

23
WSW
1/2-1
0.814 mi.
4297 ft.

ELEMENTARY SCHOOL SITE
11722 COLFAX HIGHWAY
GRASS VALLEY, CA 95945

ENVIROSTOR
SCH

S118756651
N/A

Relative:
Lower

Actual:
2695 ft.

ENVIROSTOR:
Name: ELEMENTARY SCHOOL SITE
Address: 11722 COLFAX HIGHWAY
City,State,Zip: GRASS VALLEY, CA 95945
Facility ID: 29820003
Status: No Action Required

ELEMENTARY SCHOOL SITE (Continued) **S118756651**

Status Date:	12/22/2000
Site Code:	104191
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	Not reported
NPL:	NO
Regulatory Agencies:	DTSC
Lead Agency:	DTSC
Program Manager:	Not reported
Supervisor:	Charles Ridenour
Division Branch:	Northern California Schools & Santa Susana
Assembly:	01
Senate:	01
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	39.20446
Longitude:	-121.0369
APN:	09-640-29
Past Use:	NONE
Potential COC:	NONE SPECIFIED No Contaminants found
Confirmed COC:	NONE SPECIFIED
Potential Description:	NMA
Alias Name:	ELEMENTARY SCHOOL SITE
Alias Type:	Alternate Name
Alias Name:	UNION HILL ELEM. SD-UNION HIL ELEM EXP
Alias Type:	Alternate Name
Alias Name:	UNION HILL ELEMENTARY SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	09-640-29
Alias Type:	APN
Alias Name:	104191
Alias Type:	Project Code (Site Code)
Alias Name:	29820003
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	12/22/2000
Comments:	COMPLETED: Phase 1 - Pursuant to an agreement between the Department of Toxic Substances Control (DTSC) and the California Department of Education, DTSC’s Site Mitigation Program completed a review of a Phase 1 Environmental Assessment and has made a "No Action" determination for this Site.

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	03/23/2001
Comments:	DTSC sent a CRU to the accounting unit to summarize costs associated with the Phase 1

Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported

ELEMENTARY SCHOOL SITE (Continued) **S118756651**

Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Name: ELEMENTARY SCHOOL SITE
Address: 11722 COLFAX HIGHWAY
City,State,Zip: GRASS VALLEY, CA 95945
Facility ID: 29820003
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: Not reported
National Priorities List: NO
Cleanup Oversight Agencies: DTSC
Lead Agency: DTSC
Lead Agency Description: * DTSC
Project Manager: Not reported
Supervisor: Charles Ridenour
Division Branch: Northern California Schools & Santa Susana
Site Code: 104191
Assembly: 01
Senate: 01
Special Program Status: Not reported
Status: No Action Required
Status Date: 12/22/2000
Restricted Use: NO
Funding: School District
Latitude: 39.20446
Longitude: -121.0369
APN: 09-640-29
Past Use: NONE
Potential COC: NONE SPECIFIED, No Contaminants found
Confirmed COC: NONE SPECIFIED
Potential Description: NMA
Alias Name: ELEMENTARY SCHOOL SITE
Alias Type: Alternate Name
Alias Name: UNION HILL ELEM. SD-UNION HIL ELEM EXP
Alias Type: Alternate Name
Alias Name: UNION HILL ELEMENTARY SCHOOL DISTRICT
Alias Type: Alternate Name
Alias Name: 09-640-29
Alias Type: APN
Alias Name: 104191
Alias Type: Project Code (Site Code)
Alias Name: 29820003
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 12/22/2000

ELEMENTARY SCHOOL SITE (Continued) **S118756651**

Comments: COMPLETED: Phase 1 - Pursuant to an agreement between the Department of Toxic Substances Control (DTSC) and the California Department of Education, DTSC’s Site Mitigation Program completed a review of a Phase 1 Environmental Assessment and has made a "No Action" determination for this Site.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 03/23/2001
Comments: DTSC sent a CRU to the accounting unit to summarize costs associated with the Phase 1

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

E24 **FAMILIAN PIPE AND SUPPLY** **EDR MGP** **1012008180**
NW **10403 IDAHO MARYLAND ROAD** **N/A**
1/2-1 **GRASS VALLEY, CA 95945**
0.931 mi.
4915 ft. **Site 1 of 2 in cluster E**

Relative:
Lower

Actual:
2538 ft.

Manufactured Gas Plants:
No additional information available

E25 **FAMILIAN PIPE AND SUPPLY** **ENVIROSTOR** **S104570522**
NW **10403 IDAHO MARYLAND ROAD** **N/A**
1/2-1 **GRASS VALLEY, CA 95945**
0.931 mi.
4915 ft. **Site 2 of 2 in cluster E**

Relative:
Lower

Actual:
2538 ft.

ENVIROSTOR:
Name: FAMILIAN PIPE AND SUPPLY
Address: 10403 IDAHO MARYLAND ROAD
City,State,Zip: GRASS VALLEY, CA 95945
Facility ID: 29490005
Status: Refer: RWQCB
Status Date: 07/29/2008
Site Code: Not reported
Site Type: Evaluation
Site Type Detailed: Evaluation
Acres: 1.3
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: Referred - Not Assigned

FAMILIAN PIPE AND SUPPLY (Continued) **S104570522**

Division Branch: Cleanup Sacramento
Assembly: 01
Senate: 01
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 39.22332
Longitude: -121.0477
APN: NONE SPECIFIED
Past Use: NONE SPECIFIED
Potential COC: NONE SPECIFIED
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: PG&E Manufactured Gas Plant SV-DM-GRV-2
Alias Type: Alternate Name
Alias Name: 29490002
Alias Type: Envirostor ID Number
Alias Name: 29490005
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 01/04/1994
Comments: PEA recommended medium priority. This facility is located at a former PG&E gas manufacturing plant site, approximately 1.3 acres. Water-gas was produced by cracking oil in the presence of blue gas and steam. The plant had a 100,000 cubic feet steel gas holder, 5 steel compression tanks, two 500 barrel fuel oil tanks encased in six foot concrete pits. Soil analyses indicated the presence of polynuclear aromatic compounds, PNAs, at .2 - 9,296 milligrams per kilogram. Ground water was analyzed from 3 monitoring wells, PNAs were detected in a monitoring well adjacent to Wolf Creek on the south border of the property.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

Count: 3 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
GRASS VALLEY	S106230317	CALTRANS RIGHT-OF-WAY	BENNETT ST AND HIGHWAY 20/49		CPS-SLIC
GRASS VALLEY	S100188336	LOMA RICA ADMINISTRATION SITE	LOMA RICA DRIVE	95945	ENVIROSTOR
GRASS VALLEY	S123785056	CENTENNIAL M-1 PROPERTY	SOUTH OF IDAHO-MARYLAND ROAD A	95959	ENVIROSTOR, VCP

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 10/25/2019	Source: EPA
Date Data Arrived at EDR: 11/07/2019	Telephone: N/A
Date Made Active in Reports: 11/20/2019	Last EDR Contact: 01/03/2020
Number of Days to Update: 13	Next Scheduled EDR Contact: 04/13/2020
	Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1 Telephone 617-918-1143	EPA Region 6 Telephone: 214-655-6659
EPA Region 3 Telephone 215-814-5418	EPA Region 7 Telephone: 913-551-7247
EPA Region 4 Telephone 404-562-8033	EPA Region 8 Telephone: 303-312-6774
EPA Region 5 Telephone 312-886-6686	EPA Region 9 Telephone: 415-947-4246
EPA Region 10 Telephone 206-553-8665	

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 10/25/2019	Source: EPA
Date Data Arrived at EDR: 11/07/2019	Telephone: N/A
Date Made Active in Reports: 11/20/2019	Last EDR Contact: 01/03/2020
Number of Days to Update: 13	Next Scheduled EDR Contact: 04/13/2020
	Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/20/2019
Number of Days to Update: 13

Source: EPA
Telephone: N/A
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/21/2019
Number of Days to Update: 14

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 10/25/2019	Source: EPA
Date Data Arrived at EDR: 11/07/2019	Telephone: 800-424-9346
Date Made Active in Reports: 11/21/2019	Last EDR Contact: 01/03/2020
Number of Days to Update: 14	Next Scheduled EDR Contact: 04/27/2020
	Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/16/2019	Source: EPA
Date Data Arrived at EDR: 12/16/2019	Telephone: 800-424-9346
Date Made Active in Reports: 12/20/2019	Last EDR Contact: 12/16/2019
Number of Days to Update: 4	Next Scheduled EDR Contact: 04/06/2020
	Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/16/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/16/2019	Telephone: (415) 495-8895
Date Made Active in Reports: 12/20/2019	Last EDR Contact: 12/16/2019
Number of Days to Update: 4	Next Scheduled EDR Contact: 04/06/2020
	Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/16/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/16/2019	Telephone: (415) 495-8895
Date Made Active in Reports: 12/20/2019	Last EDR Contact: 12/16/2019
Number of Days to Update: 4	Next Scheduled EDR Contact: 04/06/2020
	Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/16/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/16/2019	Telephone: (415) 495-8895
Date Made Active in Reports: 12/20/2019	Last EDR Contact: 12/16/2019
Number of Days to Update: 4	Next Scheduled EDR Contact: 04/06/2020
	Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/16/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/16/2019	Telephone: (415) 495-8895
Date Made Active in Reports: 12/20/2019	Last EDR Contact: 12/16/2019
Number of Days to Update: 4	Next Scheduled EDR Contact: 04/06/2020
	Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 08/13/2019	Source: Department of the Navy
Date Data Arrived at EDR: 08/20/2019	Telephone: 843-820-7326
Date Made Active in Reports: 08/26/2019	Last EDR Contact: 11/07/2019
Number of Days to Update: 6	Next Scheduled EDR Contact: 02/24/2020
	Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 08/19/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 08/20/2019	Telephone: 703-603-0695
Date Made Active in Reports: 08/26/2019	Last EDR Contact: 11/22/2019
Number of Days to Update: 6	Next Scheduled EDR Contact: 03/09/2020
	Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 08/19/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 08/20/2019	Telephone: 703-603-0695
Date Made Active in Reports: 08/26/2019	Last EDR Contact: 11/22/2019
Number of Days to Update: 6	Next Scheduled EDR Contact: 03/09/2020
	Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/09/2019	Source: National Response Center, United States Coast Guard
Date Data Arrived at EDR: 09/09/2019	Telephone: 202-267-2180
Date Made Active in Reports: 09/23/2019	Last EDR Contact: 12/19/2019
Number of Days to Update: 14	Next Scheduled EDR Contact: 04/06/2020
	Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 10/28/2019	Source: Department of Toxic Substances Control
Date Data Arrived at EDR: 10/29/2019	Telephone: 916-323-3400
Date Made Active in Reports: 01/07/2020	Last EDR Contact: 10/29/2019
Number of Days to Update: 70	Next Scheduled EDR Contact: 02/10/2020
	Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control’s (DTSC’s) Site Mitigation and Brownfields Reuse Program’s (SMBRP’s) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 10/28/2019	Source: Department of Toxic Substances Control
Date Data Arrived at EDR: 10/29/2019	Telephone: 916-323-3400
Date Made Active in Reports: 01/07/2020	Last EDR Contact: 10/29/2019
Number of Days to Update: 70	Next Scheduled EDR Contact: 02/10/2020
	Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 11/11/2019	Source: Department of Resources Recycling and Recovery
Date Data Arrived at EDR: 11/12/2019	Telephone: 916-341-6320
Date Made Active in Reports: 01/08/2020	Last EDR Contact: 11/12/2019
Number of Days to Update: 57	Next Scheduled EDR Contact: 02/24/2020
	Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board’s LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/08/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/25/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 04/12/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 12/03/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/16/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 05/02/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 20

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/08/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 79

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 07/02/2019
Date Data Arrived at EDR: 10/16/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 8

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 58

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 6L: SLIC Sites

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004	Source: California Regional Water Quality Control Board, Lahontan Region
Date Data Arrived at EDR: 09/07/2004	Telephone: 530-542-5574
Date Made Active in Reports: 10/12/2004	Last EDR Contact: 08/15/2011
Number of Days to Update: 35	Next Scheduled EDR Contact: 11/28/2011
	Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004	Source: California Regional Quality Control Board, Colorado River Basin Region
Date Data Arrived at EDR: 11/29/2004	Telephone: 760-346-7491
Date Made Active in Reports: 01/04/2005	Last EDR Contact: 08/01/2011
Number of Days to Update: 36	Next Scheduled EDR Contact: 11/14/2011
	Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008	Source: California Region Water Quality Control Board Santa Ana Region (8)
Date Data Arrived at EDR: 04/03/2008	Telephone: 951-782-3298
Date Made Active in Reports: 04/14/2008	Last EDR Contact: 09/12/2011
Number of Days to Update: 11	Next Scheduled EDR Contact: 12/26/2011
	Data Release Frequency: No Update Planned

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007	Source: California Regional Water Quality Control Board San Diego Region (9)
Date Data Arrived at EDR: 09/11/2007	Telephone: 858-467-2980
Date Made Active in Reports: 09/28/2007	Last EDR Contact: 08/08/2011
Number of Days to Update: 17	Next Scheduled EDR Contact: 11/21/2011
	Data Release Frequency: No Update Planned

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 08/27/2019	Source: FEMA
Date Data Arrived at EDR: 08/28/2019	Telephone: 202-646-5797
Date Made Active in Reports: 11/11/2019	Last EDR Contact: 01/07/2020
Number of Days to Update: 75	Next Scheduled EDR Contact: 04/20/2020
	Data Release Frequency: Varies

UST: Active UST Facilities

Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 09/09/2019	Source: SWRCB
Date Data Arrived at EDR: 09/09/2019	Telephone: 916-341-5851
Date Made Active in Reports: 10/31/2019	Last EDR Contact: 12/10/2019
Number of Days to Update: 52	Next Scheduled EDR Contact: 03/23/2020
	Data Release Frequency: Semi-Annually

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 09/09/2019	Source: State Water Resources Control Board
Date Data Arrived at EDR: 09/09/2019	Telephone: 866-480-1028
Date Made Active in Reports: 11/01/2019	Last EDR Contact: 12/10/2019
Number of Days to Update: 53	Next Scheduled EDR Contact: 03/23/2020
	Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 09/06/2019	Source: State Water Resources Control Board
Date Data Arrived at EDR: 09/09/2019	Telephone: 916-327-7844
Date Made Active in Reports: 10/31/2019	Last EDR Contact: 12/10/2019
Number of Days to Update: 52	Next Scheduled EDR Contact: 03/23/2020
	Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016	Source: California Environmental Protection Agency
Date Data Arrived at EDR: 07/12/2016	Telephone: 916-327-5092
Date Made Active in Reports: 09/19/2016	Last EDR Contact: 12/11/2019
Number of Days to Update: 69	Next Scheduled EDR Contact: 03/30/2020
	Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/16/2019	Source: EPA Region 10
Date Data Arrived at EDR: 07/30/2019	Telephone: 206-553-2857
Date Made Active in Reports: 10/17/2019	Last EDR Contact: 12/04/2019
Number of Days to Update: 79	Next Scheduled EDR Contact: 02/03/2020
	Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/01/2019	Source: EPA Region 6
Date Data Arrived at EDR: 07/29/2019	Telephone: 214-665-7591
Date Made Active in Reports: 10/17/2019	Last EDR Contact: 12/04/2019
Number of Days to Update: 80	Next Scheduled EDR Contact: 02/03/2020
	Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/08/2019	Source: EPA Region 5
Date Data Arrived at EDR: 07/29/2019	Telephone: 312-886-6136
Date Made Active in Reports: 10/17/2019	Last EDR Contact: 12/04/2019
Number of Days to Update: 80	Next Scheduled EDR Contact: 02/03/2020
	Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 04/12/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 12/03/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 05/02/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 20

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/08/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 79

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 05/02/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 80

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 12/17/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008	Source: EPA, Region 7
Date Data Arrived at EDR: 04/22/2008	Telephone: 913-551-7365
Date Made Active in Reports: 05/19/2008	Last EDR Contact: 04/20/2009
Number of Days to Update: 27	Next Scheduled EDR Contact: 07/20/2009
	Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 10/28/2019	Source: Department of Toxic Substances Control
Date Data Arrived at EDR: 10/29/2019	Telephone: 916-323-3400
Date Made Active in Reports: 01/07/2020	Last EDR Contact: 10/29/2019
Number of Days to Update: 70	Next Scheduled EDR Contact: 02/10/2020
	Data Release Frequency: Quarterly

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing

A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 09/23/2019	Source: State Water Resources Control Board
Date Data Arrived at EDR: 09/24/2019	Telephone: 916-323-7905
Date Made Active in Reports: 11/06/2019	Last EDR Contact: 12/19/2019
Number of Days to Update: 43	Next Scheduled EDR Contact: 04/06/2020
	Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/03/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 06/04/2019	Telephone: 202-566-2777
Date Made Active in Reports: 08/26/2019	Last EDR Contact: 12/16/2019
Number of Days to Update: 83	Next Scheduled EDR Contact: 03/30/2020
	Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 10/25/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/07/2019
Number of Days to Update: 59

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 03/26/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 34

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 11/07/2019
Next Scheduled EDR Contact: 02/24/2020
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 10/28/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 11/01/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 06/11/2019	Source: Drug Enforcement Administration
Date Data Arrived at EDR: 06/13/2019	Telephone: 202-307-1000
Date Made Active in Reports: 09/03/2019	Last EDR Contact: 11/20/2019
Number of Days to Update: 82	Next Scheduled EDR Contact: 03/09/2020
	Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005	Source: Department of Toxic Substance Control
Date Data Arrived at EDR: 08/03/2006	Telephone: 916-323-3400
Date Made Active in Reports: 08/24/2006	Last EDR Contact: 02/23/2009
Number of Days to Update: 21	Next Scheduled EDR Contact: 05/25/2009
	Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 10/28/2019	Source: Department of Toxic Substances Control
Date Data Arrived at EDR: 10/29/2019	Telephone: 916-323-3400
Date Made Active in Reports: 01/07/2020	Last EDR Contact: 10/29/2019
Number of Days to Update: 70	Next Scheduled EDR Contact: 02/10/2020
	Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2018	Source: Department of Toxic Substances Control
Date Data Arrived at EDR: 07/16/2019	Telephone: 916-255-6504
Date Made Active in Reports: 09/24/2019	Last EDR Contact: 01/06/2020
Number of Days to Update: 70	Next Scheduled EDR Contact: 04/20/2020
	Data Release Frequency: Varies

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 10/21/2019	Source: CalEPA
Date Data Arrived at EDR: 10/22/2019	Telephone: 916-323-2514
Date Made Active in Reports: 01/02/2020	Last EDR Contact: 10/22/2019
Number of Days to Update: 72	Next Scheduled EDR Contact: 02/03/2020
	Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 06/11/2019
Date Data Arrived at EDR: 06/13/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990’s. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 08/20/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing

Aboveground storage tank sites

Date of Government Version: 08/01/2019	Source: San Francisco County Department of Public Health
Date Data Arrived at EDR: 08/02/2019	Telephone: 415-252-3896
Date Made Active in Reports: 10/11/2019	Last EDR Contact: 10/31/2019
Number of Days to Update: 70	Next Scheduled EDR Contact: 02/17/2020
	Data Release Frequency: Varies

CERS TANKS: California Environmental Reporting System (CERS) Tanks

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 10/21/2019	Source: California Environmental Protection Agency
Date Data Arrived at EDR: 10/22/2019	Telephone: 916-323-2514
Date Made Active in Reports: 01/03/2020	Last EDR Contact: 10/22/2019
Number of Days to Update: 73	Next Scheduled EDR Contact: 02/03/2020
	Data Release Frequency: Quarterly

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994	Source: California Environmental Protection Agency
Date Data Arrived at EDR: 09/05/1995	Telephone: 916-341-5851
Date Made Active in Reports: 09/29/1995	Last EDR Contact: 12/28/1998
Number of Days to Update: 24	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 08/29/2019	Source: Department of Toxic Substances Control
Date Data Arrived at EDR: 08/30/2019	Telephone: 916-323-3400
Date Made Active in Reports: 10/29/2019	Last EDR Contact: 12/02/2019
Number of Days to Update: 60	Next Scheduled EDR Contact: 03/16/2020
	Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information

A Federal CERCLA (’Superfund’) lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 10/25/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 11/07/2019	Telephone: 202-564-6023
Date Made Active in Reports: 11/20/2019	Last EDR Contact: 01/03/2020
Number of Days to Update: 13	Next Scheduled EDR Contact: 04/13/2020
	Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 09/03/2019
Date Data Arrived at EDR: 09/04/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 62

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 06/24/2019
Date Data Arrived at EDR: 06/26/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 89

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 12/06/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 05/15/2019
Date Data Arrived at EDR: 06/24/2019
Date Made Active in Reports: 08/21/2019
Number of Days to Update: 58

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 10/25/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012	Source: FirstSearch
Date Data Arrived at EDR: 01/03/2013	Telephone: N/A
Date Made Active in Reports: 02/22/2013	Last EDR Contact: 01/03/2013
Number of Days to Update: 50	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA’s comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/16/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/16/2019	Telephone: (415) 495-8895
Date Made Active in Reports: 12/20/2019	Last EDR Contact: 12/16/2019
Number of Days to Update: 4	Next Scheduled EDR Contact: 04/06/2020
	Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 05/15/2019	Source: U.S. Army Corps of Engineers
Date Data Arrived at EDR: 05/21/2019	Telephone: 202-528-4285
Date Made Active in Reports: 08/08/2019	Last EDR Contact: 11/19/2019
Number of Days to Update: 79	Next Scheduled EDR Contact: 03/02/2020
	Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005	Source: USGS
Date Data Arrived at EDR: 11/10/2006	Telephone: 888-275-8747
Date Made Active in Reports: 01/11/2007	Last EDR Contact: 01/10/2020
Number of Days to Update: 62	Next Scheduled EDR Contact: 04/20/2020
	Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018	Source: U.S. Geological Survey
Date Data Arrived at EDR: 04/11/2018	Telephone: 888-275-8747
Date Made Active in Reports: 11/06/2019	Last EDR Contact: 01/09/2020
Number of Days to Update: 574	Next Scheduled EDR Contact: 04/20/2020
	Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017	Source: Environmental Protection Agency
Date Data Arrived at EDR: 02/03/2017	Telephone: 615-532-8599
Date Made Active in Reports: 04/07/2017	Last EDR Contact: 12/02/2019
Number of Days to Update: 63	Next Scheduled EDR Contact: 02/24/2020
	Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 09/23/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 09/24/2019	Telephone: 202-566-1917
Date Made Active in Reports: 12/20/2019	Last EDR Contact: 12/19/2019
Number of Days to Update: 87	Next Scheduled EDR Contact: 04/06/2020
	Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/21/2014	Telephone: 617-520-3000
Date Made Active in Reports: 06/17/2014	Last EDR Contact: 10/31/2019
Number of Days to Update: 88	Next Scheduled EDR Contact: 02/17/2020
	Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017	Source: Environmental Protection Agency
Date Data Arrived at EDR: 05/08/2018	Telephone: 703-308-4044
Date Made Active in Reports: 07/20/2018	Last EDR Contact: 11/08/2019
Number of Days to Update: 73	Next Scheduled EDR Contact: 02/17/2020
	Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016	Source: EPA
Date Data Arrived at EDR: 06/21/2017	Telephone: 202-260-5521
Date Made Active in Reports: 01/05/2018	Last EDR Contact: 12/20/2019
Number of Days to Update: 198	Next Scheduled EDR Contact: 03/30/2020
	Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 11/16/2018
Date Made Active in Reports: 11/21/2019
Number of Days to Update: 370

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 11/22/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 10/23/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 84

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/23/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/20/2019
Number of Days to Update: 13

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 04/25/2019
Date Data Arrived at EDR: 05/02/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/21/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2019	Source: EPA
Date Data Arrived at EDR: 11/07/2019	Telephone: 202-564-6023
Date Made Active in Reports: 11/21/2019	Last EDR Contact: 01/03/2020
Number of Days to Update: 14	Next Scheduled EDR Contact: 02/17/2020
	Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 10/09/2019	Source: EPA
Date Data Arrived at EDR: 10/11/2019	Telephone: 202-566-0500
Date Made Active in Reports: 12/20/2019	Last EDR Contact: 01/10/2020
Number of Days to Update: 70	Next Scheduled EDR Contact: 04/20/2020
	Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016	Source: Environmental Protection Agency
Date Data Arrived at EDR: 11/23/2016	Telephone: 202-564-2501
Date Made Active in Reports: 02/10/2017	Last EDR Contact: 01/06/2020
Number of Days to Update: 79	Next Scheduled EDR Contact: 04/20/2020
	Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009	Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Date Data Arrived at EDR: 04/16/2009	Telephone: 202-566-1667
Date Made Active in Reports: 05/11/2009	Last EDR Contact: 08/18/2017
Number of Days to Update: 25	Next Scheduled EDR Contact: 12/04/2017
	Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009	Source: EPA
Date Data Arrived at EDR: 04/16/2009	Telephone: 202-566-1667
Date Made Active in Reports: 05/11/2009	Last EDR Contact: 08/18/2017
Number of Days to Update: 25	Next Scheduled EDR Contact: 12/04/2017
	Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/25/2019	Source: Nuclear Regulatory Commission
Date Data Arrived at EDR: 10/25/2019	Telephone: 301-415-7169
Date Made Active in Reports: 01/15/2020	Last EDR Contact: 10/25/2019
Number of Days to Update: 82	Next Scheduled EDR Contact: 02/03/2020
	Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 42

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 11/25/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 11/06/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 78

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/29/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/30/2019
Date Data Arrived at EDR: 10/09/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 72

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 01/07/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 11/04/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/01/2019
Date Data Arrived at EDR: 08/21/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 82

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 11/15/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/20/2019
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/01/2019
Date Data Arrived at EDR: 08/27/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 76

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 11/25/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Semi-Annually

MINES VIOLATIONS: MSHA Violation Assessment Data
Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 09/17/2019
Date Data Arrived at EDR: 09/18/2019
Date Made Active in Reports: 12/03/2019
Number of Days to Update: 76

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/22/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/22/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/10/2019
Date Data Arrived at EDR: 09/10/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 37

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and ’pointers’ to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 08/12/2019
Date Data Arrived at EDR: 09/04/2019
Date Made Active in Reports: 12/03/2019
Number of Days to Update: 90

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information
ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 10/06/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 10/08/2019	Telephone: 202-564-2280
Date Made Active in Reports: 01/02/2020	Last EDR Contact: 01/07/2020
Number of Days to Update: 86	Next Scheduled EDR Contact: 04/20/2020
	Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites
A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2017	Source: Department of Defense
Date Data Arrived at EDR: 01/17/2019	Telephone: 703-704-1564
Date Made Active in Reports: 04/01/2019	Last EDR Contact: 01/13/2020
Number of Days to Update: 74	Next Scheduled EDR Contact: 04/27/2020
	Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/19/2019	Source: EPA
Date Data Arrived at EDR: 08/20/2019	Telephone: 800-385-6164
Date Made Active in Reports: 11/11/2019	Last EDR Contact: 11/19/2019
Number of Days to Update: 83	Next Scheduled EDR Contact: 03/02/2020
	Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan
Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989	Source: Department of Health Services
Date Data Arrived at EDR: 07/27/1994	Telephone: 916-255-2118
Date Made Active in Reports: 08/02/1994	Last EDR Contact: 05/31/1994
Number of Days to Update: 6	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 09/23/2019	Source: CAL EPA/Office of Emergency Information
Date Data Arrived at EDR: 09/24/2019	Telephone: 916-323-3400
Date Made Active in Reports: 11/06/2019	Last EDR Contact: 12/20/2019
Number of Days to Update: 43	Next Scheduled EDR Contact: 04/06/2020
	Data Release Frequency: Quarterly

CUPA SAN FRANCISCO CO: CUPA Facility Listing
Cupa facilities

Date of Government Version: 10/31/2019	Source: San Francisco County Department of Environmental Health
Date Data Arrived at EDR: 11/01/2019	Telephone: 415-252-3896
Date Made Active in Reports: 12/11/2019	Last EDR Contact: 10/31/2019
Number of Days to Update: 40	Next Scheduled EDR Contact: 02/17/2020
	Data Release Frequency: Varies

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing
list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 02/24/2020
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/06/2019
Date Data Arrived at EDR: 10/11/2019
Date Made Active in Reports: 12/12/2019
Number of Days to Update: 62

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Annually

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 09/27/2019
Date Data Arrived at EDR: 10/01/2019
Date Made Active in Reports: 11/07/2019
Number of Days to Update: 37

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 08/28/2019
Date Data Arrived at EDR: 08/30/2019
Date Made Active in Reports: 10/29/2019
Number of Days to Update: 60

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/24/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 59

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 03/29/2020
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 07/19/2019
Date Data Arrived at EDR: 07/22/2019
Date Made Active in Reports: 09/26/2019
Number of Days to Update: 66

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 10/30/2019
Next Scheduled EDR Contact: 02/02/2020
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 11/08/2019	Source: California Integrated Waste Management Board
Date Data Arrived at EDR: 11/12/2019	Telephone: 916-341-6066
Date Made Active in Reports: 01/08/2020	Last EDR Contact: 11/07/2019
Number of Days to Update: 57	Next Scheduled EDR Contact: 02/24/2020
	Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2017	Source: California Environmental Protection Agency
Date Data Arrived at EDR: 05/29/2019	Telephone: 916-255-1136
Date Made Active in Reports: 07/22/2019	Last EDR Contact: 01/09/2020
Number of Days to Update: 54	Next Scheduled EDR Contact: 04/20/2020
	Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 08/19/2019	Source: Department of Toxic Subsances Control
Date Data Arrived at EDR: 08/20/2019	Telephone: 877-786-9427
Date Made Active in Reports: 10/18/2019	Last EDR Contact: 11/19/2019
Number of Days to Update: 59	Next Scheduled EDR Contact: 03/02/2020
	Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001	Source: Department of Toxic Substances Control
Date Data Arrived at EDR: 01/22/2009	Telephone: 916-323-3400
Date Made Active in Reports: 04/08/2009	Last EDR Contact: 01/22/2009
Number of Days to Update: 76	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/19/2019	Source: Department of Toxic Substances Control
Date Data Arrived at EDR: 08/20/2019	Telephone: 916-323-3400
Date Made Active in Reports: 10/18/2019	Last EDR Contact: 11/19/2019
Number of Days to Update: 59	Next Scheduled EDR Contact: 03/02/2020
	Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 10/07/2019	Source: Department of Toxic Substances Control
Date Data Arrived at EDR: 10/08/2019	Telephone: 916-440-7145
Date Made Active in Reports: 11/07/2019	Last EDR Contact: 01/07/2020
Number of Days to Update: 30	Next Scheduled EDR Contact: 04/20/2020
	Data Release Frequency: Quarterly

MINES: Mines Site Location Listing

A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing

The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 07/19/2019
Date Data Arrived at EDR: 09/04/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 62

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 11/11/2019
Date Data Arrived at EDR: 11/12/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 57

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 11/12/2019
Next Scheduled EDR Contact: 02/24/2020
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing

A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 09/03/2019
Date Data Arrived at EDR: 09/04/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 62

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

PROC: Certified Processors Database

A listing of certified processors.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 09/16/2019
Date Data Arrived at EDR: 09/18/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 49

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 12/11/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: No Update Planned

UIC: UIC Listing

A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 08/20/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 11/18/2019
Number of Days to Update: 90

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)

Underground control injection sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing

Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region’s active disposal pits are operating without permission.

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 07/11/2018
Date Made Active in Reports: 09/13/2018
Number of Days to Update: 64

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 01/07/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Varies

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: No Update Planned

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 12/17/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)

Military privatized sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)

Projects sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing

In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 58

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 09/03/2019
Date Data Arrived at EDR: 09/04/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 62

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 10/21/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/03/2020
Number of Days to Update: 73

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/22/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 09/09/2019	Source: State Water Resources Control Board
Date Data Arrived at EDR: 09/09/2019	Telephone: 866-480-1028
Date Made Active in Reports: 11/01/2019	Last EDR Contact: 12/10/2019
Number of Days to Update: 53	Next Scheduled EDR Contact: 03/23/2020
	Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 09/09/2019	Source: State Water Resources Control Board
Date Data Arrived at EDR: 09/09/2019	Telephone: 866-480-1028
Date Made Active in Reports: 11/01/2019	Last EDR Contact: 12/10/2019
Number of Days to Update: 53	Next Scheduled EDR Contact: 03/23/2020
	Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 09/09/2019	Source: State Water Resources Control Board
Date Data Arrived at EDR: 09/09/2019	Telephone: 866-480-1028
Date Made Active in Reports: 11/01/2019	Last EDR Contact: 12/10/2019
Number of Days to Update: 53	Next Scheduled EDR Contact: 03/23/2020
	Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018	Source: USGS
Date Data Arrived at EDR: 10/21/2019	Telephone: 703-648-6533
Date Made Active in Reports: 10/24/2019	Last EDR Contact: 11/22/2019
Number of Days to Update: 3	Next Scheduled EDR Contact: 03/09/2020
	Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A	Source: EDR, Inc.
Date Data Arrived at EDR: N/A	Telephone: N/A
Date Made Active in Reports: N/A	Last EDR Contact: N/A
Number of Days to Update: N/A	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A	Source: EDR, Inc.
Date Data Arrived at EDR: N/A	Telephone: N/A
Date Made Active in Reports: N/A	Last EDR Contact: N/A
Number of Days to Update: N/A	Next Scheduled EDR Contact: N/A
	Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR’s review was limited to those categories of sources that might, in EDR’s opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR’s HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A	Source: EDR, Inc.
Date Data Arrived at EDR: N/A	Telephone: N/A
Date Made Active in Reports: N/A	Last EDR Contact: N/A
Number of Days to Update: N/A	Next Scheduled EDR Contact: N/A
	Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A	Source: Department of Resources Recycling and Recovery
Date Data Arrived at EDR: 07/01/2013	Telephone: N/A
Date Made Active in Reports: 01/13/2014	Last EDR Contact: 06/01/2012
Number of Days to Update: 196	Next Scheduled EDR Contact: N/A
	Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A	Source: State Water Resources Control Board
Date Data Arrived at EDR: 07/01/2013	Telephone: N/A
Date Made Active in Reports: 12/30/2013	Last EDR Contact: 06/01/2012
Number of Days to Update: 182	Next Scheduled EDR Contact: N/A
	Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019	Source: Alameda County Environmental Health Services
Date Data Arrived at EDR: 01/11/2019	Telephone: 510-567-6700
Date Made Active in Reports: 03/05/2019	Last EDR Contact: 01/06/2020
Number of Days to Update: 53	Next Scheduled EDR Contact: 04/20/2020
	Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks
Underground storage tank sites located in Alameda county.

Date of Government Version: 10/02/2019
Date Data Arrived at EDR: 10/03/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 34

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 09/06/2019
Date Data Arrived at EDR: 09/10/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 51

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 08/05/2019
Date Data Arrived at EDR: 08/07/2019
Date Made Active in Reports: 10/09/2019
Number of Days to Update: 63

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 12/03/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 08/14/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 10/18/2019
Number of Days to Update: 59

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 10/31/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 08/20/2019
Date Data Arrived at EDR: 08/23/2019
Date Made Active in Reports: 10/22/2019
Number of Days to Update: 60

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 10/28/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List

Cupa Facility list

Date of Government Version: 10/11/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 12/11/2019
Number of Days to Update: 43

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 10/25/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List

CUPA facility list.

Date of Government Version: 09/06/2019
Date Data Arrived at EDR: 09/12/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 49

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 10/28/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List

Certified Unified Program Agency. CUPA’s are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 10/08/2019
Date Data Arrived at EDR: 10/10/2019
Date Made Active in Reports: 12/11/2019
Number of Days to Update: 62

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List

Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List

CUPA facility list.

Date of Government Version: 07/08/2019
Date Data Arrived at EDR: 07/10/2019
Date Made Active in Reports: 09/20/2019
Number of Days to Update: 72

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 10/30/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List

Cupa facility list.

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 72

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List

Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

KERN COUNTY:

UST KERN: Underground Storage Tank Sites & Tank Listing

Kern County Sites and Tanks Listing.

Date of Government Version: 10/28/2019
Date Data Arrived at EDR: 11/05/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 64

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 10/31/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List

A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/14/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 10/18/2019
Number of Days to Update: 59

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 11/25/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 08/16/2019	Source: Lake County Environmental Health
Date Data Arrived at EDR: 08/20/2019	Telephone: 707-263-1164
Date Made Active in Reports: 10/18/2019	Last EDR Contact: 01/08/2020
Number of Days to Update: 59	Next Scheduled EDR Contact: 04/27/2020
	Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/22/2019	Source: Lassen County Environmental Health
Date Data Arrived at EDR: 07/23/2019	Telephone: 530-251-8528
Date Made Active in Reports: 09/26/2019	Last EDR Contact: 01/17/2020
Number of Days to Update: 65	Next Scheduled EDR Contact: 05/04/2020
	Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009	Source: N/A
Date Data Arrived at EDR: 03/31/2009	Telephone: N/A
Date Made Active in Reports: 10/23/2009	Last EDR Contact: 12/11/2019
Number of Days to Update: 206	Next Scheduled EDR Contact: 03/30/2020
	Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 09/26/2019	Source: Department of Public Works
Date Data Arrived at EDR: 10/04/2019	Telephone: 626-458-3517
Date Made Active in Reports: 11/07/2019	Last EDR Contact: 01/06/2020
Number of Days to Update: 34	Next Scheduled EDR Contact: 04/20/2020
	Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 10/15/2019	Source: La County Department of Public Works
Date Data Arrived at EDR: 10/16/2019	Telephone: 818-458-5185
Date Made Active in Reports: 12/12/2019	Last EDR Contact: 01/14/2020
Number of Days to Update: 57	Next Scheduled EDR Contact: 04/27/2020
	Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2019	Source: Engineering & Construction Division
Date Data Arrived at EDR: 01/15/2019	Telephone: 213-473-7869
Date Made Active in Reports: 03/07/2019	Last EDR Contact: 01/13/2020
Number of Days to Update: 51	Next Scheduled EDR Contact: 04/27/2020
	Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory

A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills

This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 04/30/2012
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 42

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory

A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory

A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List

Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 71

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 01/14/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank

Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 01/13/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 06/27/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 10/02/2019
Number of Days to Update: 64

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county’s Certified Unified Program Agency database. California’s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/22/2019
Date Data Arrived at EDR: 08/26/2019
Date Made Active in Reports: 10/29/2019
Number of Days to Update: 64

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 11/18/2019
Date Data Arrived at EDR: 11/20/2019
Date Made Active in Reports: 01/03/2020
Number of Days to Update: 44

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 08/21/2019	Source: Mono County Health Department
Date Data Arrived at EDR: 09/03/2019	Telephone: 760-932-5580
Date Made Active in Reports: 10/31/2019	Last EDR Contact: 11/20/2019
Number of Days to Update: 58	Next Scheduled EDR Contact: 03/09/2020
	Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 11/06/2019	Source: Monterey County Health Department
Date Data Arrived at EDR: 11/07/2019	Telephone: 831-796-1297
Date Made Active in Reports: 01/08/2020	Last EDR Contact: 12/19/2019
Number of Days to Update: 62	Next Scheduled EDR Contact: 04/13/2020
	Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017	Source: Napa County Department of Environmental Management
Date Data Arrived at EDR: 01/11/2017	Telephone: 707-253-4269
Date Made Active in Reports: 03/02/2017	Last EDR Contact: 11/20/2019
Number of Days to Update: 50	Next Scheduled EDR Contact: 03/09/2020
	Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019	Source: Napa County Department of Environmental Management
Date Data Arrived at EDR: 09/09/2019	Telephone: 707-253-4269
Date Made Active in Reports: 10/31/2019	Last EDR Contact: 11/20/2019
Number of Days to Update: 52	Next Scheduled EDR Contact: 03/09/2020
	Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 10/30/2019	Source: Community Development Agency
Date Data Arrived at EDR: 10/30/2019	Telephone: 530-265-1467
Date Made Active in Reports: 12/11/2019	Last EDR Contact: 10/25/2019
Number of Days to Update: 42	Next Scheduled EDR Contact: 02/10/2020
	Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 07/10/2019
Date Data Arrived at EDR: 08/07/2019
Date Made Active in Reports: 10/09/2019
Number of Days to Update: 63

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/04/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 07/10/2019
Date Data Arrived at EDR: 08/09/2019
Date Made Active in Reports: 10/09/2019
Number of Days to Update: 61

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/04/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 10/04/2019
Date Data Arrived at EDR: 11/05/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 64

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/05/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 09/03/2019
Date Data Arrived at EDR: 09/05/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 61

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 12/13/2019
Number of Days to Update: 52

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 10/17/2019	Source: Department of Environmental Health
Date Data Arrived at EDR: 10/22/2019	Telephone: 951-358-5055
Date Made Active in Reports: 01/03/2020	Last EDR Contact: 12/16/2019
Number of Days to Update: 73	Next Scheduled EDR Contact: 03/30/2020
	Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 08/06/2019	Source: Sacramento County Environmental Management
Date Data Arrived at EDR: 10/01/2019	Telephone: 916-875-8406
Date Made Active in Reports: 11/07/2019	Last EDR Contact: 12/23/2019
Number of Days to Update: 37	Next Scheduled EDR Contact: 04/13/2020
	Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 08/07/2019	Source: Sacramento County Environmental Management
Date Data Arrived at EDR: 10/01/2019	Telephone: 916-875-8406
Date Made Active in Reports: 11/08/2019	Last EDR Contact: 12/23/2019
Number of Days to Update: 38	Next Scheduled EDR Contact: 04/13/2020
	Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 07/16/2019	Source: San Benito County Environmental Health
Date Data Arrived at EDR: 07/16/2019	Telephone: N/A
Date Made Active in Reports: 09/24/2019	Last EDR Contact: 11/14/2019
Number of Days to Update: 70	Next Scheduled EDR Contact: 02/17/2020
	Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 08/29/2019	Source: San Bernardino County Fire Department Hazardous Materials Division
Date Data Arrived at EDR: 08/30/2019	Telephone: 909-387-3041
Date Made Active in Reports: 10/29/2019	Last EDR Contact: 11/04/2019
Number of Days to Update: 60	Next Scheduled EDR Contact: 02/17/2020
	Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment ’H’ permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/03/2019
Date Data Arrived at EDR: 09/04/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 62

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 56

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego’s jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 10/16/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 12/13/2019
Number of Days to Update: 52

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

SAN DIEGO CO SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 11/25/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

LUST SAN FRANCISCO: Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 10/31/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 08/01/2019	Source: Department of Public Health
Date Data Arrived at EDR: 08/02/2019	Telephone: 415-252-3920
Date Made Active in Reports: 10/08/2019	Last EDR Contact: 01/07/2020
Number of Days to Update: 67	Next Scheduled EDR Contact: 02/17/2020
	Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST

A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018	Source: Environmental Health Department
Date Data Arrived at EDR: 06/26/2018	Telephone: N/A
Date Made Active in Reports: 07/11/2018	Last EDR Contact: 12/11/2019
Number of Days to Update: 15	Next Scheduled EDR Contact: 03/30/2020
	Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List

Cupa Facility List.

Date of Government Version: 08/14/2019	Source: San Luis Obispo County Public Health Department
Date Data Arrived at EDR: 08/20/2019	Telephone: 805-781-5596
Date Made Active in Reports: 10/18/2019	Last EDR Contact: 12/11/2019
Number of Days to Update: 59	Next Scheduled EDR Contact: 03/02/2020
	Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory

List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 09/03/2019	Source: San Mateo County Environmental Health Services Division
Date Data Arrived at EDR: 09/09/2019	Telephone: 650-363-1921
Date Made Active in Reports: 11/05/2019	Last EDR Contact: 12/10/2019
Number of Days to Update: 57	Next Scheduled EDR Contact: 03/23/2020
	Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List

A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019	Source: San Mateo County Environmental Health Services Division
Date Data Arrived at EDR: 03/29/2019	Telephone: 650-363-1921
Date Made Active in Reports: 05/29/2019	Last EDR Contact: 12/05/2019
Number of Days to Update: 61	Next Scheduled EDR Contact: 03/23/2020
	Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing

CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011	Source: Santa Barbara County Public Health Department
Date Data Arrived at EDR: 09/09/2011	Telephone: 805-686-8167
Date Made Active in Reports: 10/07/2011	Last EDR Contact: 11/14/2019
Number of Days to Update: 28	Next Scheduled EDR Contact: 03/02/2020
	Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 08/14/2019	Source: Department of Environmental Health
Date Data Arrived at EDR: 08/20/2019	Telephone: 408-918-1973
Date Made Active in Reports: 10/18/2019	Last EDR Contact: 11/14/2019
Number of Days to Update: 59	Next Scheduled EDR Contact: 03/02/2020
	Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005	Source: Santa Clara Valley Water District
Date Data Arrived at EDR: 03/30/2005	Telephone: 408-265-2600
Date Made Active in Reports: 04/21/2005	Last EDR Contact: 03/23/2009
Number of Days to Update: 22	Next Scheduled EDR Contact: 06/22/2009
	Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014	Source: Department of Environmental Health
Date Data Arrived at EDR: 03/05/2014	Telephone: 408-918-3417
Date Made Active in Reports: 03/18/2014	Last EDR Contact: 11/20/2019
Number of Days to Update: 13	Next Scheduled EDR Contact: 03/09/2020
	Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 10/30/2019	Source: City of San Jose Fire Department
Date Data Arrived at EDR: 11/01/2019	Telephone: 408-535-7694
Date Made Active in Reports: 01/08/2020	Last EDR Contact: 10/31/2019
Number of Days to Update: 68	Next Scheduled EDR Contact: 02/17/2020
	Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017	Source: Santa Cruz County Environmental Health
Date Data Arrived at EDR: 02/22/2017	Telephone: 831-464-2761
Date Made Active in Reports: 05/23/2017	Last EDR Contact: 11/14/2019
Number of Days to Update: 90	Next Scheduled EDR Contact: 03/02/2020
	Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017	Source: Shasta County Department of Resource Management
Date Data Arrived at EDR: 06/19/2017	Telephone: 530-225-5789
Date Made Active in Reports: 08/09/2017	Last EDR Contact: 11/14/2019
Number of Days to Update: 51	Next Scheduled EDR Contact: 03/02/2020
	Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks

A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 11/25/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks

Underground storage tank sites located in Solano county.

Date of Government Version: 08/28/2019
Date Data Arrived at EDR: 08/30/2019
Date Made Active in Reports: 10/29/2019
Number of Days to Update: 60

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List

Cupa Facility list

Date of Government Version: 06/18/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 07/24/2019
Number of Days to Update: 29

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites

A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 10/02/2019
Date Made Active in Reports: 11/07/2019
Number of Days to Update: 36

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 12/17/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List

Cupa facility list

Date of Government Version: 11/04/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 62

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 01/13/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks

Underground storage tank sites located in Sutter county.

Date of Government Version: 08/29/2019
Date Data Arrived at EDR: 09/03/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 64

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 05/20/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 07/18/2019
Number of Days to Update: 58

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 08/12/2019
Date Data Arrived at EDR: 08/14/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 64

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 11/04/2019
Next Scheduled EDR Contact: 02/17/2020
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 05/29/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 09/30/2019
Number of Days to Update: 63

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/21/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 11/07/2019
Next Scheduled EDR Contact: 02/24/2020
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 09/26/2019
Date Data Arrived at EDR: 10/23/2019
Date Made Active in Reports: 12/13/2019
Number of Days to Update: 51

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 10/21/2019
Next Scheduled EDR Contact: 02/03/2020
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 07/26/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 09/25/2019
Date Data Arrived at EDR: 10/01/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 30

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 11/04/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 63

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 10/25/2019
Next Scheduled EDR Contact: 02/10/2020
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 05/14/2019	Source: Department of Energy & Environmental Protection
Date Data Arrived at EDR: 05/14/2019	Telephone: 860-424-3375
Date Made Active in Reports: 08/05/2019	Last EDR Contact: 11/11/2019
Number of Days to Update: 83	Next Scheduled EDR Contact: 02/24/2020
	Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2018	Source: Department of Environmental Protection
Date Data Arrived at EDR: 04/10/2019	Telephone: N/A
Date Made Active in Reports: 05/16/2019	Last EDR Contact: 01/06/2020
Number of Days to Update: 36	Next Scheduled EDR Contact: 04/20/2020
	Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019	Source: Department of Environmental Conservation
Date Data Arrived at EDR: 05/01/2019	Telephone: 518-402-8651
Date Made Active in Reports: 06/21/2019	Last EDR Contact: 10/29/2019
Number of Days to Update: 51	Next Scheduled EDR Contact: 02/10/2020
	Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 06/30/2018	Source: Department of Environmental Protection
Date Data Arrived at EDR: 07/19/2019	Telephone: 717-783-8990
Date Made Active in Reports: 09/10/2019	Last EDR Contact: 01/14/2020
Number of Days to Update: 53	Next Scheduled EDR Contact: 04/07/2020
	Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2018	Source: Department of Environmental Management
Date Data Arrived at EDR: 10/02/2019	Telephone: 401-222-2797
Date Made Active in Reports: 12/10/2019	Last EDR Contact: 11/14/2019
Number of Days to Update: 69	Next Scheduled EDR Contact: 03/02/2020
	Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 05/31/2018	Source: Department of Natural Resources
Date Data Arrived at EDR: 06/19/2019	Telephone: N/A
Date Made Active in Reports: 09/03/2019	Last EDR Contact: 12/18/2019
Number of Days to Update: 76	Next Scheduled EDR Contact: 03/23/2020
	Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association’s annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics’ primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics’ primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

BRUNSWICK INDUSTRIAL SITE
EAST BENNETT RD
GRASS VALLEY, CA 95945

TARGET PROPERTY COORDINATES

Latitude (North):	39.209359 - 39˚ 12' 33.69''
Longitude (West):	121.016081 - 121˚ 0' 57.89''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	671295.0
UTM Y (Meters):	4341676.5
Elevation:	2732 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5603376 GRASS VALLEY, CA
Version Date:	2012
East Map:	5630285 CHICAGO PARK, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

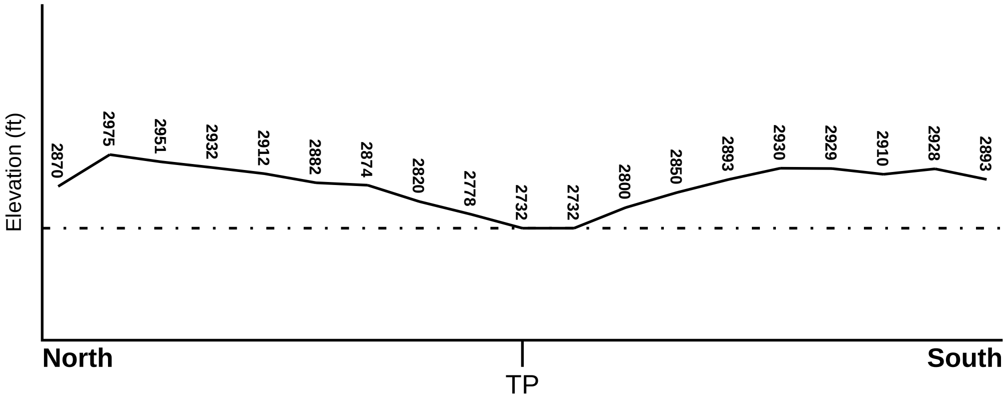
TOPOGRAPHIC INFORMATION

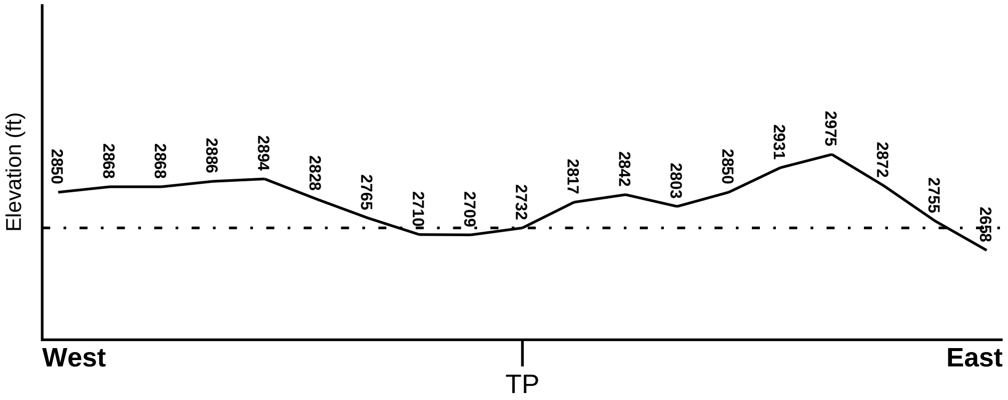
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

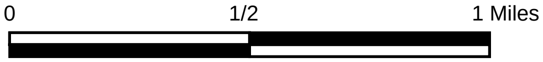
General Topographic Gradient: General West

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 2732 ft.



Source: Topography has been determined from the USGS 7.5’ Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06057C0650E	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06057C0632E	FEMA FIRM Flood data
06057C0675E	FEMA FIRM Flood data
06057C0633E	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

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* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

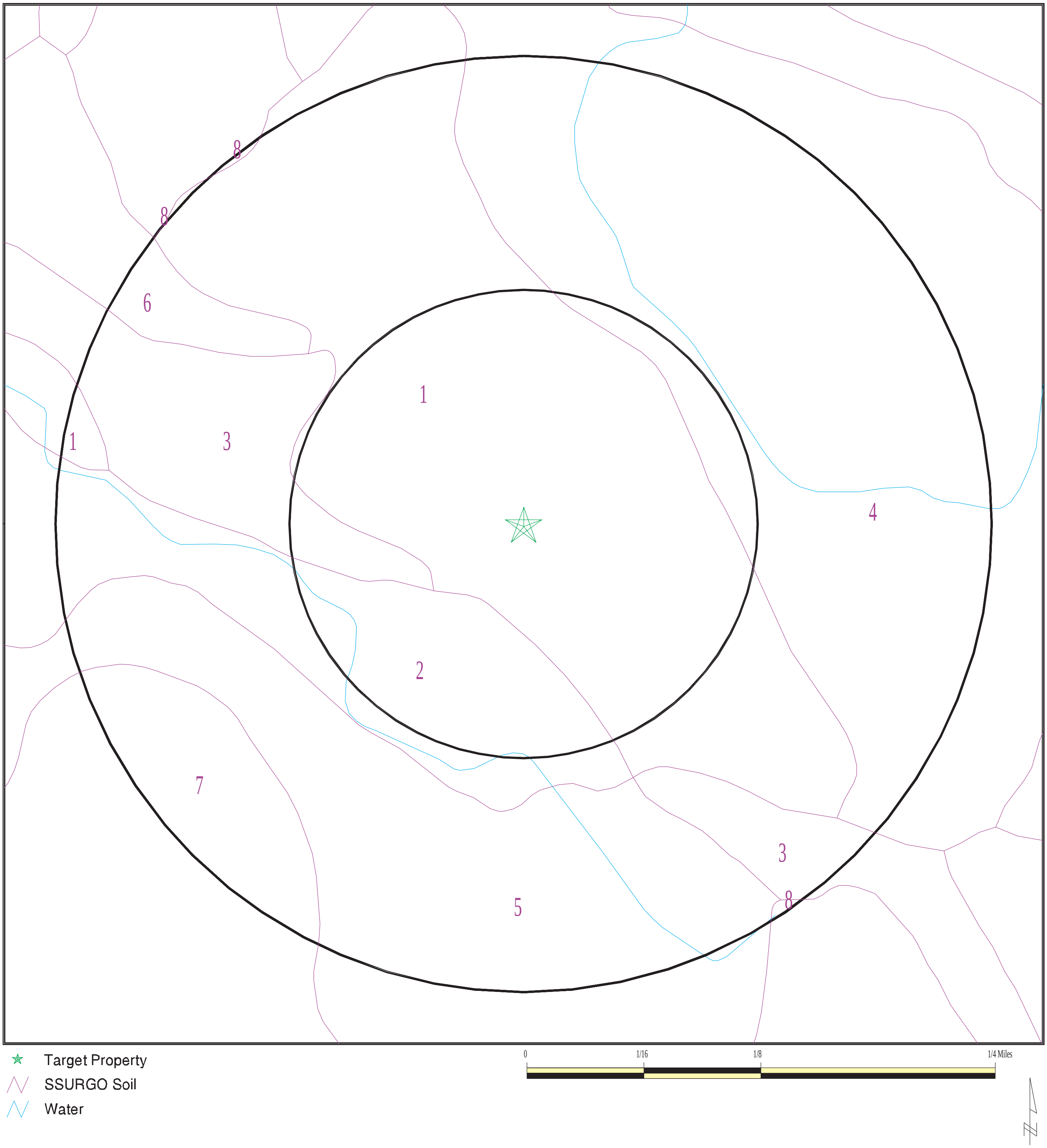
GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT		GEOLOGIC AGE IDENTIFICATION	
Era:	Mesozoic	Category:	Eugeosynclinal Deposits
System:	Lower Jurassic and Upper Triassic		
Series:	Lower Mesozoic		
Code:	lMze *(decoded above as Era, System & Series)*		

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5940744.2s



SITE NAME: Brunswick Industrial Site
ADDRESS: East Bennett Rd
Grass Valley CA 95945
LAT/LONG: 39.209359 / 121.016081

CLIENT: Holdrege & Kull Consultants
CONTACT: Julie Turnross
INQUIRY #: 5940744.2s
DATE: January 21, 2020 12:53 pm

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Placer diggings

Soil Surface Texture: variable

Hydrologic Group: Not reported

Soil Drainage Class:
Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	
Layer	**Upper**	**Lower**	**Soil Texture Class**	**AASHTO Group**	**Unified Soil**		**Soil Reaction (pH)**
1	0 inches	59 inches	variable	A-1-b	COARSE-GRAINED SOILS, Gravels, Clean gravels, Poorly Graded Gravel. COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel.	Max: 141 Min: 42	Max: Min:

Soil Map ID: 2

Soil Component Name: Aiken

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		Soil Reaction (pH)
1	0 inches	29 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:
2	29 inches	51 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:
3	51 inches	64 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:
4	64 inches	68 inches	bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:

Soil Map ID: 3

Soil Component Name: Alluvial land

Soil Surface Texture:
Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 114 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches		Not reported	Not reported	Max: 0.42 Min: 0.02	Max: Min:
2	5 inches	59 inches		Not reported	Not reported	Max: 0.42 Min: 0.02	Max: Min:

Soil Map ID: 4

Soil Component Name: Aiken

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	29 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:
2	29 inches	51 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
3	51 inches	64 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:
4	64 inches	68 inches	bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:

Soil Map ID: 5

Soil Component Name:	Cohasset
Soil Surface Texture:	loam
Hydrologic Group:	Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.
Soil Drainage Class:	Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel:	Moderate
Depth to Bedrock Min:	> 0 inches
Depth to Watertable Min:	> 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	loam	Not reported	Not reported	Max: 1.4 Min: 0.42	Max: Min:
2	14 inches	96 inches	clay loam	Not reported	Not reported	Max: 1.4 Min: 0.42	Max: Min:

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		Soil Reaction (pH)
3	96 inches	98 inches	bedrock	Not reported	Not reported	Max: 1.4 Min: 0.42	Max: Min:

Soil Map ID: 6

Soil Component Name:	Cohasset
Soil Surface Texture:	loam
Hydrologic Group:	Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.
Soil Drainage Class:	Well drained
Hydric Status: Not hydric	
Corrosion Potential - Uncoated Steel:	Moderate
Depth to Bedrock Min:	> 0 inches
Depth to Watertable Min:	> 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		Soil Reaction (pH)
1	0 inches	14 inches	loam	Not reported	Not reported	Max: 1.4 Min: 0.42	Max: Min:
2	14 inches	96 inches	clay loam	Not reported	Not reported	Max: 1.4 Min: 0.42	Max: Min:
3	96 inches	98 inches	bedrock	Not reported	Not reported	Max: 1.4 Min: 0.42	Max: Min:

Soil Map ID: 7

Soil Component Name:	Cohasset
Soil Surface Texture:	loam
Hydrologic Group:	Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.
Soil Drainage Class:	Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	
Layer	**Upper**	**Lower**	**Soil Texture Class**	**AASHTO Group**	**Unified Soil**		**Soil Reaction (pH)**
1	0 inches	14 inches	loam	Not reported	Not reported	Max: 1.4 Min: 0.42	Max: Min:
2	14 inches	96 inches	cobbly clay loam	Not reported	Not reported	Max: 1.4 Min: 0.42	Max: Min:
3	96 inches	98 inches	bedrock	Not reported	Not reported	Max: 1.4 Min: 0.42	Max: Min:

Soil Map ID: 8

Soil Component Name: Aiken

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	
Layer	**Upper**	**Lower**	**Soil Texture Class**	**AASHTO Group**	**Unified Soil**		**Soil Reaction (pH)**
1	0 inches	29 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:

Soil Layer Information

Layer	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	29 inches	51 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:
3	51 inches	64 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:
4	64 inches	68 inches	bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CA2900515	1/2 - 1 Mile SSW

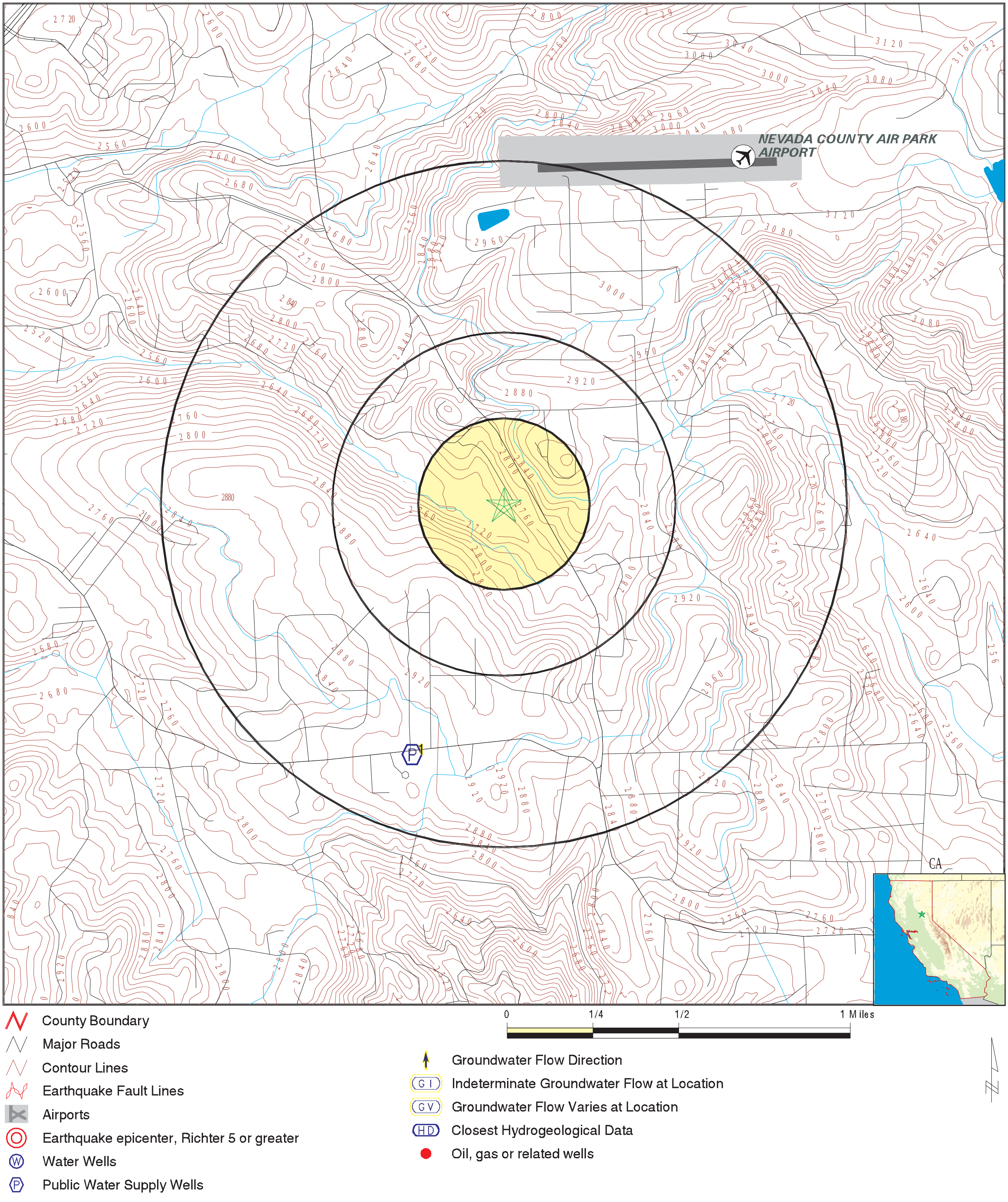
Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

No Wells Found

PHYSICAL SETTING SOURCE MAP - 5940744.2s



SITE NAME:	Brunswick Industrial Site	CLIENT:	Holdrege & Kull Consultants
ADDRESS:	East Bennett Rd Grass Valley CA 95945	CONTACT:	Julie Turnross
		INQUIRY #:	5940744.2s
LAT/LONG:	39.209359 / 121.016081	DATE:	January 21, 2020 12:53 pm

Map ID Direction Distance Elevation	Database	EDR ID Number
1 **SSW** **1/2 - 1 Mile** **Higher**	**FRDS PWS**	**CA2900515**

PWS ID:	CA2900515	PWS name:	BROOKVIEW ACRE HOA WATER
Address:	Not Reported	Care of:	Not Reported
City:	CEDARRIDGE	State:	CA
Zip:	95924	Owner:	BROOKVIEW ACRE HOA WATER
Source code:	Surface water	Population:	25

PWS ID:	CA2900515	PWS type:	System Owner/Responsible Party
PWS name:	BROOKVIEW ACRE HOA WATER	PWS address:	Not Reported
PWS city:	CEDARRIDGE	PWS state:	CA
PWS zip:	95924	PWS ID:	CA2900515
Activity status:	Active	Date system activated:	7706
Date system deactivated:	Not Reported	Retail population:	00000025
System name:	BROOKVIEW ACRE HOA WATER	System address:	BROOKVIEW ACRE HOA WATER
System address:	PO BOX 39	System city:	CEDARRIDGE
System state:	CA	System zip:	95924

Population served:	Under 101 Persons	Treatment:	Untreated

Latitude:	391156	Longitude:	1210112

Violation id:	95V0001	Orig code:	F
State:	CA	Violation Year:	1993
Contamination code:	5000	Contamination Name:	Lead and Copper Rule
Violation code:	51	Violation name:	Initial Tap Sampling for Pb and Cu
Rule code:	350	Rule name:	LCR
Violation measur:	0	Unit of measure:	Not Reported
State mcl:	0	Cmp bdt:	07/01/1993
Cmp edt:	09/01/2002		

System Name:	BROOKVIEW ACRE HOA WATER	Violation Type:	51
Contaminant:	5000	Compliance Begin:	1993-07-01
Compliance End:	2015-12-31	Violation ID:	95V0001
Enforcement Date:	Not Reported	Enforcement Action:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
95945	296	65

Federal EPA Radon Zone for NEVADA County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 95945

Number of sites tested: 11

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	3.427 pCi/L	91%	0%	9%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	5.300 pCi/L	0%	100%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5’ Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5’ Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture’s (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency
(USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey.
The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at
private sources such as universities and research institutions.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR’s Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California’s Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

Brunswick Industrial Site
East Bennett Rd
Grass Valley, CA 95945

Inquiry Number: 5940744.4
January 21, 2020

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

01/21/20

Site Name:	**Client Name:**
Brunswick Industrial Site	Holdrege & Kull Consultants
East Bennett Rd	792 Searls Avenue
Grass Valley, CA 95945	Nevada City, CA 95959
EDR Inquiry # 5940744.4	Contact: Julie Turnross

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Holdrege & Kull Consultants were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.#	NA
Project:	5279.03

Coordinates:

Latitude:	39.209359 39° 12' 34" North
Longitude:	-121.016081 -121° 0' 58" West
UTM Zone:	Zone 10 North
UTM X Meters:	671290.56
UTM Y Meters:	4341884.90
Elevation:	2729.74' above sea level

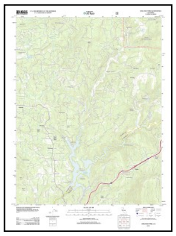
Maps Provided:

- 2012
- 1998, 2000
- 1995
- 1973
- 1950, 1951
- 1949
- 1895
- 1894
- 1892
- 1891
- 1888

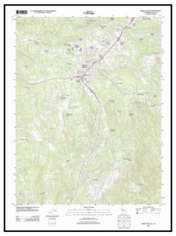
Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2012 Source Sheets



Chicago Park
2012
7.5-minute, 24000



Grass Valley
2012
7.5-minute, 24000

1998, 2000 Source Sheets

Grass Valley
1998
7.5-minute, 24000
Aerial Photo Revised 1987

Chicago Park
2000
7.5-minute, 24000
Aerial Photo Revised 1998

1995 Source Sheets

Grass Valley
1995
7.5-minute, 24000
Aerial Photo Revised 1987

1973 Source Sheets

Chicago Park
1973
7.5-minute, 24000
Aerial Photo Revised 1973

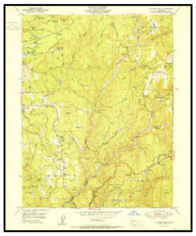
Grass Valley
1973
7.5-minute, 24000
Aerial Photo Revised 1973

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1950, 1951 Source Sheets


Grass Valley
1950
7.5-minute, 24000
Aerial Photo Revised 1947


Chicago Park
1951
7.5-minute, 24000
Aerial Photo Revised 1946

1949 Source Sheets


Chicago Park
1949
7.5-minute, 24000
Aerial Photo Revised 1946


Grass Valley
1949
7.5-minute, 24000
Aerial Photo Revised 1947

1895 Source Sheets


Smartsville
1895
30-minute, 125000

1894 Source Sheets


Colfax
1894
30-minute, 125000


Smartsville
1894
30-minute, 125000

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1892 Source Sheets

Smartsville
1892
30-minute, 125000

Colfax
1892
30-minute, 125000

1891 Source Sheets

Colfax
1891
30-minute, 125000

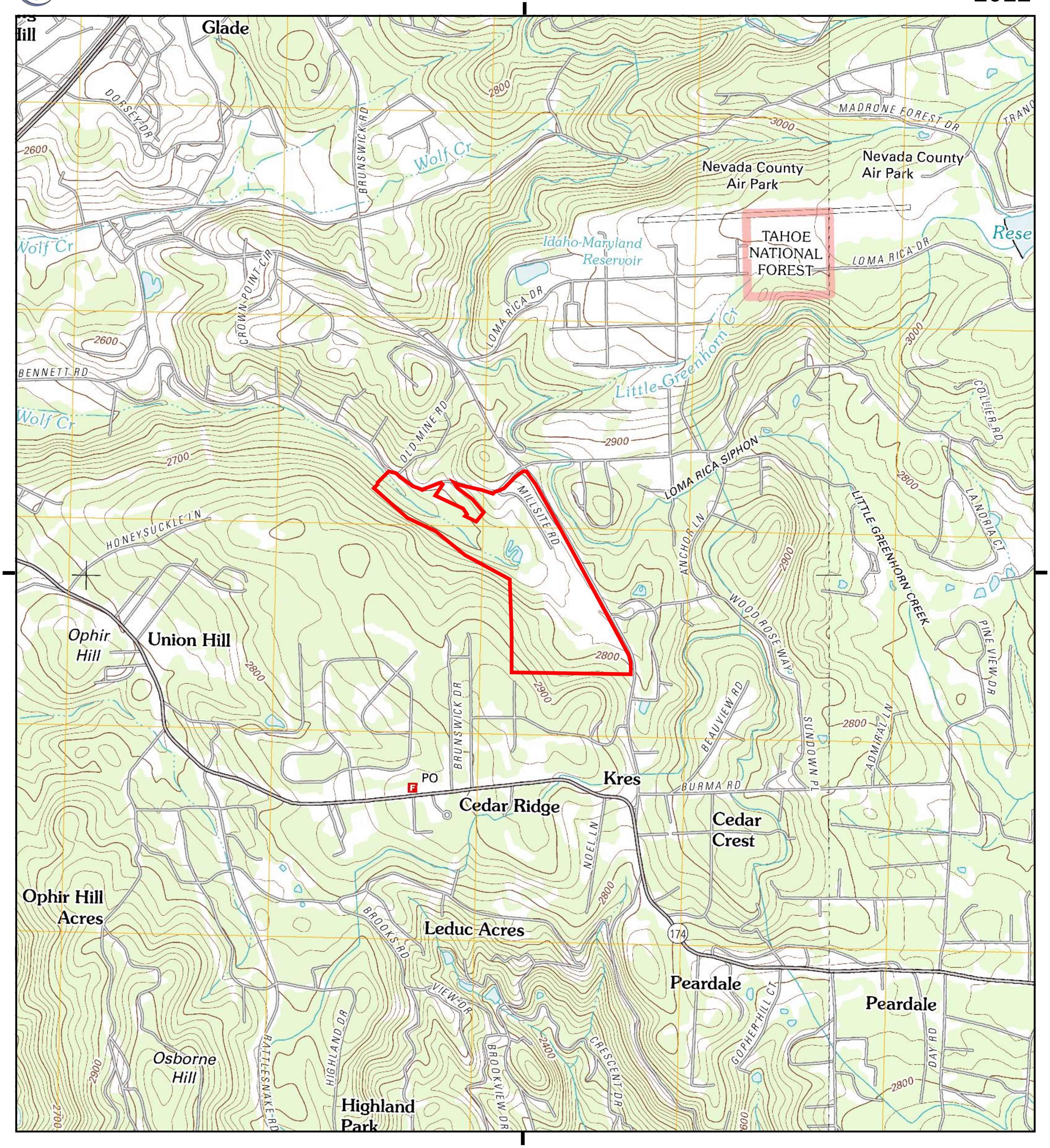
Smartsville
1891
30-minute, 125000

1888 Source Sheets

Smartsville
1888
30-minute, 125000

Historical Topo Map

2012



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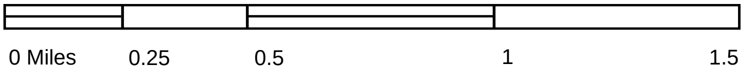
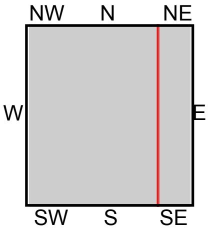


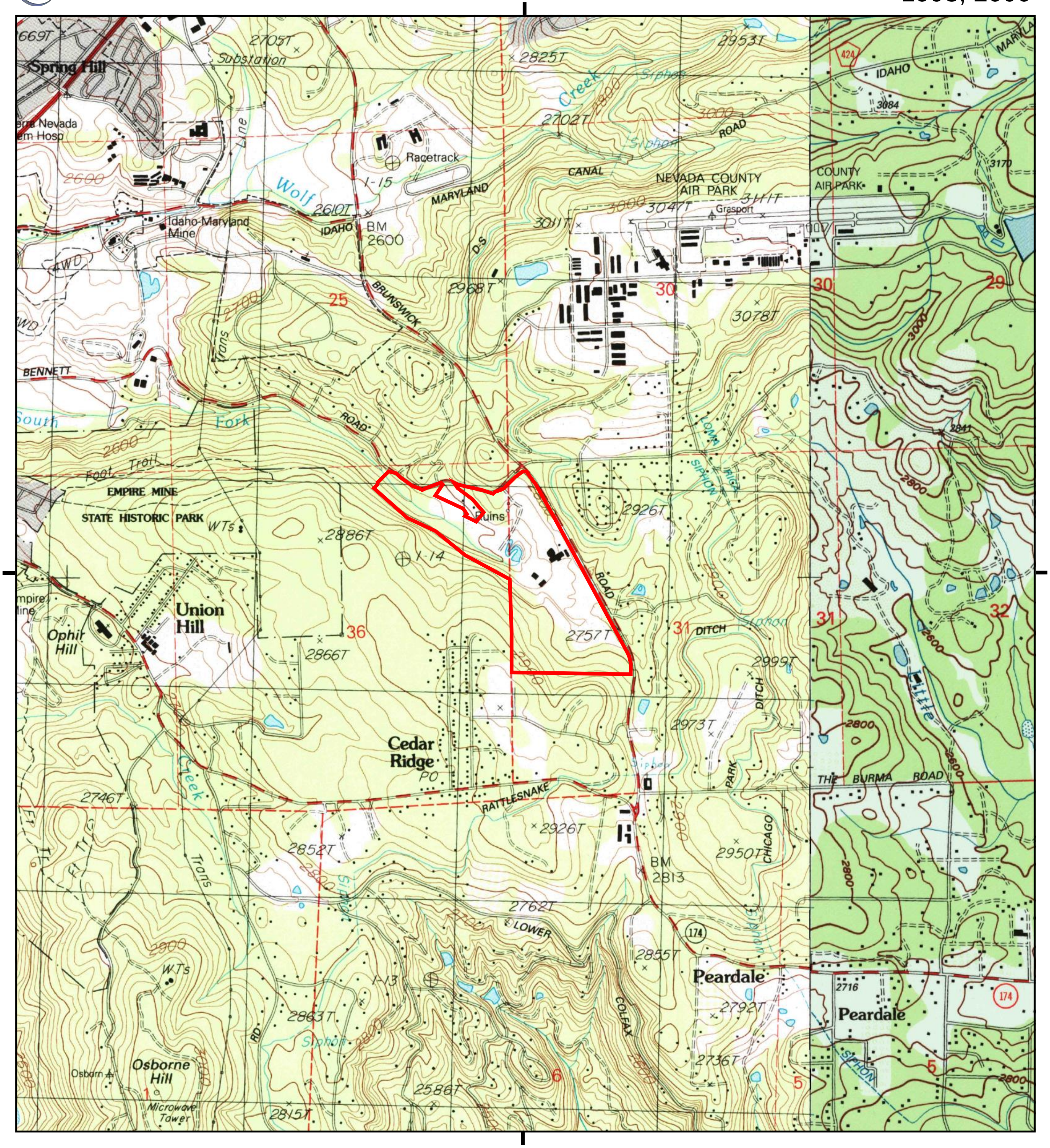


TP, Grass Valley, 2012, 7.5-minute
E, Chicago Park, 2012, 7.5-minute

SITE NAME: Brunswick Industrial Site
ADDRESS: East Bennett Rd
Grass Valley, CA 95945
CLIENT: Holdrege & Kull Consultants

Historical Topo Map

1998, 2000



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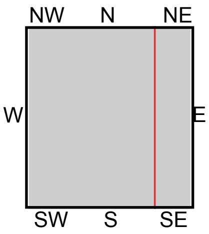
0 Miles 0.25 0.5 1 1.5

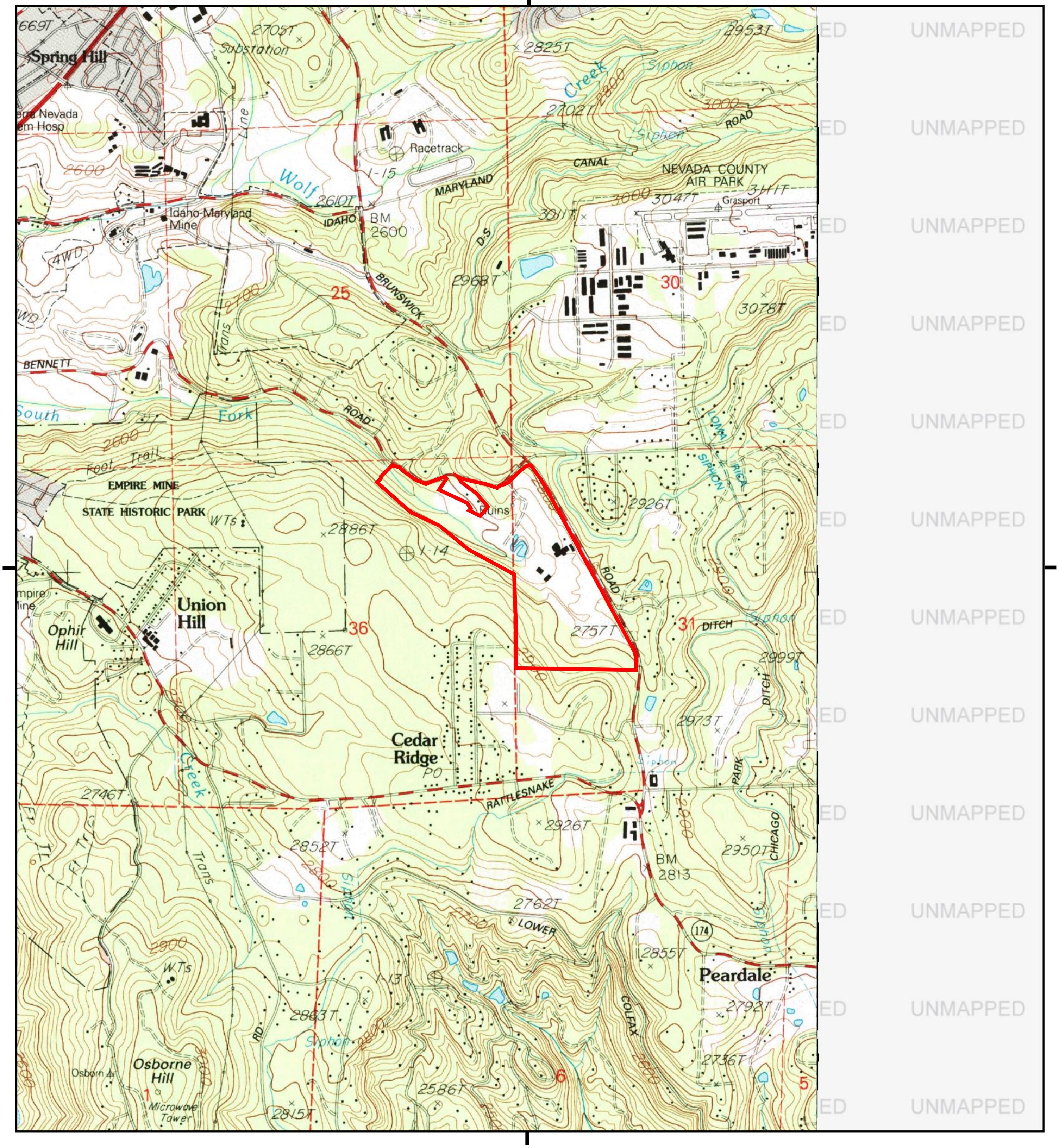


TP, Grass Valley, 1998, 7.5-minute
E, Chicago Park, 2000, 7.5-minute

SITE NAME:	Brunswick Industrial Site
ADDRESS:	East Bennett Rd Grass Valley, CA 95945
CLIENT:	Holdrege & Kull Consultants

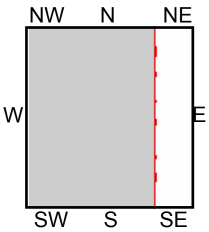
Historical Topo Map

1995



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

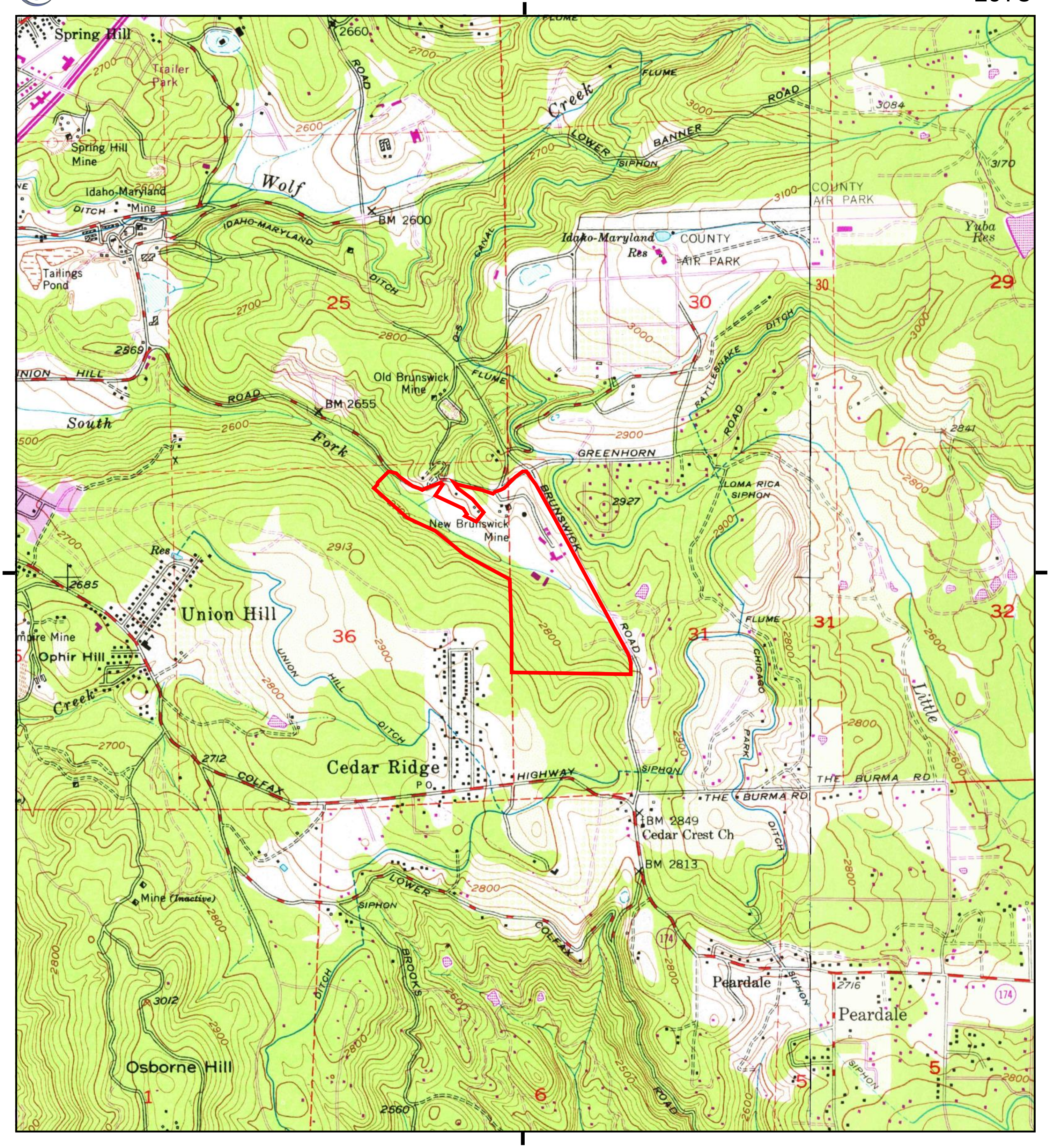


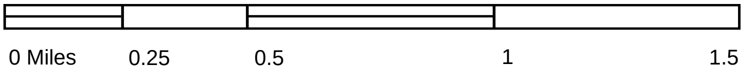
TP, Grass Valley, 1995, 7.5-minute

SITE NAME: Brunswick Industrial Site
ADDRESS: East Bennett Rd
Grass Valley, CA 95945
CLIENT: Holdrege & Kull Consultants

Historical Topo Map

1973





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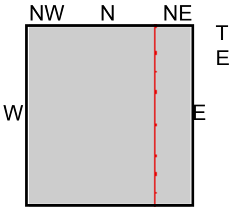
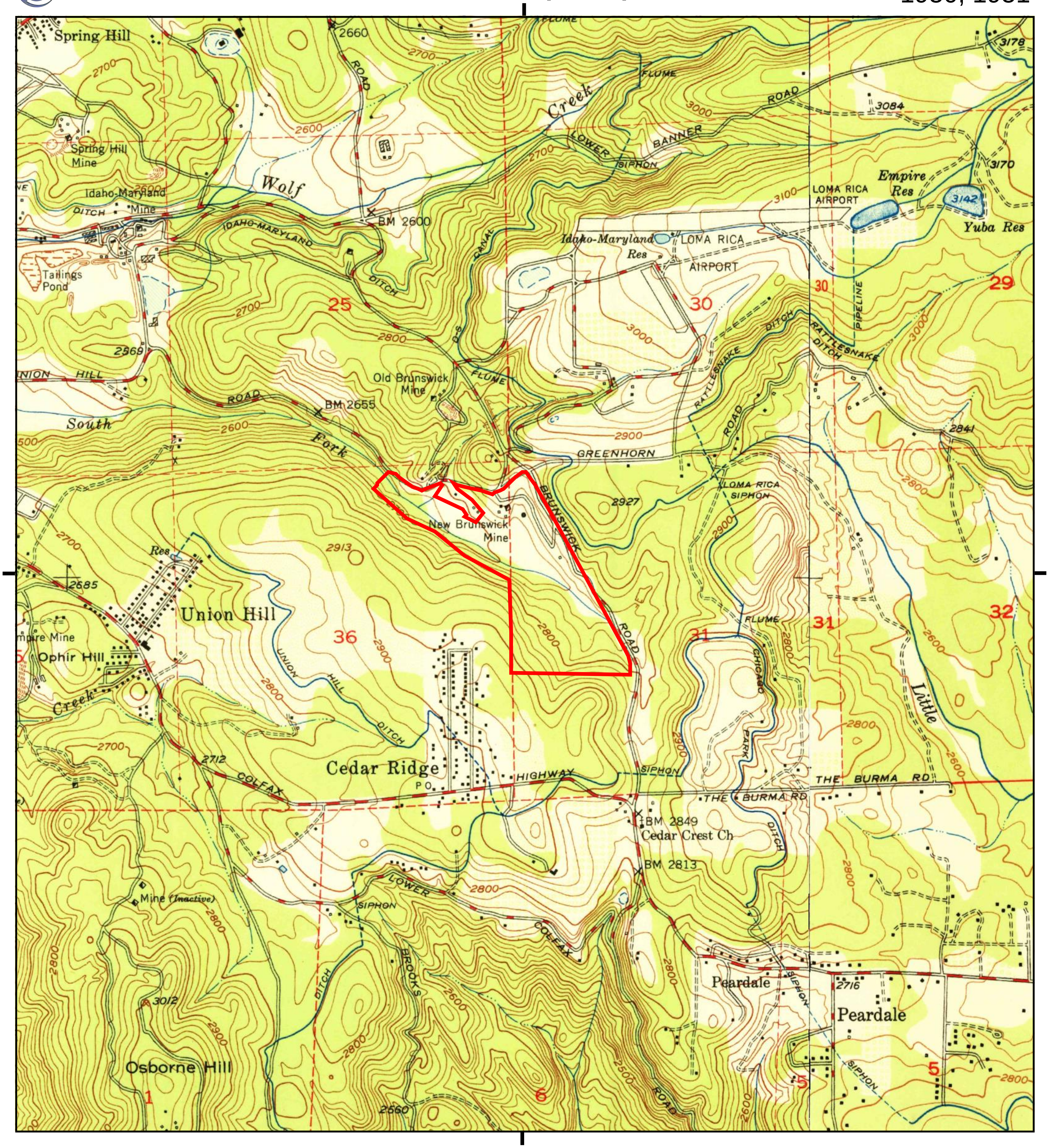


TP, Grass Valley, 1973, 7.5-minute
E, Chicago Park, 1973, 7.5-minute

SITE NAME:	Brunswick Industrial Site
ADDRESS:	East Bennett Rd Grass Valley, CA 95945
CLIENT:	Holdrege & Kull Consultants

Historical Topo Map

1950, 1951



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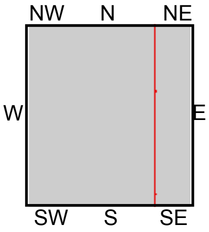
0 Miles 0.25 0.5 1 1.5



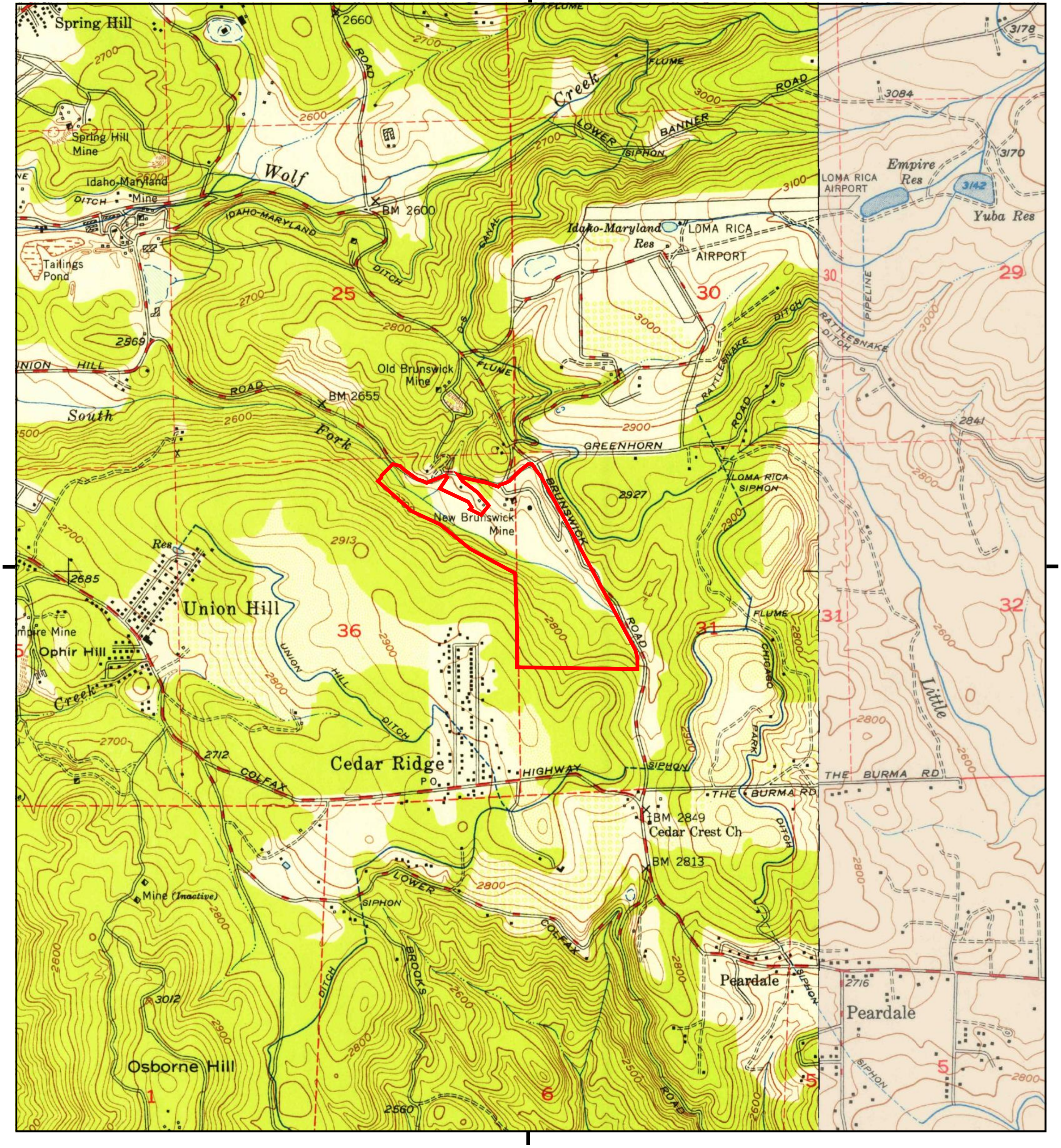
TP, Grass Valley, 1950, 7.5-minute
E, Chicago Park, 1951, 7.5-minute

SITE NAME: Brunswick Industrial Site
ADDRESS: East Bennett Rd
Grass Valley, CA 95945
CLIENT: Holdrege & Kull Consultants

N

Historical Topo Map

1949



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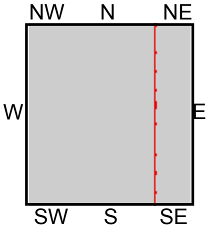
0 Miles 0.25 0.5 1 1.5

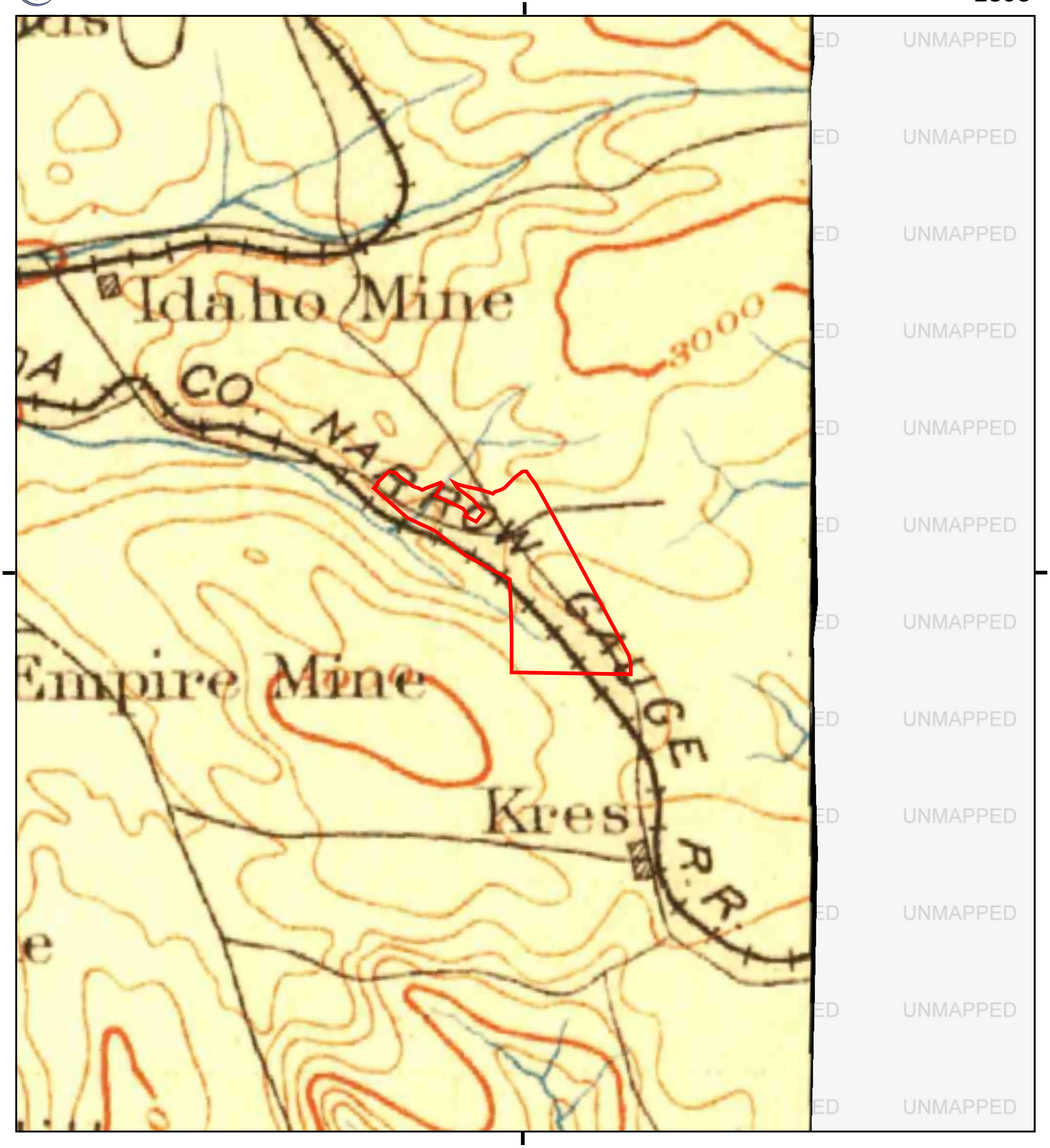


TP, Grass Valley, 1949, 7.5-minute
E, Chicago Park, 1949, 7.5-minute

SITE NAME: Brunswick Industrial Site
ADDRESS: East Bennett Rd
Grass Valley, CA 95945
CLIENT: Holdrege & Kull Consultants

Historical Topo Map

1895



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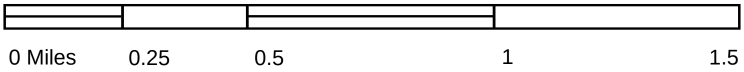
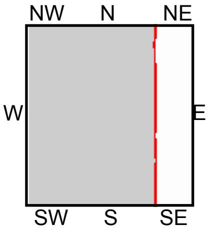


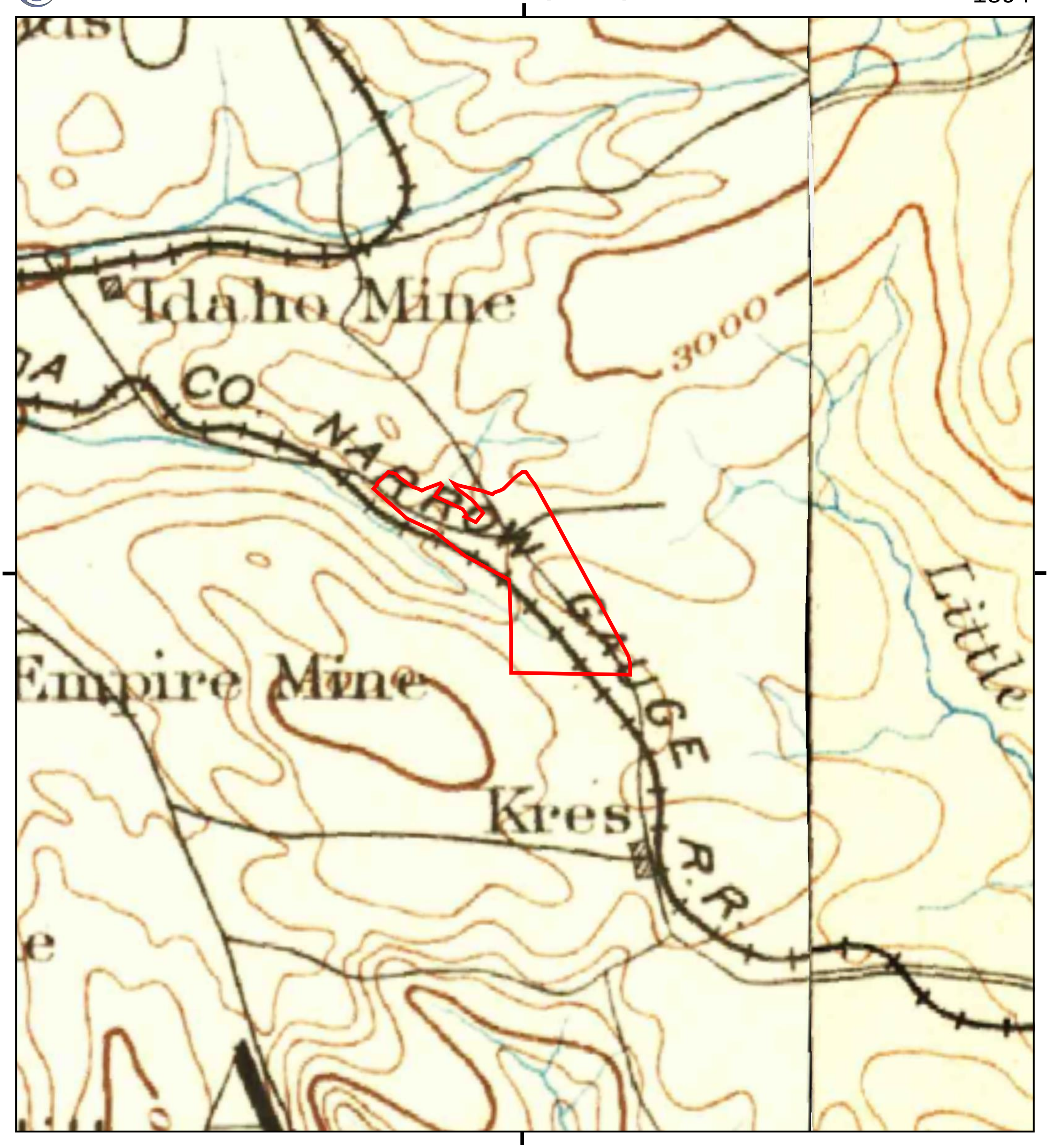


TP, Smartsville, 1895, 30-minute

SITE NAME: Brunswick Industrial Site
ADDRESS: East Bennett Rd
Grass Valley, CA 95945
CLIENT: Holdrege & Kull Consultants

Historical Topo Map

1894



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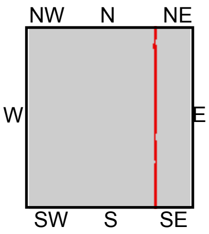
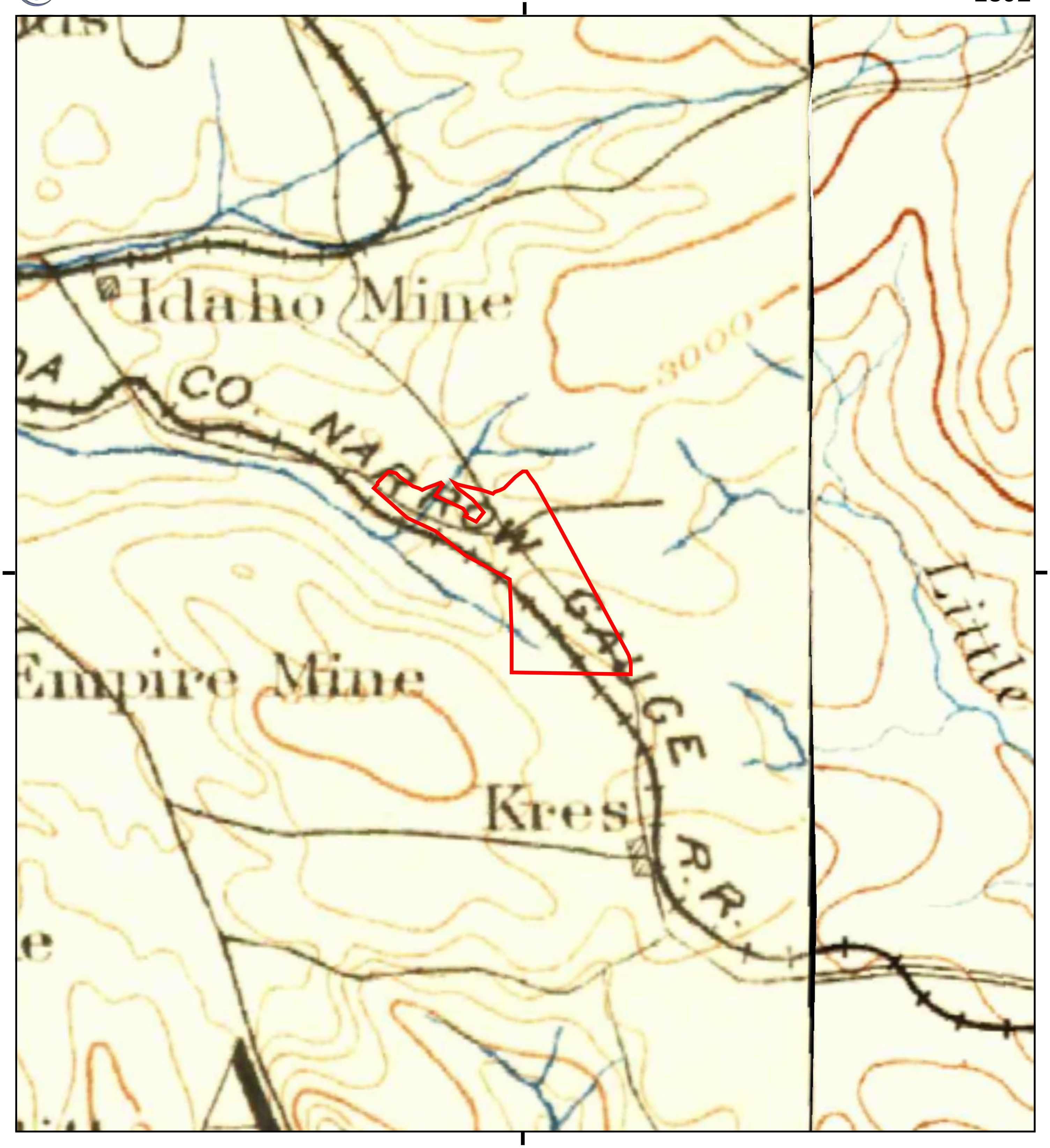


TP, Smartsville, 1894, 30-minute
E, Colfax, 1894, 30-minute

SITE NAME:	Brunswick Industrial Site
ADDRESS:	East Bennett Rd Grass Valley, CA 95945
CLIENT:	Holdrege & Kull Consultants

Historical Topo Map

1892



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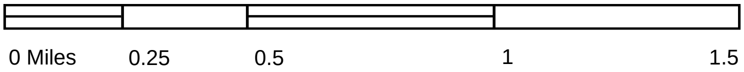
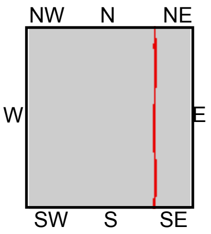


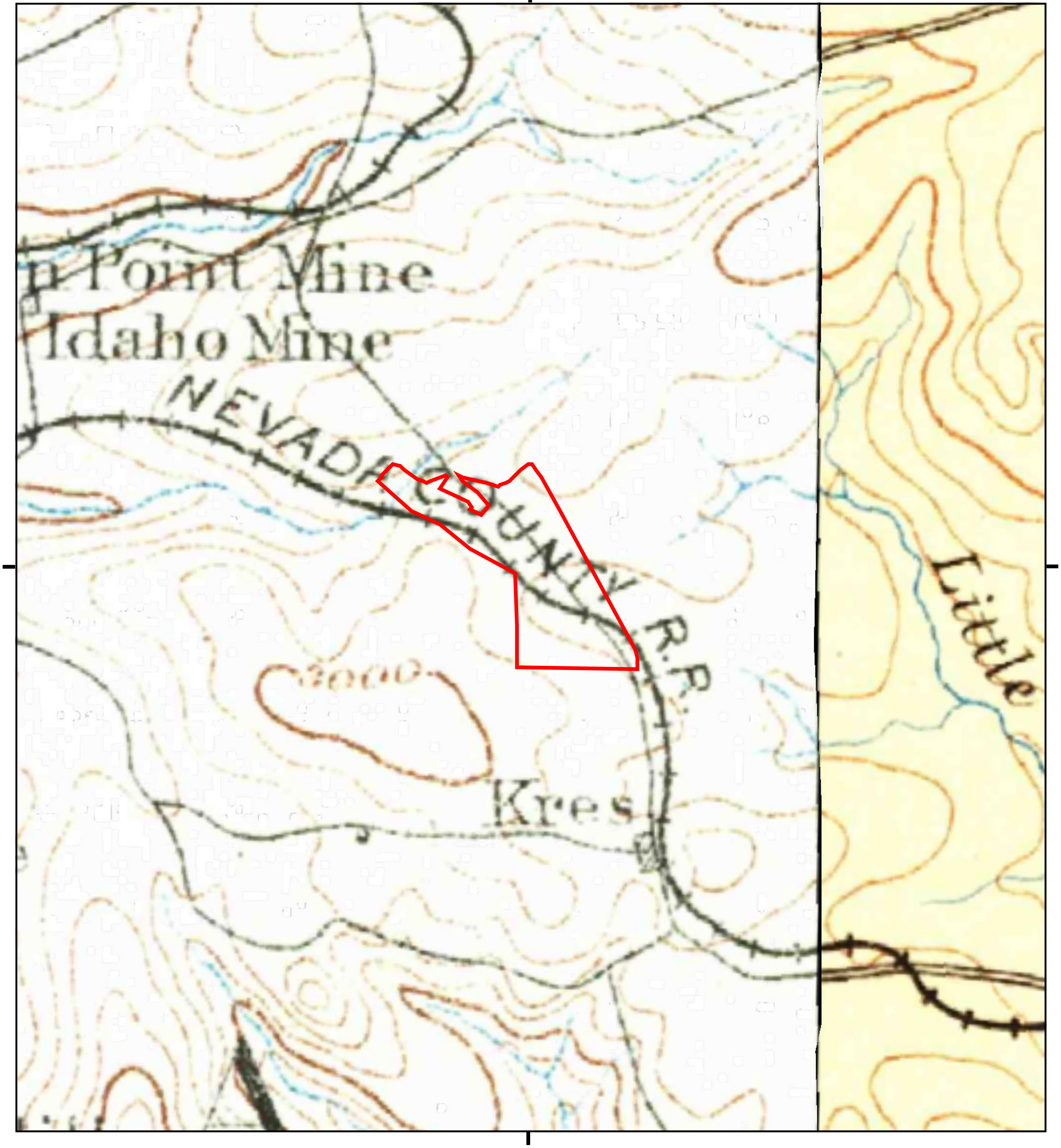


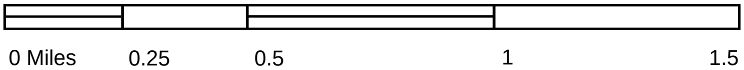
TP, Smartsville, 1892, 30-minute
E, Colfax, 1892, 30-minute

SITE NAME: Brunswick Industrial Site
ADDRESS: East Bennett Rd
Grass Valley, CA 95945
CLIENT: Holdrege & Kull Consultants

Historical Topo Map

1891





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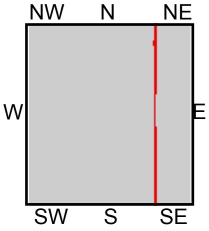
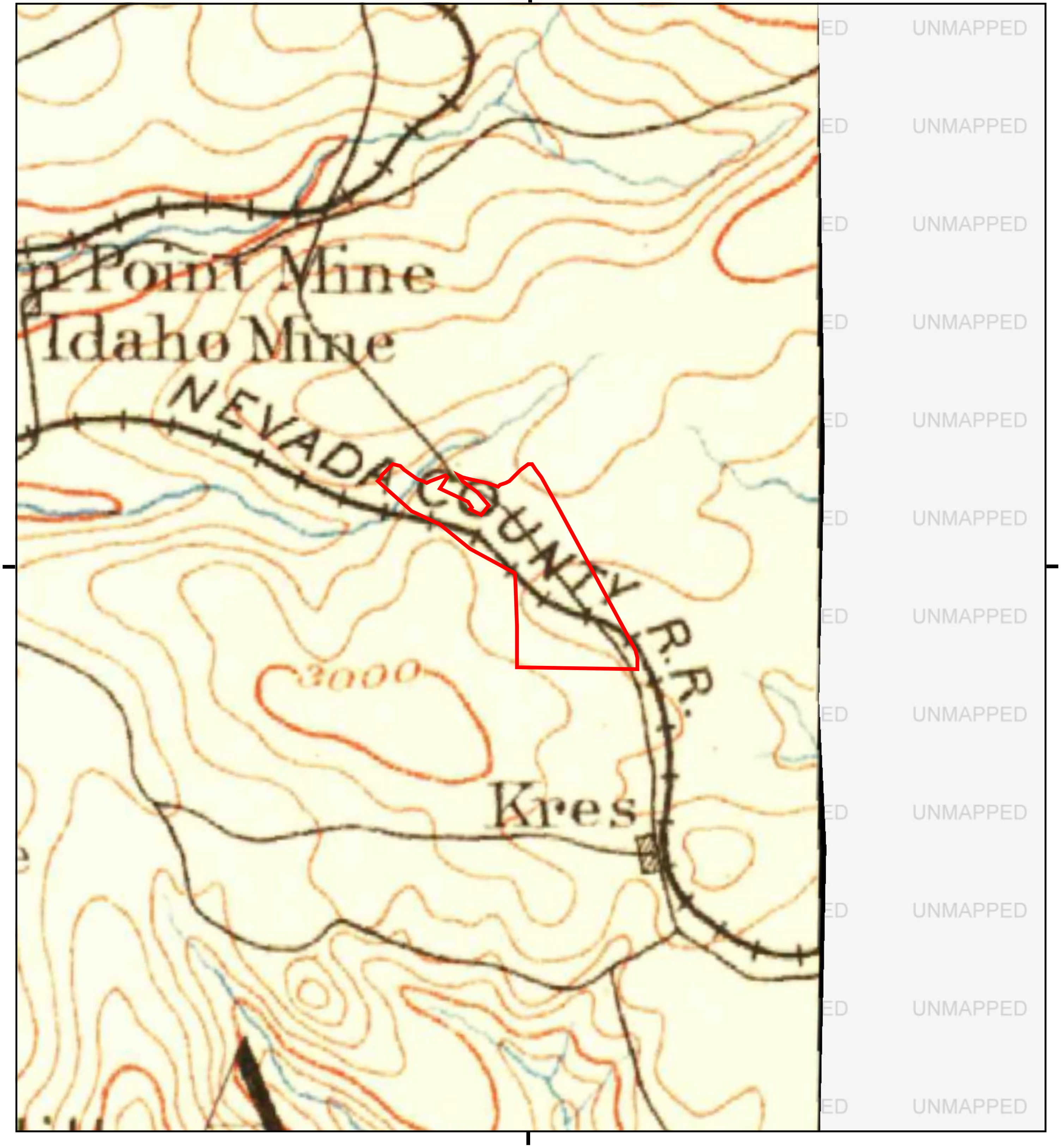


TP, Smartsville, 1891, 30-minute
E, Colfax, 1891, 30-minute

SITE NAME:	Brunswick Industrial Site
ADDRESS:	East Bennett Rd Grass Valley, CA 95945
CLIENT:	Holdrege & Kull Consultants

Historical Topo Map

1888



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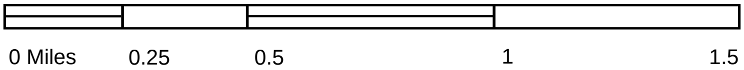
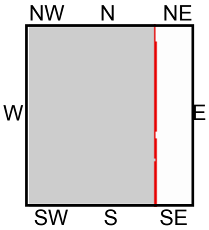




TP, Smartsville, 1888, 30-minute

SITE NAME: Brunswick Industrial Site
ADDRESS: East Bennett Rd
Grass Valley, CA 95945
CLIENT: Holdrege & Kull Consultants

Brunswick Industrial Site
East Bennett Rd
Grass Valley, CA 95945

Inquiry Number: 5940744.8
January 23, 2020

The EDR Aerial Photo Decade Package

EDR®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

01/23/20

Site Name:

Brunswick Industrial Site
East Bennett Rd
Grass Valley, CA 95945
EDR Inquiry # 5940744.8

Client Name:

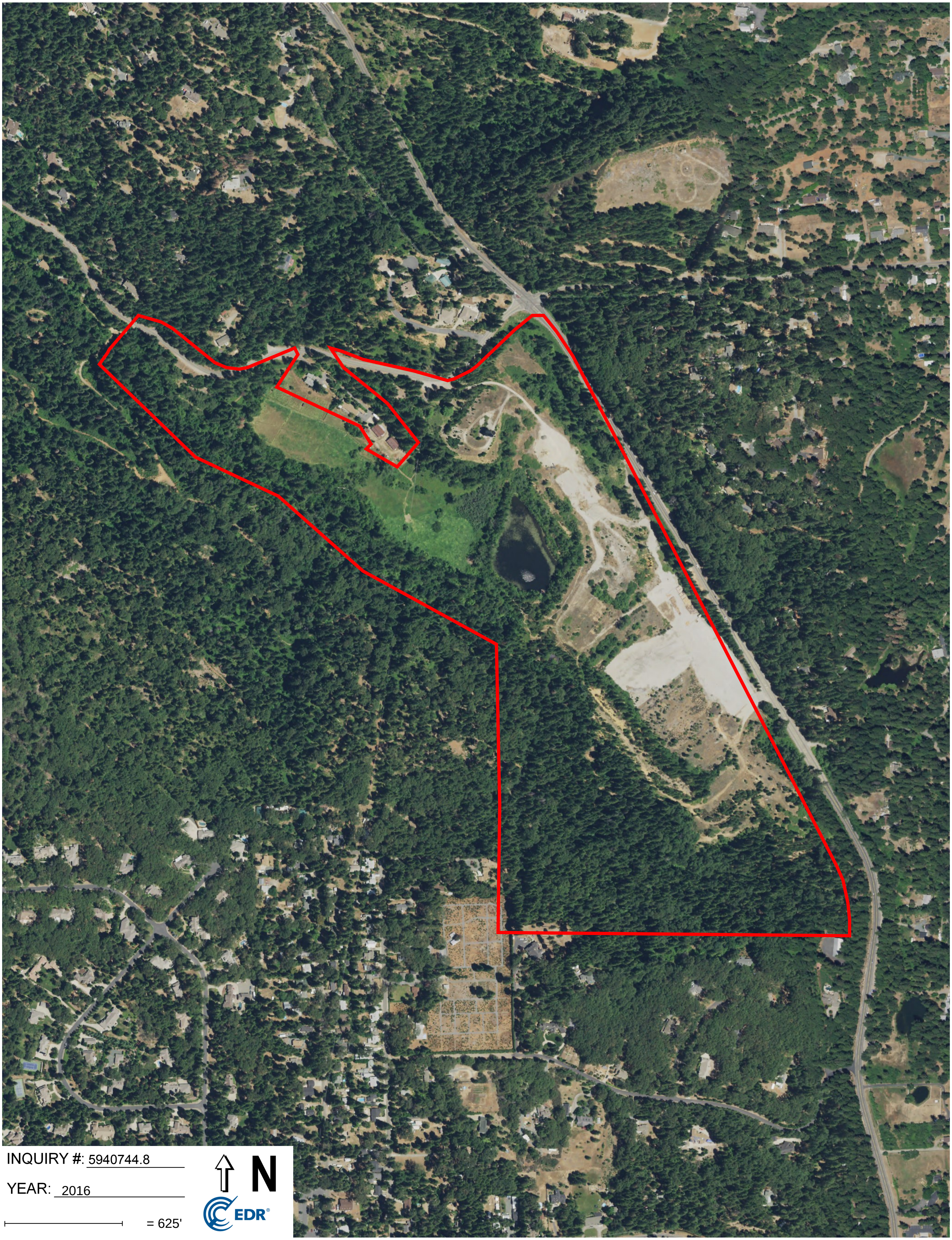
Holdrege & Kull Consultants
792 Searls Avenue
Nevada City, CA 95959
Contact: Julie Turnross

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	*Scale*	*Details*	*Source*
2016	1"=625'	Flight Year: 2016	USDA/NAIP
2012	1"=625'	Flight Year: 2012	USDA/NAIP
2009	1"=625'	Flight Year: 2009	USDA/NAIP
2006	1"=625'	Flight Year: 2006	USDA/NAIP
1998	1"=625'	Acquisition Date: August 16, 1998	USGS/DOQQ
1987	1"=625'	Flight Date: January 01, 1987	USGS
1984	1"=625'	Flight Date: June 29, 1984	USDA
1975	1"=625'	Flight Date: August 25, 1975	USGS
1973	1"=625'	Flight Date: June 03, 1973	USGS
1963	1"=625'	Flight Date: July 28, 1963	USDA
1962	1"=625'	Flight Date: January 01, 1962	USDA
1952	1"=625'	Flight Date: August 08, 1952	USDA
1947	1"=625'	Flight Date: February 01, 1947	USGS
1939	1"=625'	Flight Date: June 17, 1939	USDA

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.



INQUIRY #: 5940744.8

YEAR: 2016

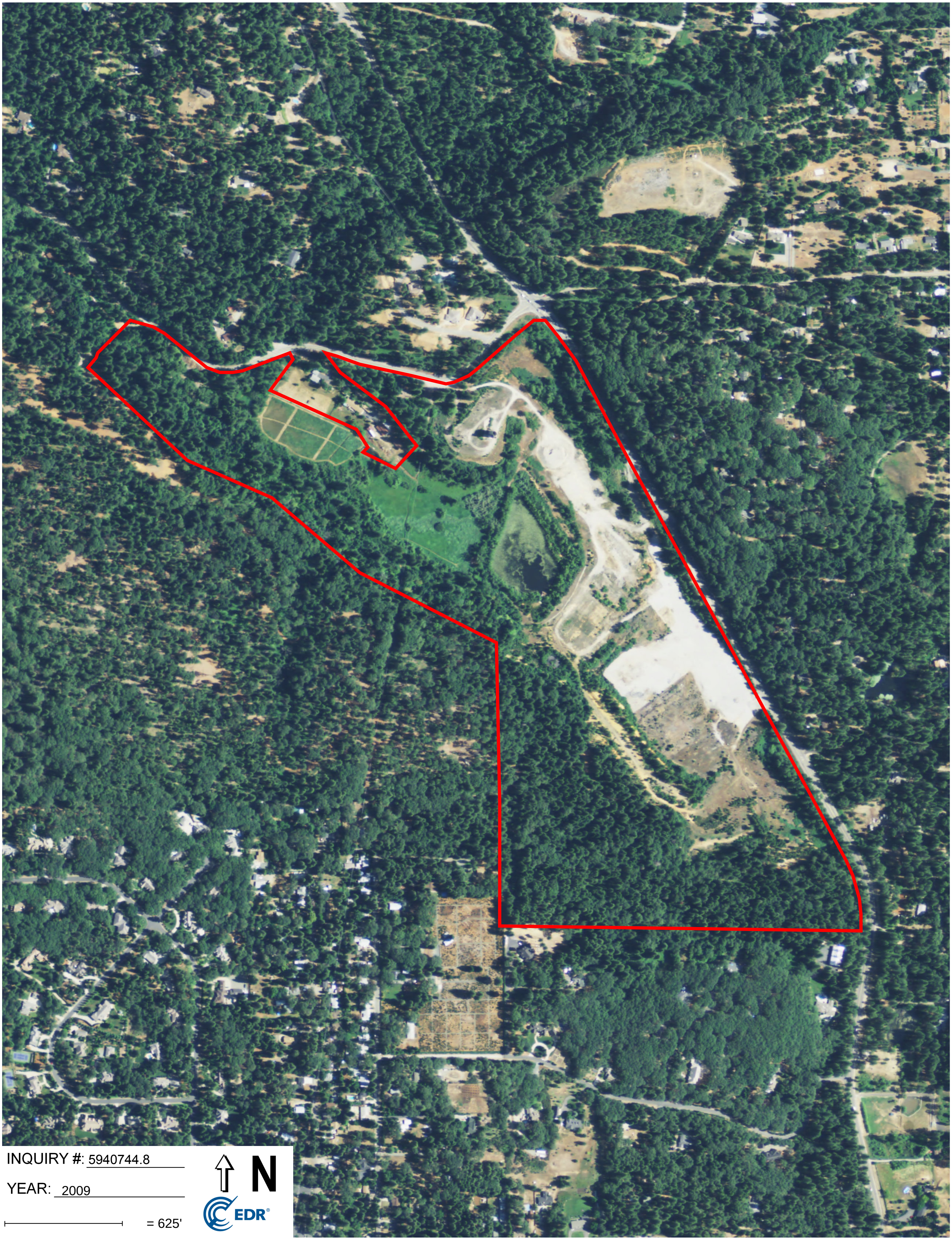
= 625'

INQUIRY #: 5940744.8

YEAR: 2012

= 625'

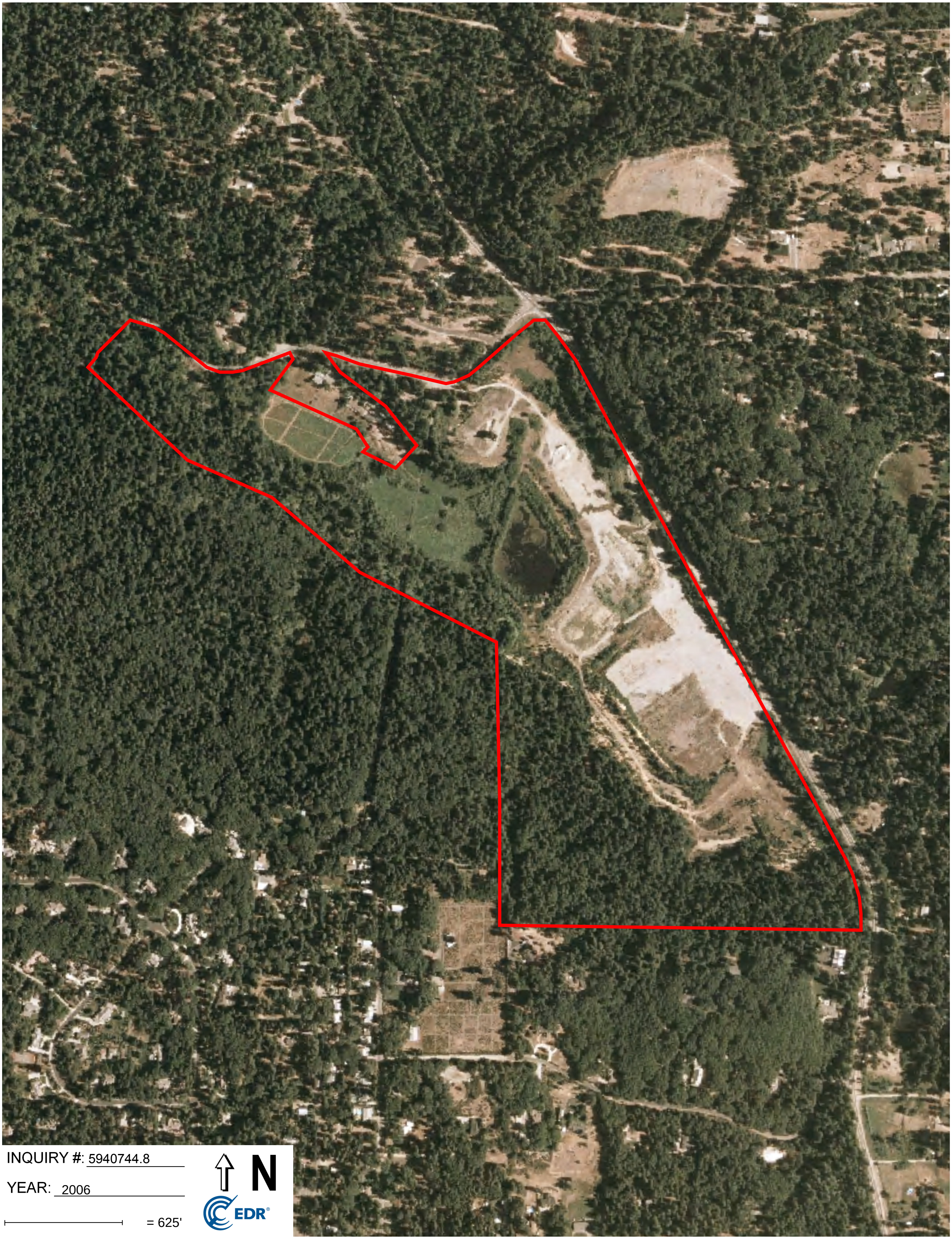
N



INQUIRY #: 5940744.8

YEAR: 2009

= 625'



INQUIRY #: 5940744.8

YEAR: 2006

= 625'

INQUIRY #: 5940744.8

YEAR: 1998

= 625'

INQUIRY #: 5940744.8

YEAR: 1987

= 625'

N

Subject boundary not shown because it exceeds image extent or image is not georeferenced.

INQUIRY #: 5940744.8

YEAR: 1984

= 625'

N

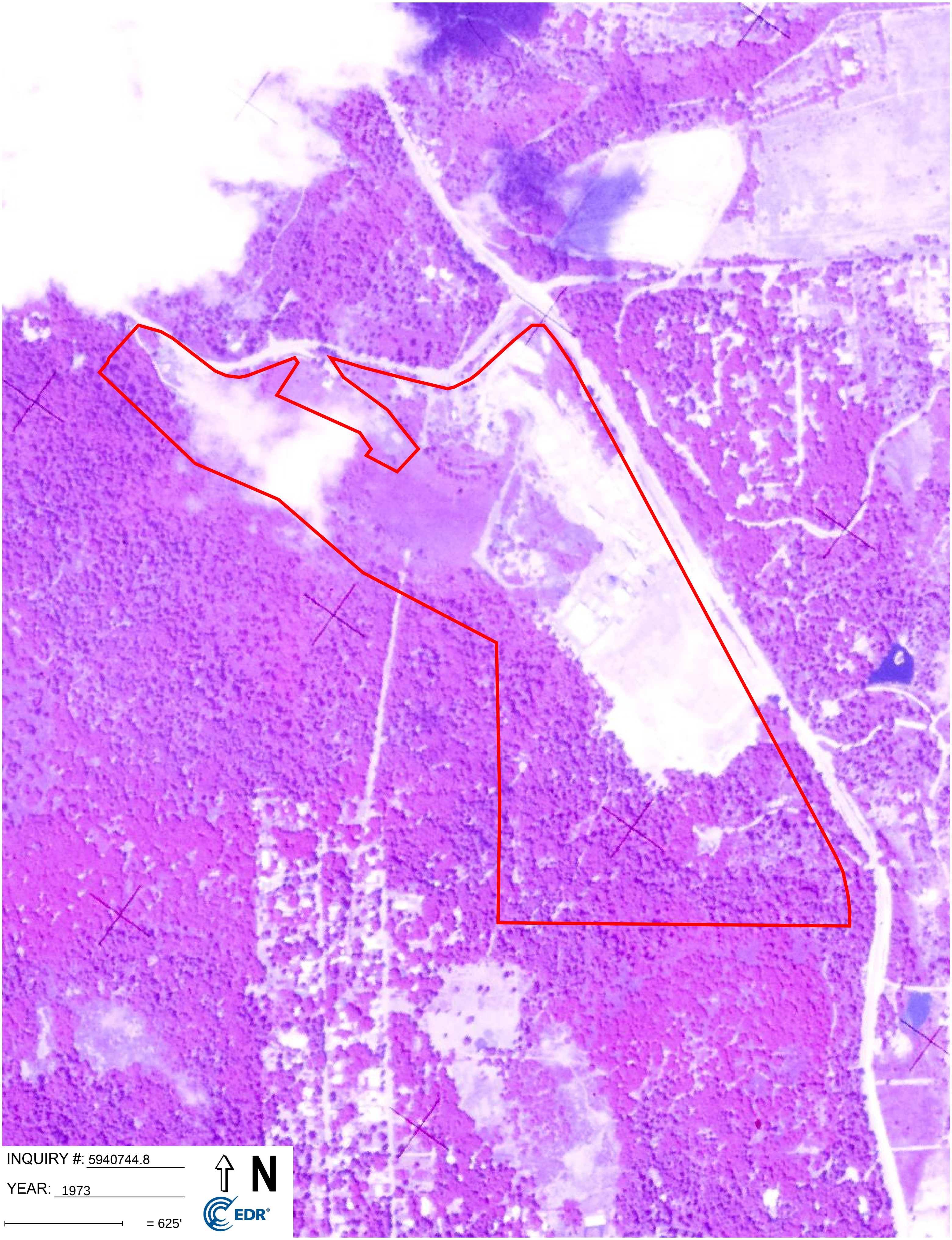
INQUIRY #: 5940744.8

YEAR: 1975

= 625'

N

EDR

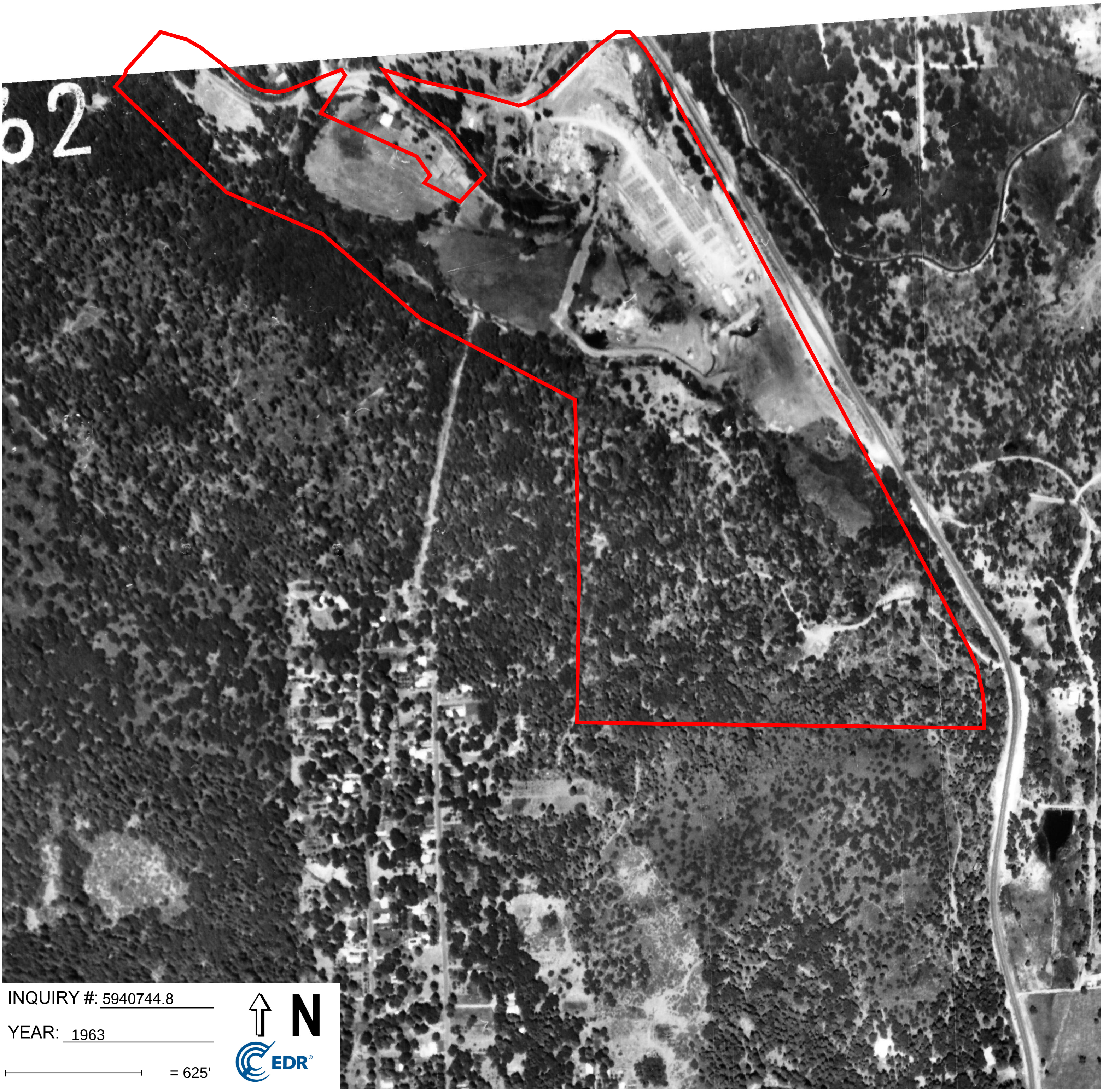


INQUIRY #: 5940744.8

YEAR: 1973

= 625'

[redacted]



INQUIRY #: 5940744.8

YEAR: 1963

= 625'

INQUIRY #: 5940744.8

YEAR: 1962

= 625'

N

Subject boundary not shown because it exceeds image extent or image is not georeferenced.

INQUIRY #: 5940744.8

YEAR: 1952

= 625'

N

Subject boundary not shown because it exceeds image extent or image is not georeferenced.

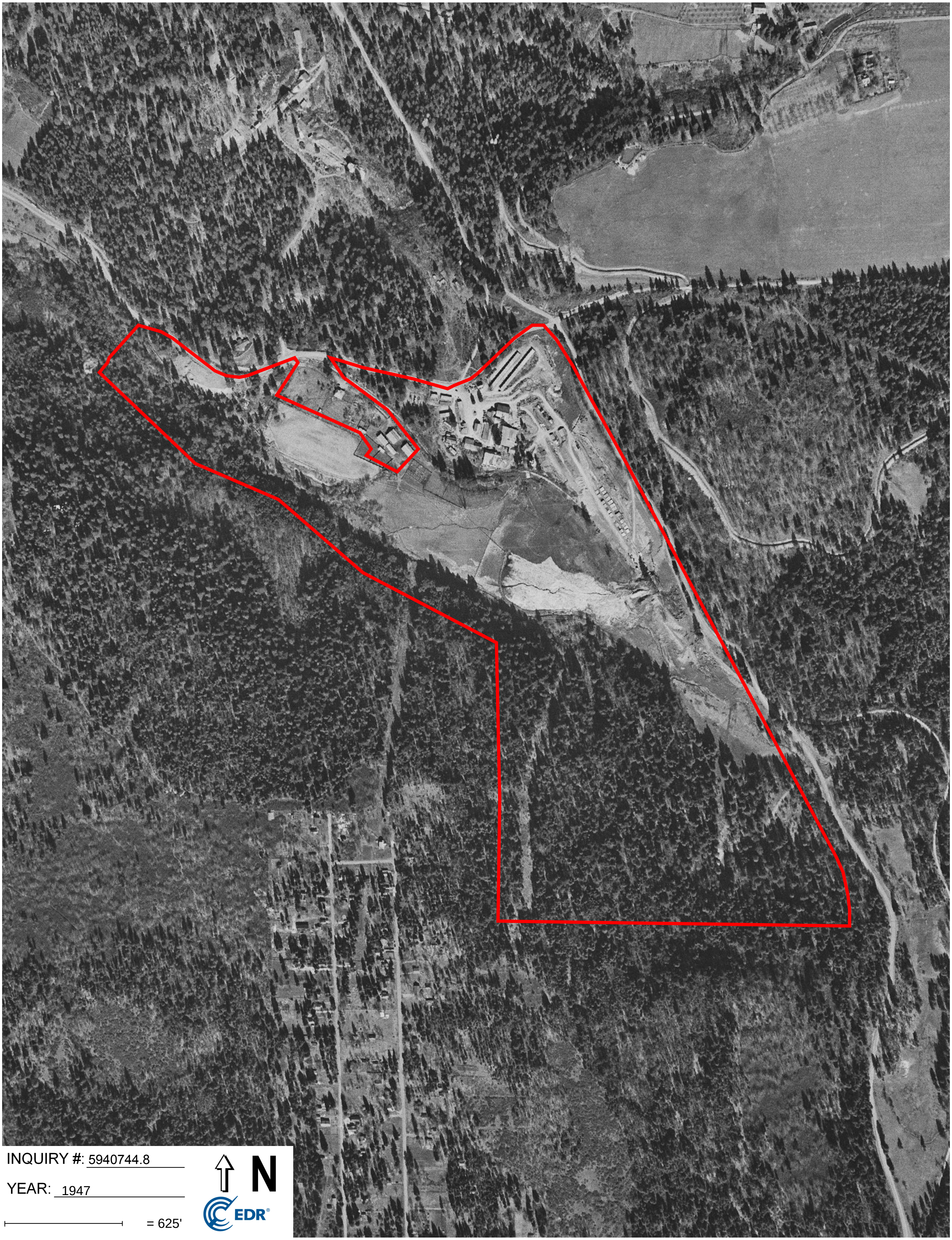
INQUIRY #: 5940744.8

YEAR: 1952

= 625'

N

Subject boundary not shown because it exceeds image extent or image is not georeferenced.



INQUIRY #: 5940744.8

YEAR: 1947

= 625'

INQUIRY #: 5940744.8

YEAR: 1939

= 625'

Brunswick Industrial Site
East Bennett Rd
Grass Valley, CA 95945

Inquiry Number: 5940744.5
January 23, 2020

The EDR-City Directory Image Report

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

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Data by
infoUSA®

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	***Target Street***	***Cross Street***	***Source***
2014	☑	☐	EDR Digital Archive
2010	☑	☐	EDR Digital Archive
2005	☑	☐	EDR Digital Archive
2000	☑	☐	EDR Digital Archive
1995	☑	☐	EDR Digital Archive
1992	☑	☐	EDR Digital Archive
1985	☐	☐	Haines Criss-Cross Directory
1980	☐	☐	Haines Criss-Cross Directory
1974	☐	☐	Haines Criss-Cross Directory
1970	☐	☐	Haines Criss-Cross Directory

FINDINGS

TARGET PROPERTY STREET

East Bennett Rd
Grass Valley, CA 95945

Year	***CD Image***	***Source***	
BRUNSWICK RD			
2014	pg A2	EDR Digital Archive	
2010	pg A5	EDR Digital Archive	
2005	pg A8	EDR Digital Archive	
2000	pg A10	EDR Digital Archive	
1995	pg A12	EDR Digital Archive	
1992	pg A15	EDR Digital Archive	
1985	-	Haines Criss-Cross Directory	Street not listed in Source
1980	-	Haines Criss-Cross Directory	Street not listed in Source
1974	-	Haines Criss-Cross Directory	Street not listed in Source
1970	-	Haines Criss-Cross Directory	Street not listed in Source
E BENNETT RD			
2014	pg A4	EDR Digital Archive	
2010	pg A7	EDR Digital Archive	
2005	pg A9	EDR Digital Archive	
2000	pg A11	EDR Digital Archive	
1995	pg A14	EDR Digital Archive	
1992	pg A17	EDR Digital Archive	
1985	-	Haines Criss-Cross Directory	Street not listed in Source
1980	-	Haines Criss-Cross Directory	Street not listed in Source
1974	-	Haines Criss-Cross Directory	Street not listed in Source
1970	-	Haines Criss-Cross Directory	Street not listed in Source

FINDINGS

CROSS STREETS

No Cross Streets Identified

City Directory Images

Target Street	**Cross Street**	**Source**
✓	-	EDR Digital Archive

BRUNSWICK RD 2014

133	CENTURY 21 GOLD DUST REALTY
	MILLER ERIN DESIGNS
375	HANGER PRSTHETCS & ORTHO INC
410	SLEEP SHOP INC
412	AUTOZONE INC
428	JPMORGAN CHASE BANK NAT ASSN
448	ARMY UNITED STATES DEPT OF
450	MARINE CORPS UNITED STATES
452	ADO STAFFING INC
460	BANK OF WEST
464	CALIFORNIA LAND TITLE COMPANY
466	NEVADA SIERRA IHSS PUBLIC
	NEVEDA SIERRA REG IN HOME
512	FOOTHILL TAX SERVICE
516	SSG LL
520	CHUCK HEMMERT INSUR FINCL SVCS
526	DOTTIE RAY REALTY
	KELLER WILLIAMS REALTY
528	LINCOLN ADRIANNE INSUR SVCS
	ON THE CASE COMPUTER REPAIR
530	DANA HOLDING CORPORATION
	SWASEYS HAIR CENTER
	WHALIN JUDY
532	CB COMMERCIAL GRASS ROOTS
	COLDWELL BANKER COML I 80 BRKS
536	GRASS VALLEY PRINTERS
563	ANTOURI, CHARLES E
	HART, CHARLES
	HAWKINS, RICHARD M
565	EAST MAIN ST INSUR SVCS INC
	GAWLEY DANA R
	LOTUS HEALTH GROUP
	MONTANARO CHRIS
10563	BELLS TAX SERVICE
	BROWN HOWARD A DDS
10859	RUSHFORD, DAN
12117	PARK, KUK
12149	CRANE, SYLVIA J
12616	WITT, DARRYL W
12684	VANMATRE, PETER D
12730	SAUER, ADAM G
12904	GEORGE, KEVIN L
12942	GARCIA, LEVI M
13018	BRUMM, BARBARA C
13064	KENNETH, GUY
13110	ENGEL, SKIPP E
13148	RUBALCAVA, MIGUEL A
13152	FLETCHER, JOHN S
13177	MITCHELL, BRADLEY S
13192	OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

BRUNSWICK RD 2014 (Cont'd)

13215	EASON, RON J
13253	OCCUPANT UNKNOWN,
13326	COOKS AUTO CY SVC CTR INC
13328	SHIPLEY, LYN

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

E BENNETT RD 2014

10662	REXEL INC
10701	DURHAM SCHOOL SERVICES L P
10739	GREG A HUNYADA HUNYADA, GREG A
10771	HENRY, JIM
11352	PALMER ENTERPRISE TRUCK REPAIR
11429	SALA JIM CONSTRUCTION
11497	FAIRWEATHER, M
11613	FAIRWEATHER, MICHAEL B
11780	SARANTOPOULOS, STEVEN L WSCACPA
11818	TAURO, JOHN S
11828	WESSELL, KEVIN J
11866	VOSS, DENNIS L
11918	HEALY, ARTHUR D
11948	OLSON, FRANK E
11966	OCCUPANT UNKNOWN,
12040	VADNEY, MICHELINE R
12108	CREATIVE KIDS WENGRYN, CYNTHIA
12110	OCCUPANT UNKNOWN,
12161	HAMILTON, FRANCIS X
12176	CLARK, ROBERT L
12195	OCCUPANT UNKNOWN,
12261	RUDD, PATRICIA A
12368	ADVANTAGE GUTTER SYSTEMS LIGHTY, MARK W
12479	OCCUPANT UNKNOWN, WEISS MASONRY
12481	SECK, LETA M

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

BRUNSWICK RD 2010

133	CENTURY 21 GOLD DUST REALTY
	TOMMYKNOCKERS INC
375	HANGER PRSTHETCS & ORTHO INC
400	CHEVROLET AUTHORIZED SALES & S
410	BLOCKBUSTER INC
412	AUTOZONE INC
428	JPMORGAN CHASE BANK NAT ASSN
448	ARMY UNITED STATES DEPT OF
450	MARINE CORPS UNITED STATES
452	ADO STAFFING INC
454	NAVY UNITED STATES DEPT OF
460	BANK OF WEST
464	CALIFORNIA LAND TITLE COMPANY
466	NEVADA SIERRA IHSS PUBLIC
	NEVEDA SIERRA REG IN HOME
512	DANL J DOWNEY
	M R C REALTY INC
	TAYLOR PATTY
528	PANDA FOOT MASSAGE
530	DANAS
	SWASEYS HAIR CENTER
	WHALIN JUDY
532	GREAT AMERICAN GUN STOCK
563	EVANS, PAUL
	FLETCHER, SCOTT
	HAWKINS, RICHARD M
565	ENSPIRE PRESS
	HOEY ROBERT PHD
	HOEY, ROBERT
	LOTUS HEALTH GROUP
	SCHIMMEL SUSAN DHOM HOMEOPATH
	WERNER, LAURA W
10563	BELLS TAX SERVICE
	BROWN HOWARD A DDS
10565	GAWLEY DANA R
10980	CARVILLE SIERRA INC
12117	GEORGE, NICOLE K
12149	CRANE, SYLVIA J
12616	WITT, DARRYL W
12684	VANMATRE, MELODY K
12730	SAUER, MATTHEW G
12904	WILLIAMSON, GEORGE P
12942	OCCUPANT UNKNOWN,
13018	BRUMM, BARBARA C
13064	OCCUPANT UNKNOWN,
13110	OCCUPANT UNKNOWN,
13148	RUBALCAVA, MIGUEL A
13152	FLETCHER, JOHN S
13177	HARTING, BRADLEY L
13192	INTERNATIONAL PLYWOOD CORP

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

BRUNSWICK RD 2010 (Cont'd)

13192	WATERMAN, RUSS
13215	EASON, RON
13253	LIBREROS, AYDA
13326	COOK KEN
13328	SHIPLEY, LYN

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

E BENNETT RD 2010

10662	REXEL INC
	SUMMERS GROUP INC
10701	DURHAM SCHOOL SERVICES L P
10739	GREG A HUNYADA
	HUNYADA GREG A
	HUNYADA, GREG A
11352	PALMER ENTERPRISE TRUCK REPAIR
	SIERRA PRE BILT INC
11429	NEVADA UNION JUNIOR MINERS
	PACIFIC CREST DOOR COMPANY
11497	FAIRWEATHER, M
11613	FAIRWEATHER, MICHAEL B
11780	HACKWORTH, TIMOTHY D
11828	WESSELL, KEVIN J
11866	VOSS DENNIS
	VOSS, DENNIS L
11918	HEALY, ARTHUR D
11948	OLSON, FRANK E
11966	OCCUPANT UNKNOWN,
12040	BRUNMEIER, RONALD A
12108	CREATIVE KIDS
12110	OCCUPANT UNKNOWN,
12161	HAMILTON, FRANCIS X
	TRINITY TRANSPORT INC
12195	BROWN, LANCE
12261	RUDD, PATRICIA A
12368	ADVANTAGE GUTTER SYSTEMS
	LIGHTY, MARK W
12479	OCCUPANT UNKNOWN,
12481	SECK, LETA

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

BRUNSWICK RD 2005

133	CENTURY 21 GOLD DUST REALTY
400	JIM KEIL CHEVROLET-OLDSMOBILE
410	BLOCKBUSTER VIDEO
464	CALIFORNIA LAND TITLE COMPANY
512	BAKER JOHN A CONSTRUCTION
	DANL J DOWNEY
516	NEVADA COUNTY WEDDINGS
	VIRTUAL ANTIQUES
526	PENNY LANE CLAIMS
	RAY DOTTIE REALTY
	SOUTER CONSTRUCTION INC
528	QUICKS GLASS SERVICE
530	SWASEYS HAIR CENTER
10375	WESTAMERICA BANK
10412	AUTOZONE INC
10428	WASHINGTON MUTUAL BANK
10460	BANK OF WEST
10464	CALIFORNIA LAND TITLE NEV CNTY
10563	FLETCHER, SCOTT
	LEE, JAMES
	RICHMOND LLC
10565	KELLY, PAMLYN
	MAYFIELD, JOHN
	MOON, LISA E
	QUAYLE, DEBRA
	WERNER, LAURA L
	ZELENKA, CRAIG T
10859	STICE, LAURIE
10980	SILVA, RICARDO
12149	CRANE, SYLVIA J
12616	WITT, DARRYL W
12684	VANMATRE, PETER D
12730	SAUER, MATTHEW G
12904	GEORGE, KEVIN L
12942	GONZALEZ, BARBARA J
13018	BRUMM, BARBARA C
13064	OCCUPANT UNKNOWN,
13110	ENGEL, LOIS A
13148	OCCUPANT UNKNOWN,
13152	FLETCHER, JOHN S
13177	HARTING, BRADLEY L
13215	WOLD, STEPHANIE
13253	LIVES ON TARGET
	OCCUPANT UNKNOWN,
13328	HOSTETLER, CARL S

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

E BENNETT RD 2005

10662	REXEL NORCAL VALLEY INC
10663	DURHAM SCHOOL SERVICES LP
10739	HUNYADA, GREG A
11269	NEVADA COUNTY PLUMBING INC
	OCCUPANT UNKNOWN,
11352	PALMER ENT TRUCK REPAIR
	SIERRA PRE BILT INC
11429	PACIFIC CREST DOOR COMPANY
11497	BLAKEMORE, RANDALL T
11613	FAIRWEATHER, MICHAEL B
11780	HACKWORTH, TIM D
11818	TAURO, JOHN S
11828	WESSELL, RICHARD T
11866	VOSS DENNIS
	VOSS, DENNIS L
11918	TRAEGER, AILLEN J
11948	OLSON, FRANK E
11966	HARRINGTON, JIM C
12000	BOWMAN, GARY S
12040	LEWIS, JEANINE K
12108	CREATIVE KIDS
	OCCUPANT UNKNOWN,
12110	OCCUPANT UNKNOWN,
12161	HAMILTON, FRANCIS X
12195	GRIGGS, ERIC
12228	MARCUCCI, MICHAEL E
12261	OCCUPANT UNKNOWN,
12368	LIGHTY, MARK W
12479	OCCUPANT UNKNOWN,
12481	MCQUEEN, ERNEST W

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

BRUNSWICK RD 2000

10033	CENTURY 21 GOLD DUST REALTY
10375	BURGER REHABILITATION SYSTEMS
	CHOICE CAPITAL OF CALIFORNIA
	MCPARTLAND BRIAN P OD
	SIERRA REHABALIATION CENTER
	WESTAMERICA BANK
10400	KEIL JIM CHEVROLET-OLDSMOBILE
10410	BLOCKBUSTER VIDEO
10412	AUTOZONE INC
10428	WASHINGTON MUTUAL BANK
10450	B JS HAIR DESIGNS
10452	ADECCO INC
10460	BANK OF THE WEST
10464	CALIFORNIA LAND TITLE
10466	FIRST UNION SECURITIES INC
10512	BAKER JOHN A CONSTRUCTION
10514	GROOMING BY JUDY
10524	WAGNER JEFF
10526	DOTTIE RAY REALTY
	WEATHER BOS INTERNATIONAL INC
10528	EVERYTHING ELECTRONIC
10530	SWASEYS HAIR CENTER
10536	BURROWS B COMPANY INC
10563	LEE JAMES W DMD
	NORTHCUTT MICHAEL E DDS INC
	TOFF JEFFREY R LAW OFFICES
10565	APPLE DANIEL B MS CFP
	COMMUNITY ASIAN THTRE OF SERRA
	OHARA BRYAN & VALERIE MFCC
12117	TOWE, DAVID K
12149	OCCUPANT UNKNOWN,
12503	EMPEROR GOLD (US) CORP
12616	WITT, MARV
12684	OCCUPANT UNKNOWN,
12730	OCCUPANT UNKNOWN,
12904	LANYON, JOHN M
12942	SKINNER, SONYA
13018	BRUMM, MARTIN P
13064	OCCUPANT UNKNOWN,
13110	ENGEL, LOIS A
13148	RUBALCAVA, MARIA L
13177	MOORE, BRADLEY L
13192	COULTER, GEORGIE A
13253	RUIS, STEPHEN P
13326	AUTOMOTIVE CITY INC
13328	HOSTETLER, CARL

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

E BENNETT RD 2000

10498	RATHBUN ROBERT
	RATHBUN, ROB
10512	OCCUPANT UNKNOWN,
10513	PAGANETTI, GARRY T
10531	OCCUPANT UNKNOWN,
10551	PEEPLES, M
10605	OCCUPANT UNKNOWN,
10606	ROGERS, E A
10607	OCCUPANT UNKNOWN,
10662	NORCAL ELECTRIC SUPPLY INC
10663	DURHAM TRANSPORTATION INC
10739	HUNYADA, BERNICE H
11269	PUTNAM, ROBERT E
11352	PALMER ENT TRUCK REPAIR
	SIERRA PRE BILT INC
11429	PACIFIC CREST DOOR COMPANY
11481	MCQUEEN, ERNEST
11497	OCCUPANT UNKNOWN,
11613	OCCUPANT UNKNOWN,
11780	OCCUPANT UNKNOWN,
11818	TAURO, JOHN S
11866	VOSS DENNIS
11918	OCCUPANT UNKNOWN,
	TRAEGER DONALD
11948	MEDIANO, CHARLES E
11966	BUCCI, JOSEPH A
12000	LONGO, JOSEPH F
	MILLER, CAROL A
12040	OCCUPANT UNKNOWN,
12050	TAURO, JOHN S
12108	CREATIVE KIDS
	OCCUPANT UNKNOWN,
12110	BUSH, VALARIE L
12161	ZENOHAMILTON, NANCY S
12176	LEONHARD, ARN
12228	MARCUCCI, MICHAEL E
12261	NEELEY, EARL

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

BRUNSWICK RD 1995

0518	CENTRAL LIFE INSURANCE
10033	CENTURY 21 GOLD DUST REALTY
10375	FIRST CHOICE FINANCIAL
	MCPARTLAND BRIAN P OD
	SIERRA SPORTS & INDUS REHAB
10400	KEIL JIM CHEVROLET-OLDSMOBILE
	U HAUL CO
10428	FIRST INTERSTATE BANK OF CAL
10450	B JS HAIR DESIGNS
10466	HELLWIG TED
10512	KENS PLUMBING SUPPLY
10520	BRUNSWICK PET BOUTIQUE
10522	OUT WEST NEWSPAPER
10524	WAGNER JEFF
10526	SIERRA HOSE & FITTING
10528	NEW COVENANT BPTST CHRCH INC
10530	SWASEYS HAIR CENTER
10534	BURROWS SECURITY FORCE INC
10563	BROWN HOWARD A DDS
	HART KALMAN & HAAS
	LEE JAMES W DMD
	THOMPSON, THOMAS
	TOFF JEFFREY LAW OFFICES
	WARNER, PETER S
10565	ELY, P H
	EMPIRE MORTGAGE
	TURNER BARRY A DDS
10859	MYERS, FRED
10904	2 GUYS TRONICS
	HAEMMIG, MICHAEL J
11011	MENDENHALL, C
11040	HAMILTON, MARY
11047	FEIGHTNER, JAMES P
11048	OCCUPANT UNKNOWNN
11064	PARKS, SHELLEY
11070	HUNT, RUSTY L
11072	OCCUPANT UNKNOWNN
11078	PHILLIPS I, RICHARD E
11086	OCCUPANT UNKNOWNN
11090	OCCUPANT UNKNOWNN
11097	HARRIS, L
11100	OCCUPANT UNKNOWNN
11125	MCILHENNY, DANIEL S
11128	WILSON, L J
11143	FRANKLIN, JAMES B
11152	CHRISTMAN, ERROL
11178	DRISCOL, DAN A
11185	GRISCHKOWSKY, A L
11190	MEDLEY, J
11205	STOFLE, PETER C

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

BRUNSWICK RD 1995 (Cont'd)

11213	OCCUPANT UNKNOWNN
11233	KEEN, LILIAN P
11234	ELLIS, RALPH L
11288	EDWARDS, EDW
11311	TRIPP, ARLIE W
11321	OCCUPANT UNKNOWNN
11331	BREVOORT, PAULINE M
11343	OCCUPANT UNKNOWNN
11355	BARNES, NEOVA
11391	OCCUPANT UNKNOWNN
11399	MYERS, R C
11437	HERMOSO, CYNDI
11822	BAILEY DENNIS & SON CNSTR
	BAILEY, AUSTIN W
12117	DODGE, ROY L
12616	MARVS AUTO
12942	CARPENTER ENTERPRISES
13018	BRUMM, MARTIN P
13064	OCCUPANT UNKNOWNN
13110	ENGEL, LOIS A
13126	OCCUPANT UNKNOWNN
13148	OCCUPANT UNKNOWNN
13177	OCCUPANT UNKNOWNN
13192	COULTER, CHRIS L
13215	AKERS, DENNY
13253	OCCUPANT UNKNOWNN

E BENNETT RD 1995

10498	RATHBUN ROBERT
	RATHBUN, ROB
10513	OCCUPANT UNKNOWNN
10531	ALLEN, SHAWN
10551	GENERAL CASTINGS INC
	PEEPLES, M
10605	OCCUPANT UNKNOWNN
10606	ROGERS, E A
10607	KINCH, DANIEL
10651	KINAMON, PERNEY
10657	EARLE JAMISON HIGH SCHOOL
10662	NORCAL ELC SUP OF GRASS VLY
10663	DIAL A RIDE NEVADA COUNTY
	DURHAM TRANSPORTATION INC
10739	HUNYADA, ELMER J
11269	MCCREA, C E
11352	NEITHERCUTT JOSEPH W
	PALMER ENT TRUCK REPAIR
	SIERRA PRE BILT INC
11429	PACIFIC CREST DOOR CO
11479	MCQUEEN, ERNEST
11481	MCQUEEN, ERNEST
11497	SPINDLER, BETTY E
11613	FAIRWEATHER, MICHAEL
11780	SUMMIT ENGINEERING
11866	VOSS, DENNIS L
11918	OCCUPANT UNKNOWNN
11948	SNOW, RICHARD K
11966	BUCCI, JOSEPH A
12000	OCCUPANT UNKNOWNN
12040	LEWIS, RANDY
12108	CREATIVE KIDS
	FARBER, DONOVAN
12161	ZENO, NANCY S
12176	WHYTE, DAVID H
12195	OCCUPANT UNKNOWNN
12228	CRESSIO, RAYMOND F
12261	NEELEY, EARL

BRUNSWICK RD 1992

0518	CENTRAL LIFE INSURANCE
10033	BANNER MOUNTAIN REALTY
	BARNEYS SIGN STUDIOS
	CENTURY 21 GOLD DUST REALTY
	SHINNS BUILDING SUPPLY & FURN
10400	KEIL JIM CHEVROLET-OLDSMOBILE
10428	FIRST INTERSTATE BANK OF CAL
10450	B JS HAIR DESIGNS
10454	MACKENDRICK COMPUTERS
10520	BRUNSWICK PET BOUTIQUE
10522	OUT WEST NEWSPAPER
	WOODBURY, CHUCK
10524	SIERRA OFFICE EQP & SUP CO
10526	SIERRA HOSE & FITTING
10528	LUTZ TIMOTHY R DDS
10530	SWASEYS HAIR CENTER
10536	MOUNTAIN OUTPOST
10563	BASS & BASS
	BASS, ALVIN S
	BRAUN-SMITH RUTH PHD
	GILBERT, MARTIN
	HARPER, ROY E
	HART, JOHN E
	KALMAN, V L
	LEE JAMES W DMD
	RENFRO, ROGER D
	TOFF JEFFREY LAW OFFICES
10565	ASKINS, MICHAEL
	DEMARANVILLE, CHARLES
	DRURY, KERRY
	EKBLAD ROBERT L PHD
	OHARA BRYAN & VALERIE MFCC
	OSTROFE FRANK FNNCIAL CNSLTING
	SIERRA VISTA COUNSELING ASSOC
	ZELENKA CRAIG T DDS
10859	MYERS, FRED
10904	2 GUYS TRONICS
	H-O-H POWER
11064	PARKS, SHELLEY
11078	PHILLIPS, RICHARD E
11086	MILDRED, FRED
11097	DUGAN, M V
	HARRIS, L
11125	MCILHENNY, DANIEL S
11128	WILSON, L J
11152	CHRISTMAN, ERROL
11185	GRISCHKOWSKY, A L
11213	MUMM, MARTHA D
11233	KEEN, LILIAN P
11234	ELLIS, RALPH L

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

BRUNSWICK RD 1992 (Cont'd)

11331	BREVOORT, PAULINE M
11391	RODARTE, S L
12616	MARVS AUTO
12942	CARPENTER ENTERPRISES
13018	BRUMM, MARTIN P
13126	BESTBLASIUS, D M
13192	COULTER, CHRIS L
13215	SUDZ PUBLISHING
13253	CUMMINS, ALAN C
13328	WAGNER, WAYNE

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

E BENNETT RD 1992

10498	RATHBUN CABINETS
	RATHBUN, ROB
10512	EMERY, PAUL
10551	AUTOMATA INC
	GENERAL CASTINGS INC
	PEEPLES, M
10651	KINAMON, PERNEY
10657	YOUNG PARENTS PROJECT
10662	NORCAL ELC SUP OF GRASS VLY
10663	DURHAM TRANSPORTATION INC
10739	HUNYADA, ELMER J
11269	MCCREA, C E
11352	SIERRA PRE BUILT
11429	AGATE SALES INC
	PACIFIC CREST DOOR CO
11613	FAIRWEATHER, MICHAEL
11780	SUMMIT ENGINEERING
11918	ROBERTSON, DAVID
11966	BUCCI, JOSEPH A
12108	FARBER, DONOVAN
	OUR PLAYHOUSE
12161	KREFT, JOSEPH
12228	CRESSIO, RAYMOND F
12261	NEELEY, EARL

Brunswick Industrial Site
East Bennett Rd
Grass Valley, CA 95945

Inquiry Number: 5940744.3
January 21, 2020

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

01/21/20

Site Name:

Brunswick Industrial Site
East Bennett Rd
Grass Valley, CA 95945
EDR Inquiry # 5940744.3

Client Name:

Holdrege & Kull Consultants
792 Searls Avenue
Nevada City, CA 95959
Contact: Julie Turnross

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Certified Sanborn Results:

Certification # 222D-4DB3-A231

PO # NA

Project 5279.03

UNMAPPED PROPERTY

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Sanborn® Library search results

Certification #: 222D-4DB3-A231

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

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APPENDIX B

Previous Investigation Data

SOIL AND GROUND-WATER CONTAMINATION INVESTIGATION
GRASS VALLEY LUMBER MILL
GRASS VALLEY, CALIFORNIA

Prepared for

BOHEMIA, INC.
September 1987

Prepared by

EMCON Associates
1921 Ringwood Avenue
San Jose, California 95131

Project 878-02.01

TABLE OF CONTENTS

TABLE OF CONTENTS
(Continued)

TABLE OF CONTENTS
(Continued)

Appendicies

I. INTRODUCTION

Findings from EMCON Associates' investigation of soil and ground-water contamination in a portion of Bohemia, Inc.'s Grass Valley Lumber Mill are presented in this report. Remedial-action alternatives are presented following the findings from the investigation.

The Bohemia Grass Valley Lumber Mill is located adjacent to the New Brunswick Mine approximately 2-1/2 miles east of the town of Grass Valley, California (see Figure 1). Located near the intersection of Brunswick Road and Union Hill Road, the site is accessed from Interstate 50 via Brunswick Road.

The Grass Valley Lumber Mill is situated within the South Fork of Little Wolf Creek drainage (see Figure 1). Several buildings are located within the central portion of the facility. These buildings were erected on northwest-trending benches made of artificial fill. Placed on the former southwest-sloping ground surface, the artificial fill consists primarily of mine tailings from adjacent mine workings. The portion of the site studied during this investigation, referred to as the "green chain area," is situated between the mill buildings (see Figures 1 and 2). Additional background information, a discussion of previous site investigations, and the purpose of this investigation are presented below.

BACKGROUND

Extensive gold mining activities took place adjacent to the site at the New Brunswick Mine during the 1800s and early 1900s. Lumber milling operations began on the site in the late 1950s. In 1976, the lumber mill was acquired by Bohemia, Inc., who has operated it to the present.

Prior to 1984, the final phase of the milling operation consisted of treating the wood with pesticides. After the timber was cut, the wood was dipped into a pesticide solution and carried by conveyor over an area of exposed soil to a slot feeder (see Figure 2 and Drawing 1). This conveyor was known as the "green chain." As the lumber was carried on the green chain, excess pesticide solution dripped from the wood onto the exposed soil. In this report, the area beneath and immediately adjacent to the conveyer is referred to as the "green chain area" (see Figure 2). On-site treatment of lumber with pesticides ended in 1984. The green chain was decommissioned and dismantled in January 1987.

Pentachlorophenol (PCP) and tetrachlorophenol (TCP), active ingredients in the pesticide solution formerly used at the facility, have been detected in soil samples obtained in the vicinity of the green chain during previous investigations at the facility.

PREVIOUS INVESTIGATIONS

Initial investigative work concerning PCP and TCP contamination in the green chain area was performed by Dr. Alvin Franks. Dr. Franks sampled shallow soil at six locations, as described in his June 1986 report, entitled Bohemia, Inc., Grass Valley, Geology and Exploration. Sample depths ranged from the surface to 3.2 feet in depth. Analytical findings from that investigation were transmitted directly to the Regional Water Quality Control Board (RWQCB) by the laboratory which conducted the analyses. Since much of the area which Dr. Franks sampled was overlain by a layer of wood shavings, there is some question as to whether the shallow samples collected by Dr. Franks consisted primarily of wood shavings or the underlying soil. Because of the high affinity of PCP and TCP for organic material, analysis of wood shavings would not provide an accurate indication of the extent of soil contamination in the green chain area.

EMCON was retained in September 1986 to study PCP and TCP soil contamination southwest of the green chain. Initially, five backhoe test pits, designated P-1 through P-5, were excavated to depths of up to

3 feet at the locations shown on Drawing 1. Artificial fill, consisting predominantly of cobble- and boulder-size rock fragments (mine tailings) with subordinate amounts of interstitial fine-grained soil, was encountered to the bottom of Test Pits P-1, P-2, P-4, and P-5. Clayey soil was encountered in Test Pit P-3. Grab samples of the fine-grained interstitial soil were collected at various depths within the test pits.

In October 1986, two borings, designated DB-1 and DB-2, were drilled southwest of the green chain at the locations shown on Figure 2 to investigate the vertical extent of the artificial fill and to obtain depth-discrete samples of the native soil and weathered bedrock which underlies the artificial fill. Samples were collected at various depths using a split-spoon drive sampler. Samples obtained from the test pits and the borings were analyzed for PCP and TCP. Analytical findings from the investigation were presented during a meeting held at the RWQCB's Sacramento office on November 6, 1986. Details of EMCON's investigation were presented in a letter to the RWQCB dated January 14, 1987. Certified Analytical Reports for samples obtained during the investigation are presented in Appendix A.

PURPOSE OF INVESTIGATION

During the November 6, 1986 meeting, the RWQCB reviewed EMCON's findings and requested a plan (1) for additional sampling and analysis to further characterize soil contamination in the green chain area and (2) to investigate potential ground-water contamination downgradient from the green chain area. In addition, the RWQCB requested that Bohemia also determine whether dioxins, common trace constituents in PCP and TCP solutions, are present in soils in the vicinity of the green chain. In response to the RWQCB's request, EMCON developed a plan and submitted it to that agency for approval on January 14, 1987. The plan was subsequently approved by the RWQCB in a letter dated February 13, 1987. The scope of work for EMCON's investigation is presented in the following section.

II. SCOPE OF INVESTIGATION

In response to the RWQCB's request for additional information, EMCON conducted a comprehensive investigation consisting of the following tasks:

- Obtaining 16 surface soil samples from the green chain area to delineate the areal extent of soil contamination
- Drilling five exploratory borings in the green chain area and obtaining depth-discrete soil samples to define the vertical extent of soil contamination
- Installing six ground-water monitoring wells to investigate the nature and extent of possible ground-water contamination
- Analyzing soil samples for PCP, TCP, and dioxins and analyzing ground water for PCP and TCP
- Analyzing subsurface geologic, hydrogeologic, and analytical data to (1) develop a hydrogeologic model of the site and (2) evaluate the significance of soil and ground-water contamination detected in the green chain area

These tasks are described in more detail in the following sections.

SURFACE SOIL SAMPLING

Sixteen surface soil samples, designated P-6 through P-21, were collected at the locations shown on Drawing 1 to further define the areal extent of soil contamination in the green chain area. Most of the samples were taken from the area of exposed soil at a depth of approximately 0.5 to 1 foot. With one exception, all of the samples consisted of soil (i.e., a mixture of gravel, sand, silt, and clay with varying amounts of organic material). Sample P-21, however, consisted primarily of sawdust taken from the ground surface. Five samples, designated P-8, P-9, P-10, P-17, and P-20, were collected beneath the concrete slab adjacent to the area of exposed soil (see Drawing 1). At these locations, holes in the concrete slab were made using a jackhammer to facilitate sampling of the underlying soil. At each surface sample location, bulk soil samples were collected and described according to the Unified Soil Classification System. Approximately 500 grams of the finer fraction of the soil from each bulk sample was collected and placed in a Teflon-sealed 500-ml glass jar and shipped on ice to a State-certified laboratory in accordance with the procedures specified in Test Methods for Evaluation of Solid Waste: Physical/Chemical Methods (U.S. EPA, SW-846, 1982, as amended). All samples were accompanied by chain-of-custody documentation. All soil sampling equipment was thoroughly steam cleaned between samples.

SUBSURFACE SOIL SAMPLING

In order to define the vertical extent of soil contamination in the green chain area, four exploratory borings, designated DB-3 through DB-6, were drilled at the locations shown on Figure 2. For each boring, soil samples were obtained from (1) the organic-rich native soil horizon near the contact with the overlying artificial fill (hereafter referred to as "interface" samples) and (2) the weathered tuff breccia bedrock 2 feet below the contact.

Drilling operations utilized an air-rotary downhole hammer to penetrate the hard cobbles and boulders within the artificial fill. Once the native soil horizon was encountered, soil samples were obtained by pushing a split-spoon sampler into the undisturbed soil beyond the tip of the drill bit. In order to minimize cross-contamination of potentially contaminated zones and prevent flushing of samples, no drilling fluids were used during drilling operations. The soil samples from the borings were collected for chemical analyses according to the procedures described above. All samples were accompanied by chain-of-custody documentation. All soil sampling equipment was thoroughly steam cleaned between samples. The drilling rig, drill pipe, and all drilling tools were steam cleaned between borings.

If no ground water was encountered in the exploratory boring when the deepest soil sample was obtained, the borehole was filled with a cement and bentonite grout mixture to the depth corresponding to the contact between the native soil and the overlying artificial fill. Above that elevation, the borehole was backfilled with cuttings. If ground water was encountered in a boring drilled in the green chain area, the boring was converted to a ground-water monitoring well as described in the following section. All drill cuttings and drilling fluids were contained in 55-gallon drums on site pending the results of analytical testing of the collected samples.

MONITORING WELL INSTALLATION

Six ground-water monitoring wells were installed during the investigation to provide samples of ground water in the vicinity of the green chain. Ground-water monitoring wells were installed (1) at proposed Locations MW-1, MW-2, and MW-3 and (2) at three locations in the green chain area where water was encountered during subsurface exploration. Monitoring Well MW-1 was installed northeast of the green chain area at the location shown on Figure 2 to provide samples of ground water upgradient from the green chain area. Monitoring Wells MW-2 and MW-3 were installed southwest of the green chain to provide downgradient ground-water samples.

Borings DB-4 and DB-6 encountered ground water during subsurface soil sampling operations in the green chain area. These borings were subsequently converted to ground water monitoring wells to provide samples of ground water beneath the green chain area. One additional well, DB-5W, was installed to provide samples of ground water from the northern portion of the green chain area (see Figure 2).

Like the exploratory borings drilled in the green chain area, Monitoring Wells MW-1, MW-2, and MW-3 were drilled using air-rotary drilling equipment. Selected intervals of the borings were cored to provide samples for lithologic identification and correlation. All samples were logged by an EMCON geologist, and the depth of first-encountered ground water was recorded. Drilling proceeded until either 20 feet of the saturated unit was penetrated or an underlying aquitard was encountered.

All of the ground-water monitoring wells were screened across the entire saturated interval (see Appendix B). Where possible, the top of the screened interval was placed approximately 2 feet above the stabilized water level to allow for seasonal fluctuations in the water-table elevations. Two-inch-diameter, Schedule 40 threaded polyvinyl chloride (PVC) well screen and casing were used to construct the wells. No glue was used to assemble the casing and screen segments. Screen and sand-pack sizes were selected based on visual analysis of formation samples. Sand pack was placed in the annular space from the bottom of the boring to approximately 2 feet above the top of the screened interval., A 1-1/2-foot bentonite seal was placed above the sand pack and a cement and 3-percent bentonite grout mixture was tremied to the ground surface. Locking protective covers were installed over each well head. Following installation of the locking covers, the ground level and top-of-casing elevations of each well was surveyed by a State-registered surveyor.

All of the wells were developed by bailing or pumping with a positive-displacement bladder pump. Well development was conducted until the samples were clear and relatively sediment free. The duration of development in each well was approximately 2 hours.

GROUND-WATER SAMPLING

Five of the six ground-water monitoring wells were sampled on April 27 and 28, 1987 using submersible positive-displacement bladder pumps. One well, DB-4, did not have a sufficient volume of ground water to operate the sampling pump. The well was recorded dry for the sampling event. Ground-water sampling procedures followed during the investigation are presented in Appendix C.

LABORATORY ANALYSES

Soil Analyses

All of the surface and subsurface soil samples obtained during the investigation were analyzed for PCP and TCP. The method of analysis involved prolonged shaking of the acidified sample with ethyl ether. An aliquot was then treated with base and purified by partitioning in hexane. The extract was re-acidified and partitioned from the acid with hexane and methylated with diazomethane. Final detection was by gas chromatography using an electron capture detector (GC/ECD). The modified method provides for lower detection limits than the conventional EPA 8040 method. In addition, surface Samples P-7 and P-14 and subsurface soil Sample DB-3-3.5-4 were analyzed for PCP and TCP using the same method; however, a water extraction, using tap water from the site, was performed on the soil samples prior to the analysis. This analysis measures the solubility of the compounds which are adsorbed on soil particles.

Five samples (P-7, P-14, P-18, DB-3-3.5-4, and DB-5-8.5-9, were analyzed for polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzo-p-furans (PCDFs) using EPA Method 8280. The five soil samples were initially analyzed for total concentrations of tetra-, penta-, hexa-, hepta-, and octa-chlorinated dibenzo-p-dioxins and dibenzofurans. The results of the analysis indicated that PCDDs and PCDFs were detected only in the three surface soil samples (P-7, P-14, and P-18). Extracts from these three samples were resubmitted for analysis in order to quantify the levels of 2,3,7,8-substituted isomers present in the soil samples.

Ground-Water Analysis

Water samples obtained from the ground-water monitoring wells were analyzed for PCP and TCP. The method of analysis involves initially acidifying the sample and extracting it with hexane. The extract is treated with diazomethane to form the methyl derivative. Finally, the extract is analyzed by gas chromatography using an electron capture detector (GC/ECD). This method allows for lower detection limits then can be achieved by conventional EPA Method 604 analysis.

DATA ANALYSIS

Development of Hydrogeologic Model

To assess the fate and transport of PCP, TCP, and dioxins in the green chain area, geologic, hydrogeologic, and chemical data were analyzed and a hydrogeologic model of the green chain area was developed. This hydrogeologic model is presented in Section III.

Dioxin Toxicity Equivalency Assessment

In order to evaluate the significance of dioxin contamination of soil in the green chain area, a toxicity equivalency assessment was performed in accordance with EPA guidance. By applying isomer-specific toxicity equivalency factors, an equivalent 2,3,7,8-tetrachloro dibenzo-p-dioxin (2,3,7,8-TCDD) value was generated for each sample which contained PCDD/PCDF isomers containing 4, 5, 6, or 7 chlorines.

The Department of Health Services (DHS) currently designates as hazardous any material that contains 2,3,7,8-TCDD, the most toxic chlorinated dioxin, in concentrations greater than or equal to 10 parts per billion (ppb) [Total Threshold Limit Concentration (TTLC), California Administrative Code Title 22, Section 66699]. Both the DHS and the EPA recognize that other dioxin and furan isomers are toxic, although to a lesser extent than 2,3,7,8-TCDD.

The EPA has proposed a method, published in March 1987 (Interim Procedures for Estimating Risks Associated With Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Dibenzofurans, EPA/625/3-87/012). This EPA document asserts that not all of the dioxin and furan isomers are of equal toxicity and recommends using factors to indicate relative expected toxicities of other dioxin and furan isomers to 2,3,7,8-TCDD. These factors (included in Appendix D) have been estimated for each congener (tetra through octa) of dioxins and furans. In addition, a different factor is assigned to those congeners containing chlorinated compounds in the 2,3,7,8 positions, and those not containing 2,3,7,8 chlorinated compounds. The factors are then multiplied by each isomer concentration and summed for a total dioxin and furan equivalent concentration. This value can then be used to determine site-specific remedial-action alternatives if necessary.

III. FINDINGS

In this section, the findings of EMCON's investigation are presented. These findings are organized into the following areas:

- Green Chain Setting
- Chemical Characterization of Soil
- Chemical Characterization of Ground Water
- Summary of Findings

In the first section (Green Chain Setting), the geologic and hydrogeologic model of the green chain area is described. In the final section (Summary of Findings), bulleted conclusions are presented to provide easy reference when evaluating the remedial-action alternatives presented in the final section.

GREEN CHAIN SETTING

Earth Materials

Materials beneath and in the vicinity of the green chain area are composed of three distinct units. These units are, in order of increasing depth, surficial soil, artificial fill, and native tuff breccia bedrock.

Surficial Soil

The green chain area is underlain primarily by locally organic-rich, gravelly soil to a depth ranging from 0.5 to 1 foot. The area of exposed soil is bound on all sides by a 6-inch- to 1-foot-thick concrete slab (see Drawing 1). As identified from samples collected for chemical analyses, the surficial soil consists primarily of poorly-sorted gravel with 5 to 40 percent interstitial silt and clay (see Table 1). Organic material is also common within the surficial soil.

The locally high organic content within the surficial soil results from the accumulation of sawdust produced from the adjacent mill. Scattered 1- to 3-inch-thick deposits of sawdust were also present in the green chain area at the time of the investigation.

Artificial Fill

The surficial soil is underlain by coarse-grained artificial fill which was encountered in the green chain area to depths ranging from 3.5 to 9 feet (see Figure 3). Penetrated by Borings DB-1 through DB-6 and Monitoring Wells MW-2 and MW-3, the artificial fill is composed primarily of cobble- to boulder-size clasts and gravel with subordinate amounts of interstitial sand and fine-grained soil. As discussed previously, the artificial fill unit represents a bench constructed of mine tailings from the nearby New Brunswick Mine. Since the horizontal bench was constructed on the southwest-sloping native ground surface, the thickness of the artificial fill increases towards the southwest (see Figure 3).

Tuff Breccia Bedrock

The artificial fill is underlain by native fine-grained tuff breccia bedrock that represents the original ground surface prior to construction of the horizontal benches. Sampled in Borings DB-1 through DB-6, the tuff breccia bedrock near the contact with the overlying artificial fill is weathered to a high-plasticity clay, which locally contains abundant roots and other organic debris. This weathered zone represents a native soil horizon developed at the former original ground surface. Approximately 1 to 2 feet below the top of the former ground surface (now the contact with the overlying artificial fill), the unit grades into weathered tuff breccia bedrock, which displays abundant relict volcaniclastic textures.

Table 1

SUMMARY OF PCP/TCP ANALYSES - SURFACE AND SUBSURFACE SOIL SAMPLES

Sample	Sample Depth (ft)	Soil Type (USCS)*	PCP (ug/kg)	PCP Water Extraction (ug/l)	TCP (ug/kg)	TCP Water Extraction (ug/l)
Surface Soil Samples						
P-6	0.5-1	SP	22,000		3,100	
P-7	0.5-1	GC-GP + sawdust	8,300	1,100	20,000	2,000
P-8	0.5-1	CL	7.4		10	
P-9	0.5-1	GC	19		23	
P-10	0.5-1	GC	29		57	
P-11	0.5-1	GW	1,200		2,200	
P-12	0.5-1	GW	12,000		12,000	
P-13	0.5-1	GP	15,000		17,000	
P-14	0.5-1	GP	42,000	2,500	53,000	4,000
P-15	0.5-1	GP	3,700		4,600	
P-16	0.5-1	GP	22,000		34,000	
P-17	0.5-1	GW	6,900		8,200	
P-18	0.5-1	GP	6,400		3,600	
P-19	0.5-1	GP	14,000		13,000	
P-20	0.5-1	GW	3,900		3,700	
P-21	0.5-1	sawdust	150,000		110,000	
Subsurface Soil Samples						
DB-3	3.5-4	CL	48	1.3	130	2.2
DB-3	5.5-6	CL	10		25	
DB-4	7-7.5	CL	340		340	
DB-4	9-9.5	CL	12		38	
DB-5	8.5-9	CL	13		19	
DB-5	10.5-11	CL-CH	<5		10	

Regulatory Standards

STLC	1,700 ug/l
TTLC	17,000 ug/kg

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* = Classification of bulk sample according to the Unified Soil Classification System (USCS) - see Appendix B; finer fraction of soil from each bulk sample analyzed for PCP/TCP

STLC = Soluble Threshold Limit Concentration, California Administrative Code, Title 22, Section 66699

TTLC = Total Threshold Limit Concentration, California Administrative Code, Title 22, Section 66699

Using data from site borings, a structure contour map was constructed showing the elevation of the contact between the tuff breccia bedrock and the underlying artificial fill (see Figure 5). As shown on the figure, the contact between the two units slopes gently toward the southwest. Moreover, the shape of the structure contours indicate that, in the green chain area, the artificial fill was apparently placed over a shallow southwest-trending drainage swale. As discussed in the following section, the orientation of the original ground surface affects the ground-water flow characteristics in the vicinity of the green chain.

Hydrogeology

Ground water in the vicinity of the green chain occurs within two separate zones:

- Perched within the artificial fill
- Within the underlying weathered tuff breccia bedrock

Perched Ground Water

Monitored in Wells DB-4, MW-2, and MW-3, perched ground water occurs within artificial fill southwest of the green chain area (see Figures 3 and 6). Ground water was measured in the wells at depths ranging from 3.5 to 13.5 feet. Ground water within the porous artificial fill is apparently perched on top of the fine-grained weathered tuff breccia bedrock. Northeast of the southwestern portion of the green chain area, the artificial fill is above the water-table elevation and the unit is not saturated (see Figure 6).

Ground water within the artificial fill unit is recharged primarily by infiltration of precipitation and site washdown water. In the green chain area, water percolates through the artificial fill until it reaches the underlying low-permeability weathered tuff breccia. The water then flows toward the southwest along the former ground surface, until the perched water-table is encountered near the southwestern boundary of the green chain area.

Contouring of ground-water elevation data from the monitoring wells indicates that ground water within the saturated artificial fill flows toward the southwest, following the slope of the former ground surface. Ground water within the unit is apparently discharged to the South Fork of Little Wolf Creek drainage, located approximately 400 feet to the southwest of the green chain area.

Ground Water Within Bedrock

Ground water throughout the site area occurs within the weathered tuff breccia bedrock. Ground water within the unit is monitored by Wells DB-5W, DB-6, and MW-1. In the green chain area, ground water within the tuff breccia bedrock occurs approximately 8 feet below the contact with the overlying artificial fill (see Figure 3). As shown on Figure 6, ground water within this unit represents the uppermost saturated zone directly beneath the green chain area.

Ground water within the tuff breccia bedrock is recharged primarily by infiltration of precipitation. In addition, leakage from an irrigation canal located approximately 500 feet upgradient (i.e., northeast) from the facility probably contributes to ground-water recharge within the aquifer. Also, leakage of perched water from the overlying artificial fill unit probably contributes minor amounts of ground water to the tuff breccia aquifer. Contouring of ground-water elevation data from the ground-water monitoring wells screened within the unit indicates that ground water within the tuff breccia bedrock flows toward the southwest, reflecting the former topography of the area. Ground-water within this unit probably also discharges to the drainage to the southwest.

Aquifer Properties

Although no direct measurements of the permeability of water-bearing units have been made, qualitative observations can be made. Due to the abundance of high-plasticity clay within the upper portion of the tuff breccia unit, the weathered tuff breccia has a relatively low hydraulic conductivity value. Representative hydraulic conductivity values for soils of this type range from 10^{-7} to 10^{-10} cm/sec (Freeze and Cherry, 1979). In contrast, due its coarse-grained nature, the hydraulic conductivity of the artificial fill unit is probably several orders of magnitude higher than the hydraulic conductivity of the underlying weathered tuff breccia.

As shown on Figure 6, the hydraulic gradient within both water-bearing units is approximately equal. The calculated hydraulic gradient for the zones is approximately 0.07.

CHEMICAL CHARACTERIZATION OF SOILS

PCP/TCP

PCP and TCP was detected in approximately equal ratios in surface and subsurface soil samples collected in the green chain area. Relatively high concentrations of PCP and TCP were detected in samples of the surficial soil; much lower concentrations were detected in samples from the weathered tuff breccia (see Table 1). Certified Analytical Reports for chemical tests conducted during this investigation are presented in Appendix A.

Vertical Extent of PCP/TCP in Site Soils

Analyses of surficial soil samples from Locations P-6 through P-20 yielded PCP and TCP values up to 42,000 and 53,000 ppb, respectively (see Table 1). Interface soil samples obtained from the native soil horizon which caps the tuff breccia bedrock contained PCP and TCP in concentrations generally three orders of magnitude lower than that in overlying surface soil samples (see Figure 4). Apparently, most of the PCP and TCP is retained in the organic-rich surface soil and has not migrated to the native soil horizon in the tuff breccia bedrock.

Comparison of analytical results from the interface soil samples and samples taken 2 feet deeper shows that significant attenuation also occurs within the upper, organic-rich portion of the tuff breccia bedrock. As shown on Table 1, the concentrations of PCP and TCP in the lower samples are generally one order of magnitude lower than those from the interface. Concentrations of the chemicals in the lower samples are near the detection limits for PCP and TCP.

Areal Extent of PCP/TCP in Site Soils

As discussed in the previous section, high levels of PCP and TCP are found only in samples obtained from the surficial soil. Consequently, only the areal extent of contamination within the surficial soil is discussed in this section.

Concentrations of PCP and TCP in surficial soil samples exhibited a wide range of values. Values of these parameters ranged from 7 to 42,000 ppb and 10 to 53,000 ppb, respectively. In addition, one surface sample from the green chain area yielded very high values of PCP and TCP; Sample P-21, the sawdust sample, contained PCP and TCP concentrations of 150,000 and 110,000 ppb, respectively. However, as previously discussed, the concentration of PCP and TCP in sawdust does not provide a good indication of the extent of soil contamination due to the affinity of the compounds for organic material. Therefore, analytical results for Sample P-21 are not included in the following discussion.

In order to visually show the areal extent of surface soil contamination in the green chain area, the concentrations of PCP in surface soil samples were contoured (see Drawing 2). As discussed above, PCP and TCP are present in nearly equal proportions. Therefore, although only the concentrations of PCP are shown, the areal extent of TCP in the surficial soil can be inferred from the distribution of PCP shown on the contour map.

As shown on Drawing 2, the highest concentration of PCP in a surficial soil sample (42,000 ppb) was detected in a sample obtained from the center of the green chain area (P-14). The concentration of the chemical in the soil markedly decreases radially away from that location (see Drawing 2). As expected, soil samples obtained from beneath the concrete slab along the boundary of the green chain area yielded the lowest values of PCP and TCP; the concrete slab apparently minimized the infiltration of the pesticide solution into the underlying soil.

Evaluation

In order to provide an indication of the relative significance of the extent of PCP and TCP soil contamination detected in the green chain area, selected State regulatory criteria are presented for comparison. Comparative standards referred to in this section are:

- The Total Threshold Limit Concentration (TTLC)
- The Soluble Threshold Limit Concentration (STLC)

The State of California has defined TTLC values above which a solid waste is considered a hazardous waste due to the persistent and bioaccummulative nature of specific toxic substances. The State has defined TTLC values for PCP and not TCP. Consequently, the following discussion regarding the hazardous nature of site soils refers to PCP only. Comparison of the analytical data in Table 1 with TTLC standards for PCP indicate that three soil samples (P-6, P-14, and P-16) exceeded the TTLC limit for the parameter (17,000 ppb).

STLC values differ from TTLC values in that the solubility of the compound is considered when defining whether the waste is hazardous. In order to simulate the solubility of PCP and TCP under site conditions, a water extraction was performed on three samples (P-7, P-14, and DB-3) using site water. These samples were then analyzed according to the procedures described in Section II. Comparison of these values with STLC values for PCP shows that only one sample (P-14) exceeded the STLC value for that parameter.

Dioxins

Analytical Results

As discussed in Section II, five samples (P-7, P-14, P-18, DB-3-3.5-4, and DB-5-8.5-9, were analyzed for dioxins and furans by U.S. EPA Method 8280. The five soil samples were initially analyzed for total concentrations of tetra-, penta-, hexa-, hepta-, and octa-chlorinated dibenzo-p-dioxins and dibenzofurans. The results of the analysis indicated that PCDDs and PCDFs were detected only in the three surface soil samples (P-7, P-14, and P-18). Analytical results for these samples are presented in Appendix A. Extracts from these three samples were resubmitted for analysis in order to quantify the levels of 2,3,7,8-substituted isomers present in the soil samples.

Results from the second analysis did not detect 2,3,7,8-TCDD, the most toxic isomer of dioxin, in any of the samples. This suggests that the PCP solution used at the site did not contain 2,3,7,8-TCDD.

As explained in Section II, the hazardous nature of a mixture of dioxins and furans can be estimated by multiplying the concentrations of dioxin and furan homologues by factors. The sum of the resulting products represents the equivalent amount of 2,3,7,8-TCDD present in each sample. The calculations, using soil Sample P-14 as an example, are contained in Appendix D. The calculations for the three samples analyzed are summarized on Table 2.

The samples listed in Table 2 represent the probable range of equivalent 2,3,7,8-TCDD concentrations at the site. Although a limited number of samples were analyzed for dioxins and furans, there is a good correlation with the PCP data. As shown in Tables 1 and 2, the sample with the lowest equivalent concentration of 2,3,7,8-TCDD (P-18) contained a relatively low concentration of PCP. The mid-range sample (P-7) contained a moderate concentration of PCP. Finally, the sample with the highest equivalent concentration of 2,3,7,8-TCDD (P-14) had the highest concentration of PCP. Based on this data, it can be assumed that the maximum equivalent concentration of 2,3,7,8-TCDD present in the soil is much less than 1 ppb and the areal extent of equivalent 2,3,7,8-TCDD is similar to the areal extent of PCP shown in Figure 7.

Table 2

SUMMARY OF DIOXIN/FURAN ANALYSES - SURFACE SOIL SAMPLES

Sample Number	2,3,7,8-TCDD Equivalence
P-7	0.09 ppb
P-14	0.19 ppb
P-18	0.02 ppb

Evaluation

Based on the above discussion, the concentration of EPA-equivalent 2,3,7,8-TCDD in the surface soil is approximately one order of magnitude lower than the recommended EPA cleanup level of 1 ppb.

CHEMICAL CHARACTERIZATION OF GROUND WATER

PCP/TCP

Analytical Results

Very low levels of PCP and TCP were detected in two ground-water wells which monitor the quality of ground water within the tuff breccia aquifer directly beneath the green chain area. PCP and TCP were detected in Monitoring Wells DB-5W at concentrations of 0.8 and 1.6 ppb, respectively (see Table 3). The compounds were also detected in the adjacent Well DB-6 at concentrations of 3.3 and 3.9 ppb, respectively.

Evaluation

In order to evaluate the significance of the PCP and TCP contamination in site ground water, selected State regulatory criteria are presented for comparison. Comparative standards referred to in this section are:

- Recommended Maximum Contaminant Limit (RMCL)
- California Department of Health Services (DHS) Action Levels
- Soluble Threshold Limit Concentration (STLC)

EPA Maximum Contaminant Level Goals (MCLGs) are nonenforceable health based levels at which no known or anticipated adverse effects on the health of a person occurs. These levels are used to develop maximum contaminant levels or MCLs, which are the final enforceable standards for public water supplies and are often used as clean up goals. MCLs are set as close to the MCLGs as feasible after considering the best available treatment technology and costs. On November 13, 1985, the EPA proposed a MCLG of 220 ppb for PCP. Currently, a MCLG for TCP has

Table 3

SUMMARY OF PCP/TCP ANALYSES OF GROUND WATER

Compound*	MW-1	MW-2	MW-3	DB-4**	DB-5W	DB-6	Regulatory Standard PMCLG	Regulatory Standard AL	Regulatory Standard STLC
PCP	<0.5	<0.5	<0.5	--	0.8	3.3	220	30	1,700
TCP	<0.5	<0.5	<0.5	--	1.6	3.9	NA	NA	NA

---

* = Concentrations in ug/l (ppb)
** = Not sampled due to insufficient water in well
PMCLG = Proposed Maximum Contaminant Level Goal - EPA 51 FR 11411
AL = Department of Health Services Action Level
STLC = Soluble Threshold Limit Concentration - California Administrative Code, Title 22, Section 66699
NA = Not Applicable

not been proposed. As shown on Table 3, concentrations of PCP detected in ground-water samples from site monitoring wells are approximately two orders of magnitude lower than the MCLG value for PCP. Ground water in the vicinity of the green chain clearly does not contain PCP/TCP in concentrations which would require treatment of the liquid as a hazardous waste.

DHS action levels are health-based criteria set by the State to limit public exposure to substances not yet regulated by formal standards. They are levels at which the DHS requires water purveyors to take corrective action to reduce the level of contamination in the water they supply. The full parameters list is provided in the September 1986 DHS document entitled _Drinking Water Action Levels Recommended by the Department of Health Services_. As shown on Table 3, the concentration of PCP detected in site monitoring wells is approximately one order of magnitude lower than the DHS action level for PCP. As above, no action level has been designated for TCP.

Comparison of analytical results from ground water analyses with the STLC value for PCP shows that the level of PCP in site ground water is approximately three orders of magnitude lower than the STLC value for PCP. Ground water in the vicinity of the green chain clearly does not contain PCP/TCP in concentrations which would require treatment of the liquid as a hazardous waste.

Dioxins

As will be discussed in Section IV, dioxins are very insoluble in water, and have a high affinity for soils. Therefore, the dioxins are very immobile in a soil-water matrix and are not expected to be present at detectable concentrations in the ground water. Undetectable small amounts of dioxins may become dissolved in the surrounding solution. However, the likelihood of transportation over appreciable distances is remote considering the greater probability of becoming quickly adsorbed onto the adjacent soil particles.

SUMMARY OF FINDINGS

Green Chain Setting

- In order of increasing depth, the green chain area is underlain by (1) a thin organic-rich surficial soil zone, (2) artificial fill, and (3) native tuff breccia bedrock.
- Ground water in the vicinity of the green chain occurs primarily within the weathered tuff breccia bedrock. Downgradient (i.e., southwest) of the green chain area, ground water also occurs perched within the overlying artificial fill. Ground water in both zones flows toward the southwest.

Chemical Characterization of Soil

- PCP and TCP was detected in approximately equal ratios in surface and subsurface soil samples collected in the green chain area.
- PCP in surface soil samples collected in the central portion of the green chain area were detected at hazardous waste levels (i.e., exceeding the TTLC of 17,000 ppb). Concentrations of PCP in soil samples collected near the boundary of the green chain area were well below hazardous waste levels.
- Non-hazardous waste levels of PCP (i.e., below the TTLC) were detected in samples from the underlying weathered tuff breccia (interface samples). Concentrations of PCP in the interface samples were generally 3 orders of magnitude below the concentrations of the compound in surficial soil samples. Apparently, most of the PCP and TCP is retained in the organic-rich surface soil and has not migrated to the native soil horizon in the tuff breccia bedrock.
- The most toxic isomer of dioxin, 2,3,7,8-TCDD, was not detected in any of the site soil samples.
- The concentration of EPA equivalent 2,3,7,8-TCDD, calculated for samples in which PCDDs were detected, is much lower then the EPA-recommended cleanup level of 1 ppb.

Chemical Characterization of Ground Water

- Very low levels of PCP and TCP (<4 ppb for each compound) were detected in two ground-water wells, which monitor the quality of ground water within the tuff breccia aquifer directly beneath the green chain area.
- Dioxins are very immobile in a soil-water matrix and are not expected to be present at detectable concentrations in site ground water.

IV. CONTAMINANT FATE AND TRANSPORT

As discussed in the previous section, PCP, TCP, and dioxins have been detected in the soils in the green chain area. This section will address general fate and transport properties of PCP and dioxins to evaluate the likelihood of significant migration of the compounds into the ground water and stability of the compounds in the soil. The mobility of the contaminants is evaluated based on adsorption/desorption characteristics, and the stability mechanism addressed is decomposition.

ADSORPTION/DESORPTION

The tendency of compounds to be mobilized following their introduction into the soil is largely a function of the net affinity of each compound for the soil matrix compared to that of the liquid components that make up the surrounding soil solution. Many factors can affect these tendencies; however, simplifying assumptions can be made.

Based on previous EMCON investigations, calculated values of PCP in a typical soil matrix display roughly a 100- to 200-fold affinity for soil over the surrounding solution. This is based on an octanol-water partition coefficient of 100,000 and a log Ka value (strength of the PCP as an acid) of 4.75. The organic-matter content of the soil was assumed to be 1 percent (the higher suspected organic content of the surficial soil at the site would increase the affinity of PCP for the soil). Therefore, the soil can be expected to retain a relatively large portion of the PCP; however, small amounts are expected to become dissolved in the surrounding soil solution.

The soil-partition coefficients for the hepta through octa dioxins found at the Grass Valley facility are not known; however, partition coefficients for 2,3,7,8-TCDD (38,900 to 1,230,000) have been experimentally determined for a range of soil types in equilibrium with water (Jackson et al, 1985). These numbers show roughly a 40,000- to

1,200,000-fold affinity for 2,3,7,8-TCDD to bind to soil over water. Although the affinities can be expected to be different for the other congeners, the affinity of the dioxins increases with increasing numbers of attached chlorines. Given the very high values of soil-water partition coefficients, the dioxins would be expected to remain adsorbed to the soil matrix. Although undetectably small amounts of dioxin may become dissolved in the soil solution, the likelihood of transportation over appreciably distances is remote given the greater probability of adsorption onto adjacent soil particles.

DECOMPOSITION

Studies have shown that PCP can be biodegraded (Edgehill and Finn, 1983; Baker and Mayfield, 1980). Thus, at this site, the soil-bound PCP should eventually become at least partially depleted by the natural process of microbial degradation. However, the rate of this process is site specific. Soil inoculation or nutrient addition may be required to enhance the process.

Several studies have been conducted which indicate that dioxin is relatively stable in the soil. The half-life of 2,3,7,8-TCDD has been determined for a variety of soil conditions to range from about 1 to 12 years (Crosby and Wong, 1977; Kearny et al., 1973; DiDominico, 1980; and Isushimato, et al., 1982).

SUMMARY

Given the high affinity of PCP for the soil, only small amounts of PCP might be expected to migrate to the ground water. The soil-bound PCP should, to some degree, biodegrade over time. Although the low levels of dioxins would remain relatively stable. The dioxins would be not be expected to be detectable in the ground water.

V. REMEDIAL-ACTION ALTERNATIVES

As discussed in Section III, hazardous waste levels of PCP are present in the green chain area of the Grass Valley site. A small amount of the PCP could migrate to the ground water, with the potential for exceeding DHS action levels in the future. For these reasons, EMCON recommends that some form of remediation be performed.

The following section discusses key issues related to four remedial-action alternatives and then presents EMCON's preferred approach. A range of anticipated costs are also included. These costs are scoping estimates only and would require further refinement after a more detailed evaluation.

The basis for the following alternatives is a contaminated area with PCP concentrations greater than 15,000 ppb (see Drawing 2 for isoconcentration contours). This results in 30 cubic yards of material if the surficial soil is excavated to a depth of 1 foot. Actual cleanup levels would be proposed by EMCON in the Remedial-Action Plan which would be submitted to the RWQCB for approval.

OFF-SITE DISPOSAL

This alternative requires excavation of the material to a predetermined site cleanup level. The soils would then be manifested and transported to an approved disposal site.

The off-site disposal cost estimate ($25,000 to $30,000) is based on excavation and disposal of 30 cubic yards of contaminated soil. Included are costs associated with confirmation sampling and a final report.

The major obstacle for this option is the presence of small amounts of dioxins in the soils. Even though the concentration of dioxins in the soils is well below the EPA cleanup level of 1 ppb, the California disposal sites contacted are not willing to accept the waste. This decision appears to be based on potential liability and concern over future regulatory changes, as well as public pressures of nearby residents. Therefore, disposal within the State is not currently an option. Out of State disposal sites may be available to accept dioxin-containing wastes.

While excavation and disposal can effectively reduce the risks at the Grass Valley site, Bohemia would still maintain the future liability of the material. This liability occurs even though Bohemia has no control over the management of the soils. Because of the uncertainty of the liability, the level of risk associated with this option is unacceptable to Bohemia, Inc.

CAPPING

The capping option would leave the soils in place and require construction of a concrete cover. This would minimize washdown and stormwater infiltration, thereby minimizing the potential for PCP migration to the ground water.

The cost range ($25,000 to $30,000) is based on design and construction of 6 inches of native soil, 6 inches of aggregate base, and 6 inches of reinforced concrete pad over a 1,900 square foot area. The concrete is designed for construction load-bearing capacity. Long-term monitoring costs are not included.

While this option minimizes handling of the contaminated soils, it does not offer maximum protection from PCP migration into the ground water. Capping would require increased monitoring over the other alternatives and evaluation of contingency plans in the event that significant levels of PCP were detected in the ground water.

LONG-TERM STORAGE

Long-term storage would involve excavation of the soils and storage in a permitted, dedicated facility on site. The Grass Valley site would therefore be regulated as a treatment, storage, and disposal (TDS) facility.

The cost range for long-term storage ($140,000 to $180,000) includes design and construction of a double-lined burial cell with a RCRA cap. Hydrogeologic characterization, Part B application preparation, and monitoring well installation are also included. Long-term ground-water monitoring costs were not estimated.

The primary issue for this alternative is the requirement of a TSD permit. Inherent in this procedure are significant delays and costs before remediation can even begin. In addition, a long-term storage facility must be designed and constructed and new monitoring systems may be required. It is also possible that the Grass Valley facility would not meet the regulatory siting requirements for a TSD facility.

While this alternative does allow Bohemia direct control over management of the soils, Bohemia would still maintain the liability of storing the hazardous waste on site. Since the hazardous waste levels of the soils would not be reduced, the future liability would continue unless (or until) natural microbial degradation eventually decomposed the PCP.

TREATMENT

Biotreatment of PCP has been successfully demonstrated on contaminated soils. The recommended remediation method requires excavation of the contaminated soils and temporary storage. The material can then be treated in a lined impoundment until acceptable limits are reached.

The treatment cost estimate ($40,000 to $60,000) includes excavation, temporary storage, and treatability studies, as well as design, construction, and treatment costs for the treatment facility. Final grading and a confirmation report were also included in the estimate. The cost range given assumes that a TSD permit would not be required and that the treated soils would be placed back on the ground surface. Any additional facilities that may be required by the agencies would therefore increase cost.

Treatment is the only alternative that reduces the PCP concentrations, thereby minimizing the potential liability for the contaminated soils. In addition, immediate excavation and temporary storage allows for timely remediation.

PREFERRED ALTERNATIVE

The previously defined alternatives were evaluated based on the following objectives:

- Minimize the potential of on-site PCP migration to the ground water
- Maximize Bohemia's control of the soils in order to minimize long-term potential liability
- Minimize the total long-term threat (on and off site) of adverse impacts on the environment
- Provide a timely procedure to expedite remediation.

All of the alternatives discussed meet (to varying degrees) the criteria for minimizing PCP migration to ground-water. Off-site disposal, however, does not allow Bohemia direct control over management of the soils. Bohemia, therefore, considers this an unacceptable risk.

The only alternative that reduces the total long-term threat to the public is treatment of the soils. Once treated to acceptable levels, Bohemia will not have to rely on physical barriers to contain the contaminated soils. This option can be accomplished in a timely manner by excavating and temporarily storing the soils until treatment is complete.

Based on the issues stated above, EMCON recommends that the contaminated soils be excavated and that treatability studies be initiated.

Implementation of the remediation would first require a remedial-action plan establishing recommended cleanup levels. The quantity of soil and, therefore, the cost will vary based on this assumption.

Following the results of the treatability study, an agreed upon treatment level will also be negotiated with the agencies. Periodic samples of the treated soils will then be taken and analyzed to determine when treatment has been completed.

VI. REFERENCES

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The following figures, drawings, and appendices are attached and complete this report.

Figures

Figure 1 - Site Location Map
Figure 2 - Exploratory Boring and Monitoring Well Location Map
Figure 3 - Geologic Cross Section A-A
Figure 4 - Cross Section - Green Chain Area
Figure 5 - Structure Contour Map - Top of Tuff Breccia Bedrock
Figure 6 - Ground-Water Contour Map

Drawings

Drawing 1 - Soil Sample, Boring, and Monitoring Well Location Map - Green Chain Area
Drawing 2 - Concentration Contour Map - PCP in Surficial Soil

Appendices

Appendix A - Certified Analytical Reports
Appendix B - Boring Logs and Well Details
Appendix C - Ground-Water Sampling and Analysis Procedures
Appendix D - Toxicity Equivalency Factor Calculations

Respectfully Submitted,

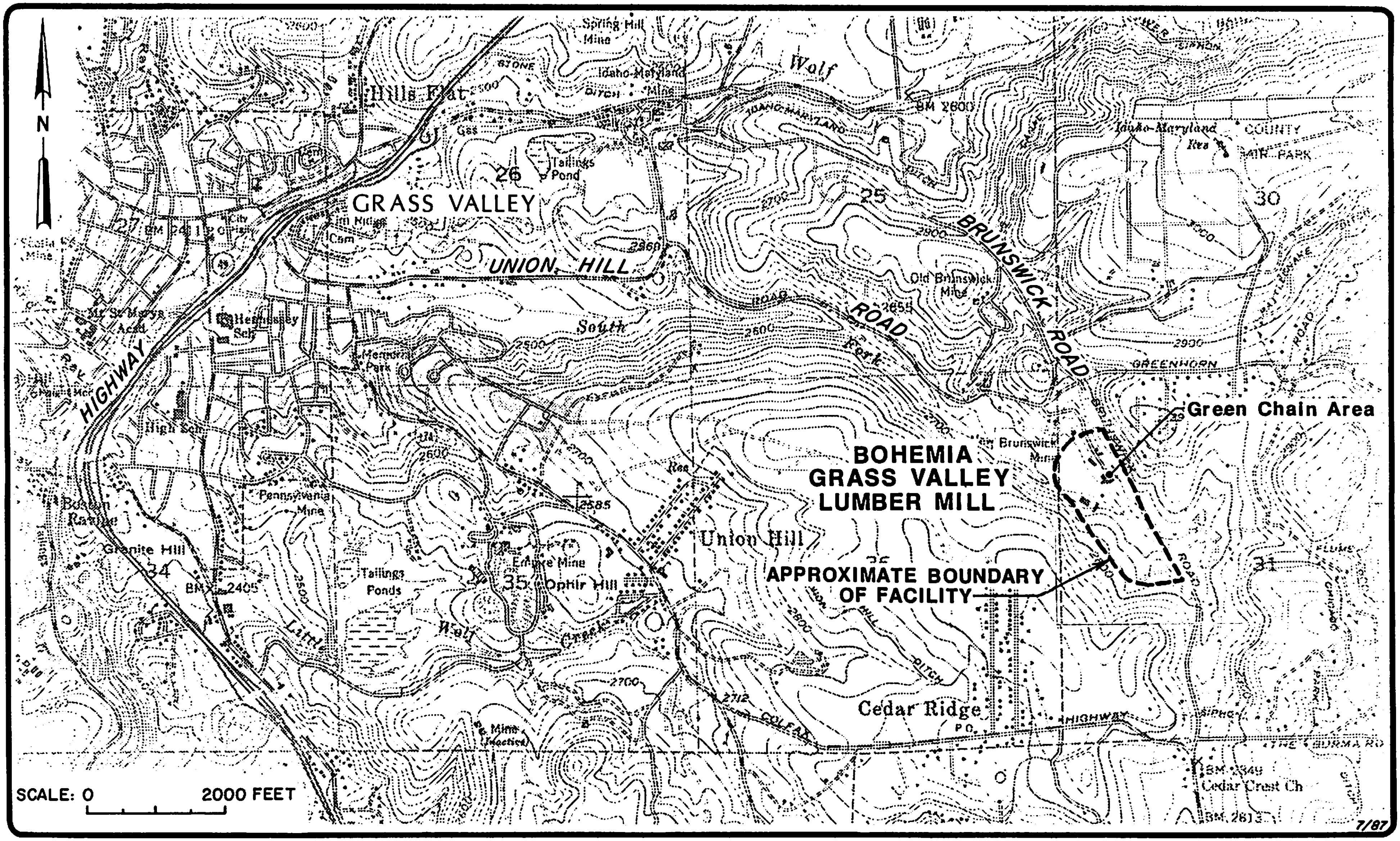
EMCON Associates

David A. Cochrane, C.E.G.
Project Manager

Terry A. Bonham

Terry A. Bonham, P.E.
Executive Manager

110169



EMCON Associates

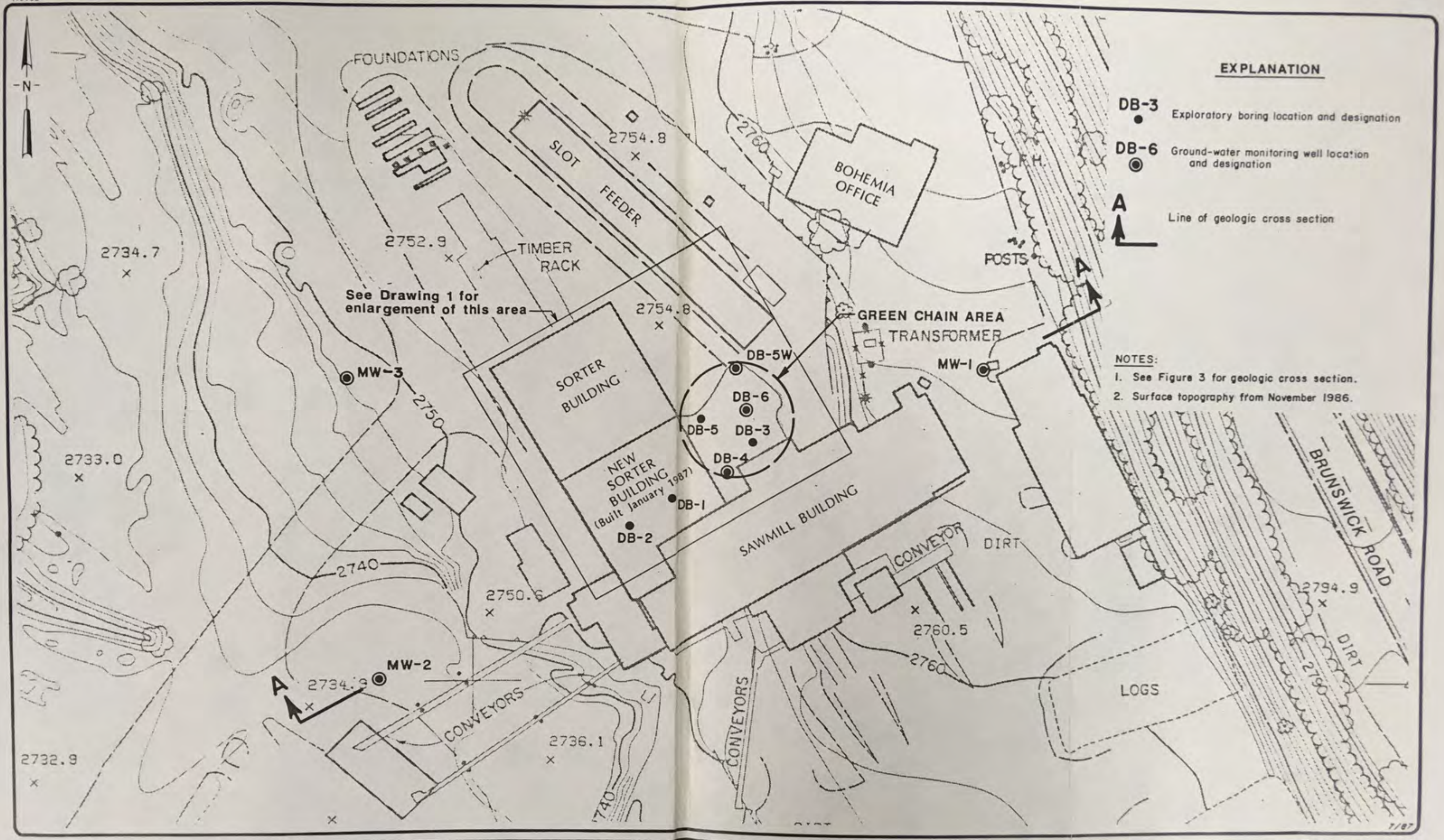
BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
SOIL AND GROUND-WATER CONTAMINATION INVESTIGATION
GRASS VALLEY, CALIFORNIA

SITE LOCATION MAP

FIGURE
1

PROJECT NO.
878 - 02.01

110169



EXPLANATION

DB-3 ● Exploratory boring location and designation

DB-6 ◉ Ground-water monitoring well location and designation

A Line of geologic cross section

NOTES:

1. See Figure 3 for geologic cross section.
2. Surface topography from November 1986.

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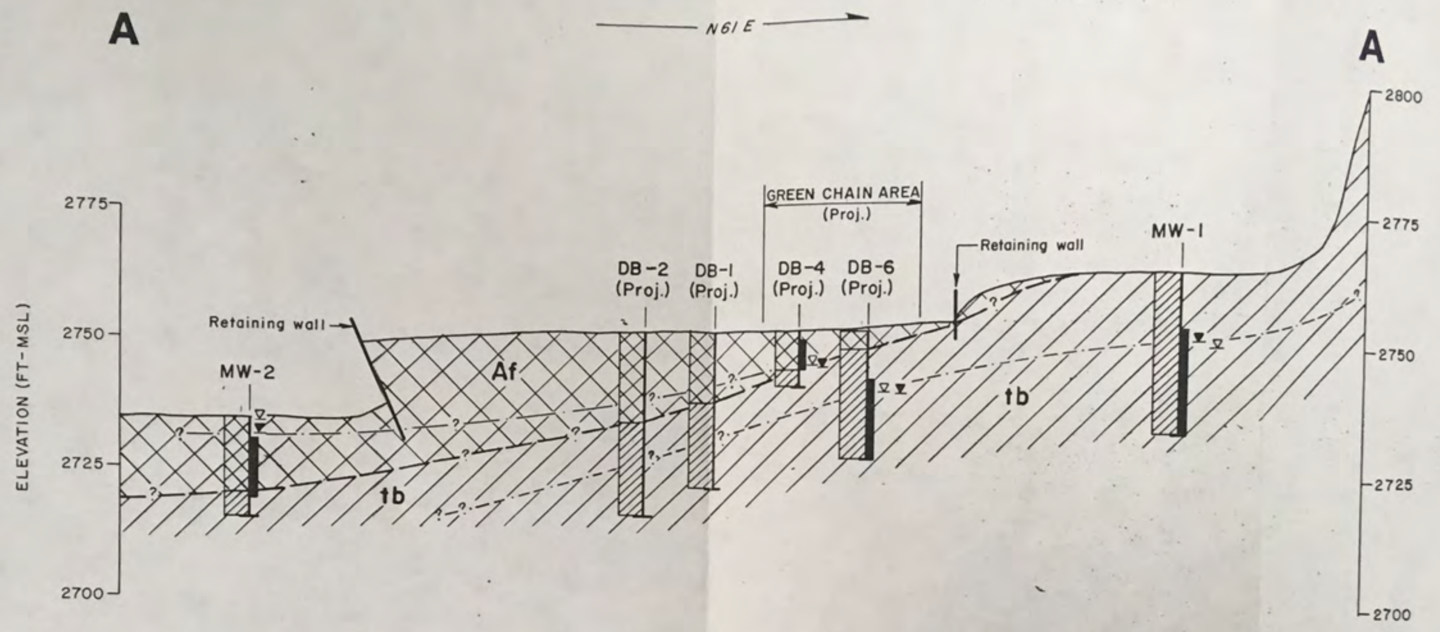
SCALE: 0 50 100 150 200 FEET

BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
SOIL AND GROUND-WATER CONTAMINATION INVESTIGATION
GRASS VALLEY, CALIFORNIA

EXPLORATORY BORING AND MONITORING WELL LOCATION MAP

FIGURE
2
PROJECT NO.
878 – 02.01



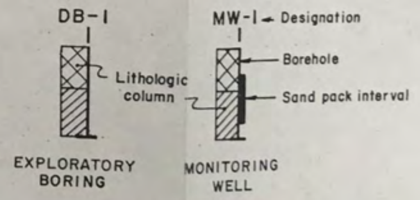
EXPLANATION

GEOLOGIC UNITS:

Af	ARTIFICIAL FILL: Predominantly gravel and cobble-size rock fragments with minor interstitial sand, silt, and clay
tb	TUFF BRECCIA – DEEPLY WEATHERED BEDROCK: Partially to completely altered to clay

SYMBOLS:

——— — —?	Geologic contact; dashed where approximate, queried where uncertain
—·—·—·—?	Approximate water table in ARTIFICIAL FILL; queried where uncertain
—·—·—·—?	Approximate water table in TUFF BRECCIA; queried where uncertain
▽	First-encountered water level (April 9-13, 1987)
▼	Piezometric water level (April 27-28, 1987)



NOTES:

1. Surface topography from 11/8/86.
2. See Figure 2 for location of cross section.

7/87

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SCALE: 0 50 100 150 200 FEET
(Horizontal)

BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
SOIL AND GROUND-WATER CONTAMINATION INVESTIGATION
GRASS VALLEY, CALIFORNIA

GEOLOGIC CROSS SECTION A-A

FIGURE
3

PROJECT NO.
878-02.01

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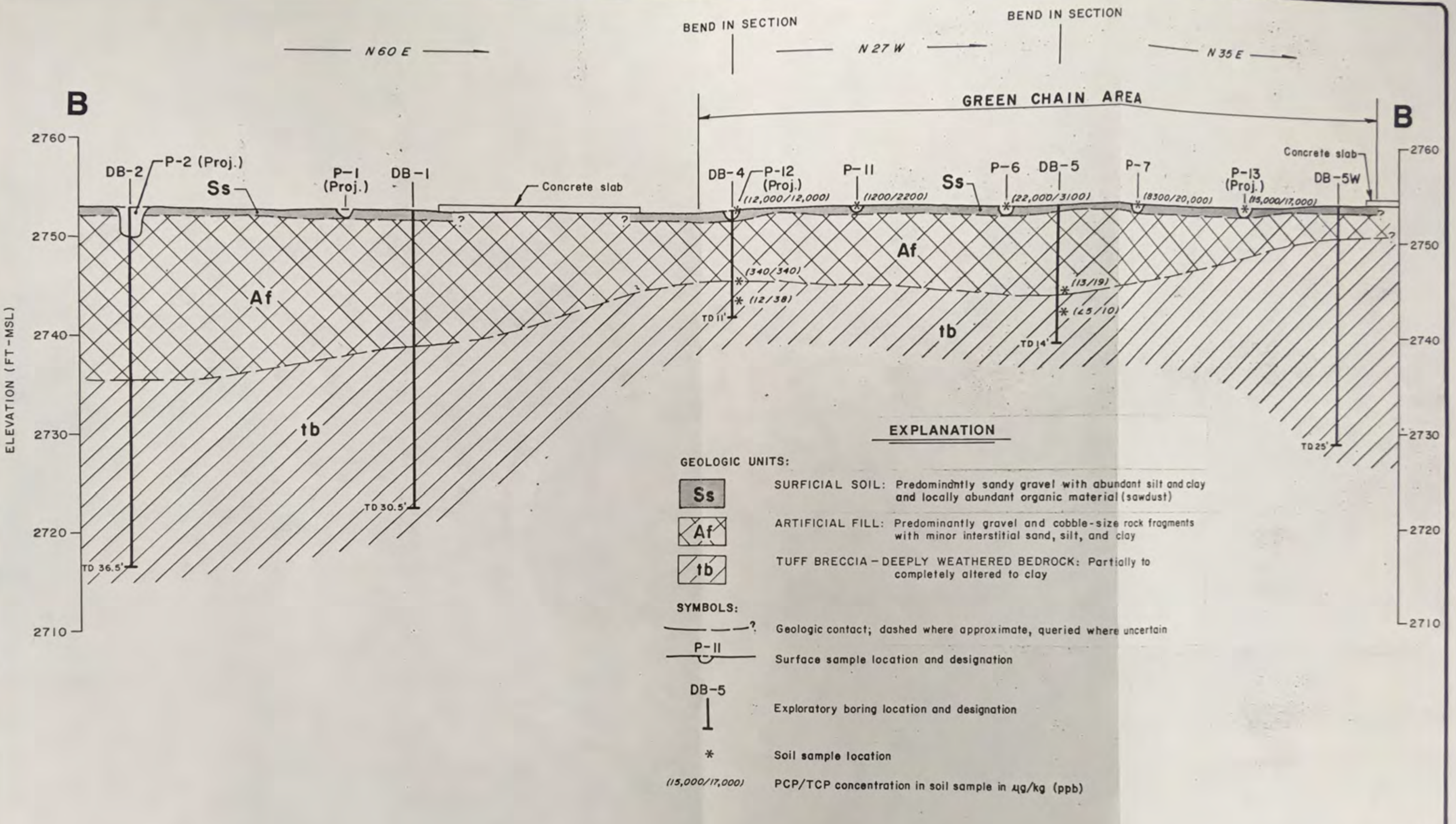

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SCALE: 0 10 20 30 40 FEET
(Horizontal)

BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
SOIL AND GROUND-WATER CONTAMINATION INVESTIGATION
GRASS VALLEY, CALIFORNIA

CROSS SECTION B-B
GREEN CHAIN AREA

FIGURE
4
PROJECT NO.
878 - 02.01

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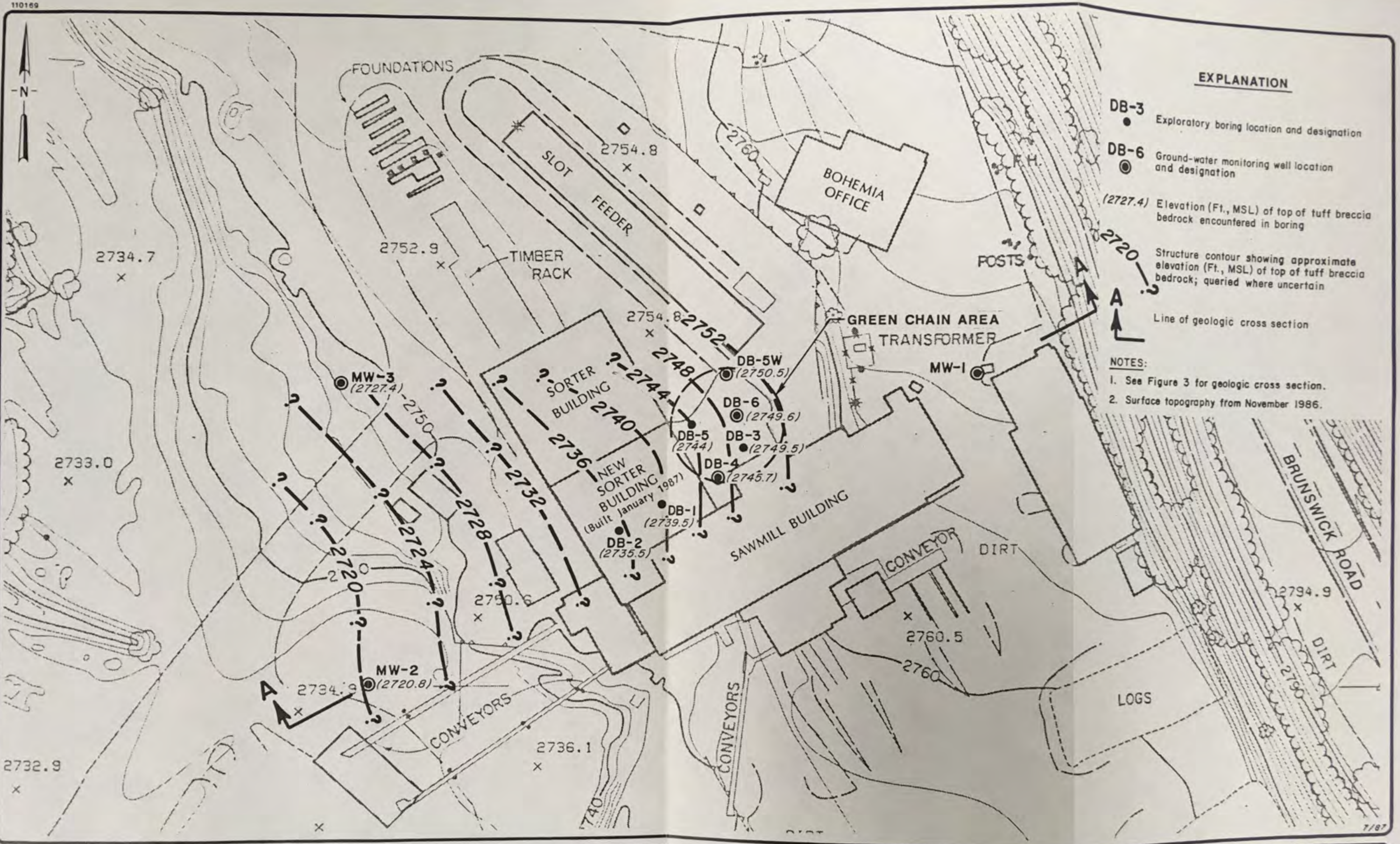

EXPLANATION

DB-3 ●	Exploratory boring location and designation
DB-6 ◉	Ground-water monitoring well location and designation
(2727.4)	Elevation (Ft., MSL) of top of tuff breccia bedrock encountered in boring
2720 —?	Structure contour showing approximate elevation (Ft., MSL) of top of tuff breccia bedrock; queried where uncertain
A	Line of geologic cross section

NOTES:

1. See Figure 3 for geologic cross section.
2. Surface topography from November 1986.

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SCALE: 0 50 100 150 200 FEET

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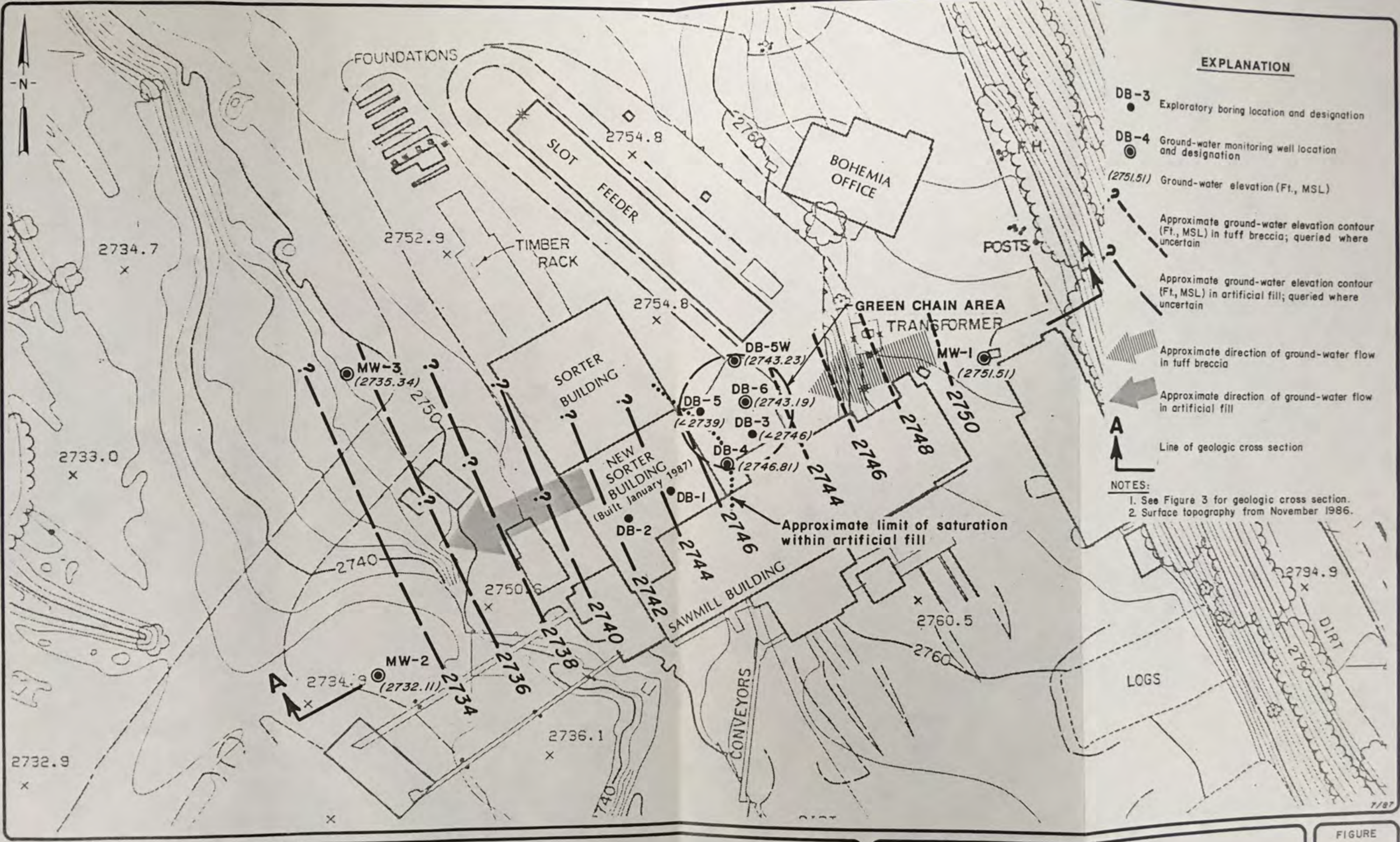
GRASS VALLEY LUMBER MILL
SOIL AND GROUND-WATER CONTAMINATION INVESTIGATION
GRASS VALLEY, CALIFORNIA

STRUCTURE CONTOUR MAP-TOP OF TUFF BRECCIA BEDROCK

FIGURE
5
PROJECT NO.
878 - 02.01

110169



NOTES:
1. See Figure 3 for geologic cross section.
2. Surface topography from November 1986.

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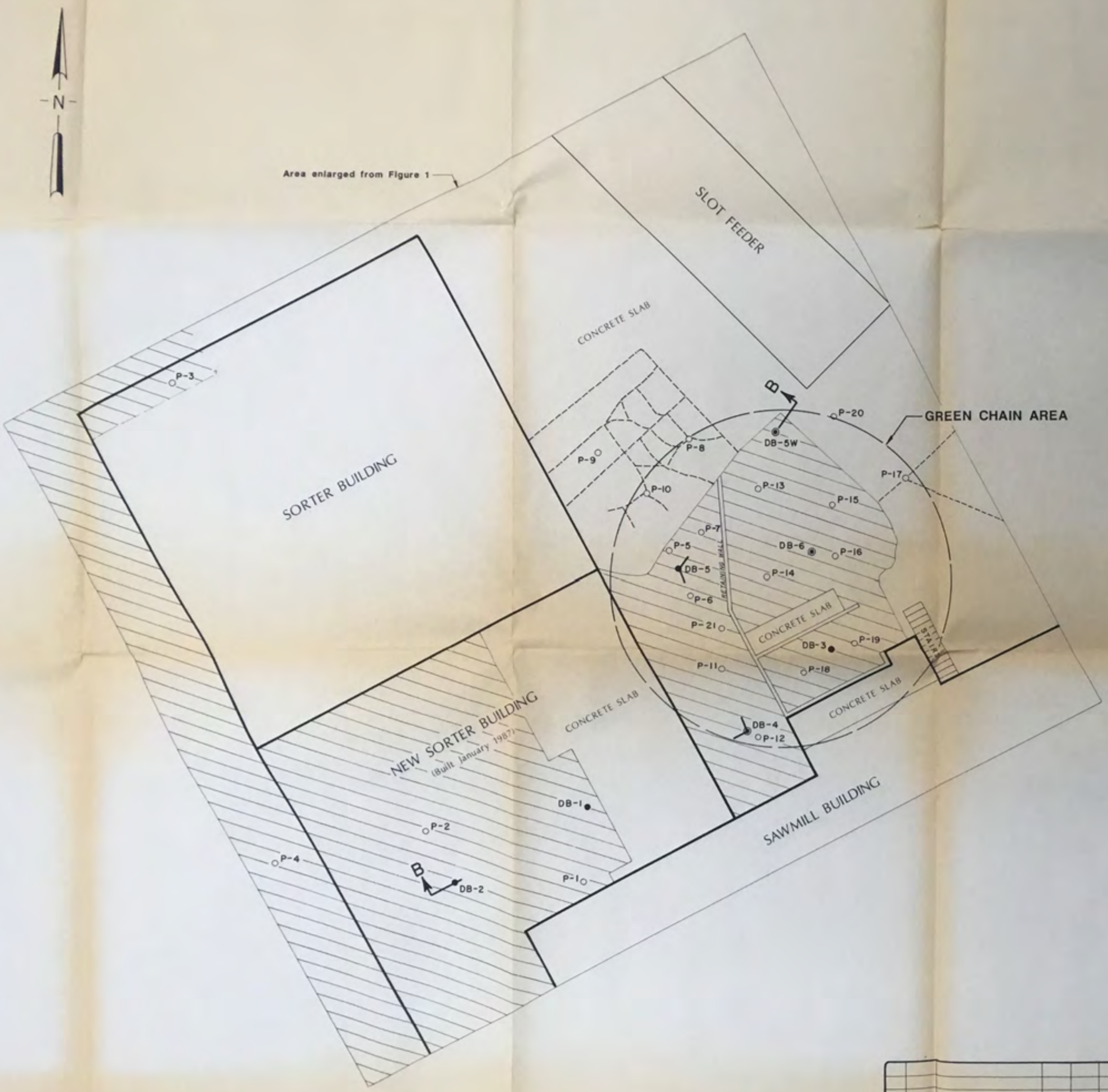
BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
SOIL AND GROUND-WATER CONTAMINATION INVESTIGATION
GRASS VALLEY, CALIFORNIA

GROUND-WATER CONTOUR MAP

FIGURE
6
PROJECT NO.
878 - 02.01



EXPLANATION

▨	Area of exposed soil
P-8 ○	Surface soil sample location and designation
DB-3 ●	Exploratory boring location and designation
DB-6 ◉	Ground-water monitoring well location and designation
- - -	Crack or seam in concrete slab
B B	Line of geologic cross section

NOTES:

1. Soil sampling and subsurface exploration southwest of the Green Chain Area was conducted between September and October 1986 prior to construction of the New Sorter Building. Investigation of the Green Chain Area was conducted in April 1987.
2. Layout of the Green Chain Area is depicted as it was at time of investigation.
3. Area covered by concrete slabs except where noted otherwise. Material underlying Sorter Building is not depicted.
4. See Figure 4 for cross section.

SCALE: 0 10 20 30 40 50 FEET

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE JULY 1987
DWN BY
DES BY
CHK BY
APP BY

EMCON Associates

BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
SOIL AND GROUND-WATER CONTAMINATION INVESTIGATION
GRASS VALLEY, CALIFORNIA

SOIL SAMPLE, BORING, AND
MONITORING WELL LOCATION MAP

DRAWING NO.
1
PROJECT NO.
878-0201

EXPLANATION

▨	Area of exposed soil
P-8 ○	Surface soil sample location and designation
DB-3 ●	Exploratory boring location and designation
DB-6 ◉	Ground-water monitoring well location and designation
- - -	Crack or seam in concrete slab
B ↑ ↑ B	Line of geologic cross section
(3700)	PCP concentration in µg/kg (ppb)
30,000	Approximate PCP concentration contour in µg/kg (ppb) in surficial soil

NOTES:

1. Soil sampling and subsurface exploration southwest of the Green Chain Area was conducted between September and October 1986 prior to construction of the New Sorter Building. Investigation of the Green Chain Area was conducted in April 1987.
2. Layout of the Green Chain Area is depicted as it was at time of investigation.
3. Area covered by concrete slabs except where noted otherwise. Material underlying Sorter Building is not depicted.
4. See Figure 4 for cross section.
5. Sample P-21 consisted of sawdust. Therefore, the PCP value from this sample is not included on contour map.

SCALE 0 10 20 30 40 50 FEET

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DATE OF ISSUE JULY 1987
DWN BY Whitacre
DES BY
CHK BY
APP BY

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BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
SOIL AND GROUND-WATER CONTAMINATION INVESTIGATION
GRASS VALLEY, CALIFORNIA

CONCENTRATION CONTOUR MAP-
PCP IN SURFICIAL SOIL

DRAWING NO.
2

PROJECT NO
878-02.01

BIOREMEDIATION PLAN

GRASS VALLEY LUMBER MILL

GRASS VALLEY, CALIFORNIA

Prepared for
BOHEMIA, INC.

May 1988

EMCON Associates
1921 Ringwood Avenue
San Jose, California 95131

Project 878-02.05

EMCON ASSOCIATES
San Jose, California

BIOREMEDIATION PLAN
Bohemia, Inc.
Grass Valley, California

The enclosed report was prepared by the following:

Signed: Lynnette L Gerald Date: 5/20/88
Lynnette L. Gerald
Project Manager

Signed: Terry A. Bonham Date: 5/20/88
Terry A. Bonham, P.E.
Executive Manager

TABLE OF CONTENTS

TABLE OF CONTENTS
(Continued)

1.0 INTRODUCTION

At the request of Bohemia, Inc., EMCON Associates has prepared this remedial action plan for the Grass Valley Lumber Mill in Grass Valley, California. This plan presents Bohemia, Inc.'s procedure to remediate the small volume of contaminated soil at the site. The proposed plan involves excavating and biotreating the contaminated soils to reduce the levels of pentachlorophenol (PCP) and tetrachlorophenol (TCP). This remedial action plan was developed to obtain the Regional Water Quality Control Board's (RWQCB) approval for the proposed cleanup levels and remediation plan.

This plan summarizes the site history, regional geography and hydrogeology, and the nature and extent of the contamination found on the site. The plan also presents an evaluation of the remedial-action alternatives, and describes the recommended remediation procedure.

2.0 BACKGROUND

2.1 SITE BACKGROUND

The Bohemia Grass Valley Lumber Mill is located adjacent to the New Brunswick Mine, approximately 2.5 miles east of the town of Grass Valley, California (see Figure 1). Located near the intersection of Brunswick Road and Union Hill Road, the site is accessed from Interstate 80 via Brunswick Road.

The Grass Valley site has been used to mill lumber since the late 1950s. In 1976, Bohemia, Inc. acquired the lumber mill and continues to operate it.

Before 1984, the final phase of milling consisted of treating the wood with pesticides. Wood was dipped into a pesticide solution after cutting and carried by conveyor (the "green chain") over an area of exposed soil to a slot feeder (see Figure 2). EMCON Associates was asked to characterize the soil and ground water after early studies (Franks 1986) detected pentachlorophenol (PCP) and tetrachlorophenol (TCP), active ingredients of the pesticide solution, in the soil near the green chain. The results of this characterization were presented in EMCON's report, Soil and Ground-Water Contamination Investigation - Grass Valley Lumber Mill, Grass Valley, California, September 1987.

In an EMCON phone call to the Central Valley RWQCB on November 12, 1987, Brian Newman verified the characterization was adequate.

2.2 SUMMARY OF SITE CHARACTERIZATION

2.2.1 General Geology/Hydrogeology

In order of increasing depth, the green-chain area is underlain by a thin, organic-rich surficial soil zone; artificial fill; and native tuff breccia bedrock. Ground water occurs primarily within the weathered tuff breccia bedrock approximately 8 feet below its contact with the artificial fill. Downgradient (southwest) from the green-chain area, ground water also occurs perched within the overlying artificial fill. Ground water within this artificial fill recharges primarily by infiltration of precipitation and site washdown water; its presence is intermittent depending on rainfall and water management practices on the site. Ground water in both zones flows toward the southwest.

2.2.2 Chemical Characterization of Soil

EMCON's investigation found PCP and TCP in the shallow soils at Grass Valley within the limited green-chain area. Small amounts of dioxin, a contaminant of PCP, were also discovered in some of the soils.

The PCP and TCP in surface and subsurface soil samples from the green-chain area were detected in approximately equal ratios. Only surface soil samples collected in the central portion of the green-chain area contained PCP at hazardous waste levels (i.e., exceeding the California State Total Threshold Limit Concentration). Concentrations of PCP in the surface soil markedly decrease radially away from the center of the green-chain area (see Drawing 1).

Concentrations of PCP in soil samples from the interface between the artificial fill layer and the tuff breccia bedrock were generally three orders of magnitude below concentrations in the surface samples. Most of the PCP and TCP is apparently retained in the organic-rich surface soil and has not migrated to the native soil horizon in the tuff breccia bedrock. Concentrations of PCP and TCP in lower samples from the bedrock (approximately 11 feet beneath the ground surface) were near the detection limits for these compounds.

Low levels of dioxins and furans were detected in some of the soil samples containing the highest concentrations of PCP. The samples were analyzed for total concentrations of tetra- penta-, hexa-, hepta-, and octa-chlorinated dibenzo-p-dioxins and furans. Samples with detectable levels of dioxins or furans were also analyzed for 2, 3, 7, 8-substituted isomers.

As discussed in the previous EMCON report (September 1987), the hazardous nature of a mixture of dioxins and furans can be estimated by multiplying the concentrations of the isomers by equivalency factors. The sum of the resulting products represents the equivalent amount of 2, 3, 7, 8-tetrachlorodibenzo-p-dioxin (TCDD) (the most toxic isomer) present in each sample.

The equivalent TCDD concentration can be calculated using either the factors approved by the Environmental Protection Agency (EPA) (U.S. Environmental Protection Agency/625/3-87/012) or California State Department of Health Services (DHS) approved factors. EPA equivalent TCDD concentrations were presented previously, and range from 0.09 to 0.19 ppb. DHS factors were obtained from the DHS Hazardous Materials Laboratory (HML) and are included in Table 1, along with the calculated equivalent concentration. These factors only apply to isomers that are chlorinated in the 2, 3, 7, and 8 positions. Totals are given both with and without inclusion of hepta-dioxin and hepta-furan concentrations because of the current debate over the lower perceived toxicity of these isomers.

The comparison of dioxin concentrations to PCP levels shows a good correlation between dioxin and PCP levels. The maximum equivalent concentration of dioxins would therefore be detected in locations where PCP concentrations were the highest, and the areal extent of TCDD would be limited to the areal extent of PCP.

2.2.3 Chemical Characterization of Ground Water

Very low levels of PCP and TCP (<4 ppb) were detected in two wells that monitor the ground water within the tuff breccia aquifer directly beneath the green-chain area. The levels observed are approximately one order of magnitude lower than the DHS action level for PCP (30 ppb). Ground-water quality therefore does not appear to require remediation.

2.3 REMEDIAL ACTION ALTERNATIVES

EMCON's report evaluated four alternatives to remediate the small quantity of soil requiring cleanup. The first alternative, off-site disposal, involved excavating the soil to a predetermined site cleanup level and then transporting it to an approved disposal site. The major obstacle to this option is the small amounts of dioxins in the soils. Even though the concentration of dioxin is well below hazardous waste levels, the California disposal sites contacted were not willing to accept the waste. In addition, Bohemia, Inc. considers this remediation alternative unacceptable because the company would retain future liability for the material even though they have no control over its management.

Capping, the second alternative, would leave the soils in place and require construction of a concrete cover. This cover would minimize washdown and stormwater infiltration and therefore minimize the potential for PCP migration to the ground water. While this alternative greatly reduces handling of the contaminated soils, it does not offer maximum protection from PCP migration into the ground water. Capping would require more monitoring than the other alternatives. Contingency plans would need to be developed to cover possible future detection of significant levels of PCP in the ground water.

The third alternative, long-term storage, would involve excavating the soils and storing them in a permitted, dedicated facility on site. The Grass Valley site could be regulated as a treatment, storage, or disposal facility (TDSF) which would include regulatory siting, design, and monitoring requirements. In addition to the expense and the delays involved with permitting, this alternative is not desirable because Bohemia would still retain the liability for the hazardous material. This alternative also does not lower the hazard level of the PCP present and would not be a permanent solution.

Biotreatment, the final alternative considered, uses bacteria to degrade the hazardous compounds. This option requires excavating the contaminated soils and treating them in a lined impoundment until the PCP concentrations decrease to acceptable levels. Successful biotreatment of PCP has been demonstrated on contaminated soils (Edgehill and Finn 1983; Kuwatsuka and Igarashi 1975). This alternative is the only one that reduces PCP concentrations, thereby minimizing the potential liability for the contaminated soils. Bohemia, Inc. has therefore selected biotreatment as the preferred alternative to remediate the observed contamination. Immediate excavation and temporary storage also allows a timely remediation.

2.4 REGULATORY ISSUES

The remediation plan must be approved by the RWQCB. However, on-site treatment of the PCP-contaminated soils at hazardous concentrations also requires DHS involvement.

The relatively small quantity of soil that will be treated would generally qualify for a variance based on limited extent and minimal impact. In this case, however, the DHS considers treatment of PCP contaminated soils to be a new and innovative technology. For this reason, the DHS Alternative Technology group will be responsible for issuing a variance for on-site treatment.

2.5 REGULATORY APPROACH

To gain approval for the variance, a bench-scale treatability study must be conducted and included in the variance application. The work plan for this treatability study is presented in Appendix A. This requirement has delayed the original schedule which proposed remediation before winter 1988. Timely remediation is not only preferred to minimize environmental exposure, but will also allow Bohemia, Inc. to complete construction in the area that was originally planned for 1987.

The recommended procedure, therefore, is to excavate and temporarily store (less than 90 days) the contaminated soils until the treatability study is completed and the variance is granted. If the treatability study indicates potential problems with effective and timely treatment, the soils could be disposed of out-of-state, or stored in a more permanent fashion until the treatment method can be re-evaluated or another solution can be developed. With this approach, the site can be remediated in the least amount of time, and construction can proceed before the rainy winter season.

EMCON is therefore requesting that the RWQCB approve the following issues included in this plan:

- The remediation approach - seems OK
- Cleanup levels - want to send by Marshack
- Excavation and temporary storage of the soils - up to DHS permit
- Confirmation sampling plan

3.0 REMEDIAL ACTION PLAN

This remedial action plan details Bohemia, Inc.'s proposal to biotreat the PCP-contaminated soil at Grass Valley. This process includes excavating the contaminated soil, temporarily storing it, and biotreating it on site using process conditions established by the bench-scale treatability study.

↳ unknown at this time.

3.1 CLEANUP LEVELS

Cleanup levels need to be established to determine how much soil must be excavated to protect ground water. Based on DHS action levels for PCP in water, cleanup levels were developed for the site. DHS has not set action levels for TCP in water. Because PCP and TCP occur in the Grass Valley system in approximately equal levels, extend to similar boundaries, and are similar chemically, remediation of PCP should also remediate TCP.

3.1.1 Cleanup Goals

EMCON developed cleanup levels aimed at protecting the water quality in the perched ground water beneath the green-chain area, the most conservative approach. The ground water lies approximately 8 feet below the ground surface and within the artificial fill. The perched ground water has no known beneficial uses. Its appearance is intermittent depending on rainfall and site washdown. The ground water is not present in sufficient quantities to support pumping. Data from monitoring wells suggest that the specific conductance of the ground water is higher than drinking water standards (EMCON 1987). The perennial deeper aquifer lying beneath the perched zone is separated from the perched water by bedrock and a organic layer of soil that comprised the original ground surface.

Deeper gw present?
Wells?

The cleanup levels are based on meeting the DHS action level of 30 ppb for PCP for drinking water. State action levels are non-enforceable

Action level is not necessarily same as dws.

guidance levels intended to be used by water suppliers. Exceeding action levels in drinking water may indicate a problem that could affect human health and welfare. Data used to derive these levels include studies to determine a threshold response value for PCP and an uncertainty (risk) factor. The EPA has set a Recommended Maximum Contamination Level (RMCL) of 220 ppb for PCP based on similar data. The DHS action level of 30 ppb for PCP is an order of magnitude more conservative than the RMCL and was therefore used to calculate cleanup levels.

3.1.2 Methodology for Development of Cleanup Levels

In his paper describing the "Designated Level Methodology" (1987), Marshack suggests developing site-specific Designated Levels using the specific water-quality goal and a factor defining environmental attenuation for the compound at the site. As stated above, the water-quality goal to be achieved by the proposed cleanup levels is the DHS action level of 30 ppb PCP in water.

Many of the natural processes that define PCP fate and transport in the environment at Grass Valley are presented in EMCON's report Soil and Ground-Water Contamination - Grass Valley Lumber Mill (1987). Of the factors that would tend to attenuate, or lower, PCP concentrations in or reaching the ground water, the most significant in the Grass Valley system is the tendency of such organic compounds to adsorb to soils in a soil/water system.

As a worst case assessment, EMCON assumed that PCP-contaminated soil had contacted ground water. The resulting concentration of PCP in the ground water would be governed by two competing processes: (1) the tendency of PCP to dissolve in the ground water, and (2) the tendency of the soil to remove the PCP from solution. At equilibrium, this relationship is described by the soil-to-water partition coefficient for PCP, i.e., after a fairly long time, the ratio of the concentration of PCP in the water to that in the soil would be the soil-to-water partition coefficient (Kd) for PCP and that soil.

$$Kd = \frac{Cs}{Cw} \qquad (1)$$

where: Cs = concentration of PCP in soil
Cw = concentration of PCP in water
Kd = soil-to-water partition coefficient for PCP

The Kd for PCP incorporates both chemical-specific and site-specific information. In most systems involving organic compounds such as PCP, the organic portion of the soil (f_{OC}) is responsible for adsorption. The amount of the organic compound that will adsorb to the soil directly relates to the organic carbon fraction of the soil. Different organic compounds have varying affinities for organic carbon. This affinity can be described using the organic carbon partition coefficient (K_{OC}) for that chemical. The Kd for an organic compound at a specific site is obtained by multiplying the amount of organic carbon present in the site soils by the affinity of the compound for carbon in the soil.

$$f_{OC} * K_{OC} = Kd \qquad (2)$$

where: f_{OC} = fraction of organic carbon present in soil
K_{OC} = organic carbon partition coefficient

Organic compounds, such as PCP and TCP, with high K_{OC}'s have a high affinity to adsorb onto soils and, therefore, tend to move slowly through soil.

The organic carbon partition coefficient for PCP has been determined to be 53,000 (Mabey, et al. 1982). The organic fraction in soils can range from almost 100 percent (as in peat) to much less than 1 percent (as in many desert soils) (Eyre, 1968). A conservative estimate of soil organic matter based on data from soil borings and generalized soil organic matter information is 0.5 percent for the Grass Valley soils. The highly organic surficial soils with high concentrations of PCP would also have a much higher organic matter content. To be conservative, however, the 0.5 percent organic matter value was used for all soils in this analysis. During the treatability study, the fraction of organic matter will be measured for Grass Valley soils. If the estimate of 0.5 percent is high, cleanup levels will be recalculated.

i.e. like desert soils?

good

Based on the above values, the calculated Kd for PCP at the Grass Valley site is

$$Kd = 0.005 * 53,000 = 265$$

With a Kd of 265 and a water-quality goal of no more than 30 ppb PCP in the ground water, the maximum concentration of PCP in the soil directly in contact with ground water can be calculated using equation (1).

$$265 = \frac{Cs}{30 \text{ ppb}}$$

assumes allowance of contam. up to dws/action level

$$Cs = 7,950 \text{ ppb } (8 \text{ ppm})$$

EMCON therefore proposes that the observed soil contamination at Grass Valley be remediated until PCP concentrations remaining in the soil are less than 8 ppm.

EMCON believes that this type of analysis is especially conservative because it relates PCP concentrations found in the soils to the quality of ground water lying approximately 8 feet beneath those soils. This analysis assumes that not only are the contaminated soils in contact with the ground water but that they are in contact long enough for equilibrium to occur. If the soil/water system has not reached equilibrium, more PCP would stay on the soil. This analysis also does not include attenuation of PCP from transport through soil to the ground water.

The soil-bound PCP may also be biologically degraded. In situ biotreatment would likely take place in the soils remaining at the site, thereby naturally reducing the concentrations over time.

3.2 SOIL REMOVAL

Based on a cleanup level of 8 ppm, EMCON estimates that 60 cubic yards of soil will need to be excavated and biotreated. Data from EMCON's Soil and Ground-Water Contamination Investigation - Grass Valley Lumber Mill (1987) indicate that approximately 1 foot of soil should be removed from a 35-foot by 45-foot area within the green-chain area (see Drawing 1). ~ 58 yd^3

Following soil removal, samples will be taken within the excavation to ensure that the soil remaining has PCP concentrations below the cleanup levels. The unexcavated soil immediately surrounding the removal area will be sampled and analyzed to make sure excavation is complete.

EMCON proposes that four surface soil samples be taken within the excavation. These samples will be located in the center of each quadrant of the excavated area. The two soil cores will be collected from the north and south ends of the excavation, following the green-chain line. Samples will be analyzed from the surface soils and at a 1-foot depth. All soils samples will be analyzed for PCP using approved EPA methods. Sampling and analysis procedures are detailed in Appendix B. If samples exceed cleanup levels, additional soil will be excavated until all soil samples contain less than 8 ppm PCP.

3.3 TEMPORARY STORAGE FACILITY

The excavated contaminated soils will be temporarily stored in an on site storage facility. Figure 2 shows the approximate location of this facility. The soil will also eventually be treated in this facility.

w/ what?

The facility will consist of a bermed, lined impoundment and sump measuring approximately 25 feet by 55 feet. The berm will divert any potential run-on around the impoundment and will prevent runoff from the facility. The facility's lining will prevent any contamination from entering the underlying soils.

below ground?

The impoundment berm will be sufficient to contain a 1.5-foot layer of soil and allow for the displacement of soils by the mixing and aeration equipment. Dust and particulates will be controlled by moistening the soil with water. The area will be constructed to promote drainage of any excess water to a sump. The leachate collected by the sump will be removed periodically and reused to moisten the soil.

To protect the stored contaminated soil from rain, a sufficient amount of plastic sheeting will be available to cover the containment area. The cover will be sloped to allow rainfall to run off outside the bermed area.

3.4 TREATMENT PROCEDURES

we will review when it's available

Bohemia, Inc. plans to biotreat the PCP contaminated soil using process conditions developed in the treatability study. The results of the treatability study will determine if nutrients will need to be added to the soil and whether the soil will be inoculated with bacteria. The treatment procedures will vary little in either of these cases.

very optomistic

The treatment procedures described below assume that the soil will be biotreated during summer 1988. Although temperature is not a controlled variable in the process, the bacteria are temperature-sensitive and biotreatment proceeds more rapidly in the warmer summer temperatures. In addition, rainfall decreases dramatically during the summer, reducing potential problems from run-on and runoff.

The contaminated soil to be biotreated will be spread in the lined area described above. The soil should be less than 1.5 feet deep within the impoundment.

After spreading, the contaminated soil will be amended with nutrients and bacteria if the treatability study indicates the need for them. The amounts of amendments to be added will also be determined by the treatability study. Once amended, the soil will be thoroughly mixed to evenly distribute the additions and to aerate the soil.

How to mix w/o tearing liner?

Soil will be mixed with a hand rototiller approximately every 3 days. Calculations presented in Appendix C indicate that PCP does not present a respiratory hazard to workers tilling the soil at Grass Valley. Due to the presence of low amounts of TCDD in the soil, however, protective clothing may be advisable. A detailed Health and Safety program will be developed prior to soil excavation. The safety program will be structured in accordance with the guidance presented in "NIOSH Current Intelligence Bulletin Number 40, 2,3,7,8-tetrachlorobenzo-p-dioxin," January 23, 1984.

Soil moisture will be monitored daily. The soil will be watered to maintain a moisture level above 60 percent of the soil's field capacity. As stated above, the plot will be aerated approximately every 3 days. The results of the treatability study will determine whether pH adjustments need to be made to the plot during the biotreatment process.

Soil testing for PCP concentrations will be performed based on information obtained from the treatability study. EMCON estimates that the first soil samples will be taken approximately 20 days after biotreatment begins.

3.5 CONFIRMATION SAMPLING OF TREATED SOILS

Results of the treatability study will estimate the time necessary for biotreatment to reduce PCP to desired levels. Based on this estimate, EMCON will sample the biotreated soil at the appropriate time after treatment begins to determine whether remediation has achieved the cleanup level of 8 ppm PCP.

Six samples will be taken at equal intervals within the treatment area. Samples will be collected approximately 6 inches beneath the soil surface. The six samples will be composited into two analytical samples; each analytical sample composited from three samples taken from alternating areas. The two composite samples will be analyzed for PCP using procedures discussed in Appendix B.

Compositing decreases accuracy.

If PCP concentrations exceed cleanup levels, additional samples will be taken every 5 days following until cleanup levels are achieved.

After biotreatment is complete, the stockpiled soil will be returned to the ground surface.

3.6 CONTINGENCY PLAN

If biotreatment does not achieve the desired levels within a reasonable time frame, the stockpiled soils will be transported for disposal at an appropriate hazardous waste disposal site.

4.0 SCHEDULE

Bohemia, Inc. wishes to excavate the contaminated soil as soon as possible to meet its internal deadline for construction this season. To ensure that construction deadlines are met, the soil must be excavated before June 15, 1988.

DHS permit for temp storage?

The treatability study, currently underway, should be completed by June 15, 1988. EMCON plans to submit the variance application to the DHS Alternative Technologies Section by the end of June.

We need a copy of trt. study.

Biotreatment will begin as soon as the variance is granted. The proposed bioremediation plan assumes that treatment takes place during the summer when temperatures are warmer and precipitation is minimal. EMCON projects that bioremediation should start around the end of July. Remediation should be complete 1 to 2 months after biotreatment begins.

The schedule described above indicates that for Bohemia, Inc. to meet its construction deadlines and for remediation to be completed before the rainy season begins, the remediation plan must be approved as soon as possible.

5.0 REFERENCES

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EMCON Associates. 1987. Soil and Ground-Water Contamination Investigation - Grass Valley Lumber Mill. Prepared for Bohemia, Inc., EMCON Associates, San Jose, California.

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Table 1

DIOXINS AND FURANS

DHS EQUIVALENT CONCENTRATIONS

(ppb)

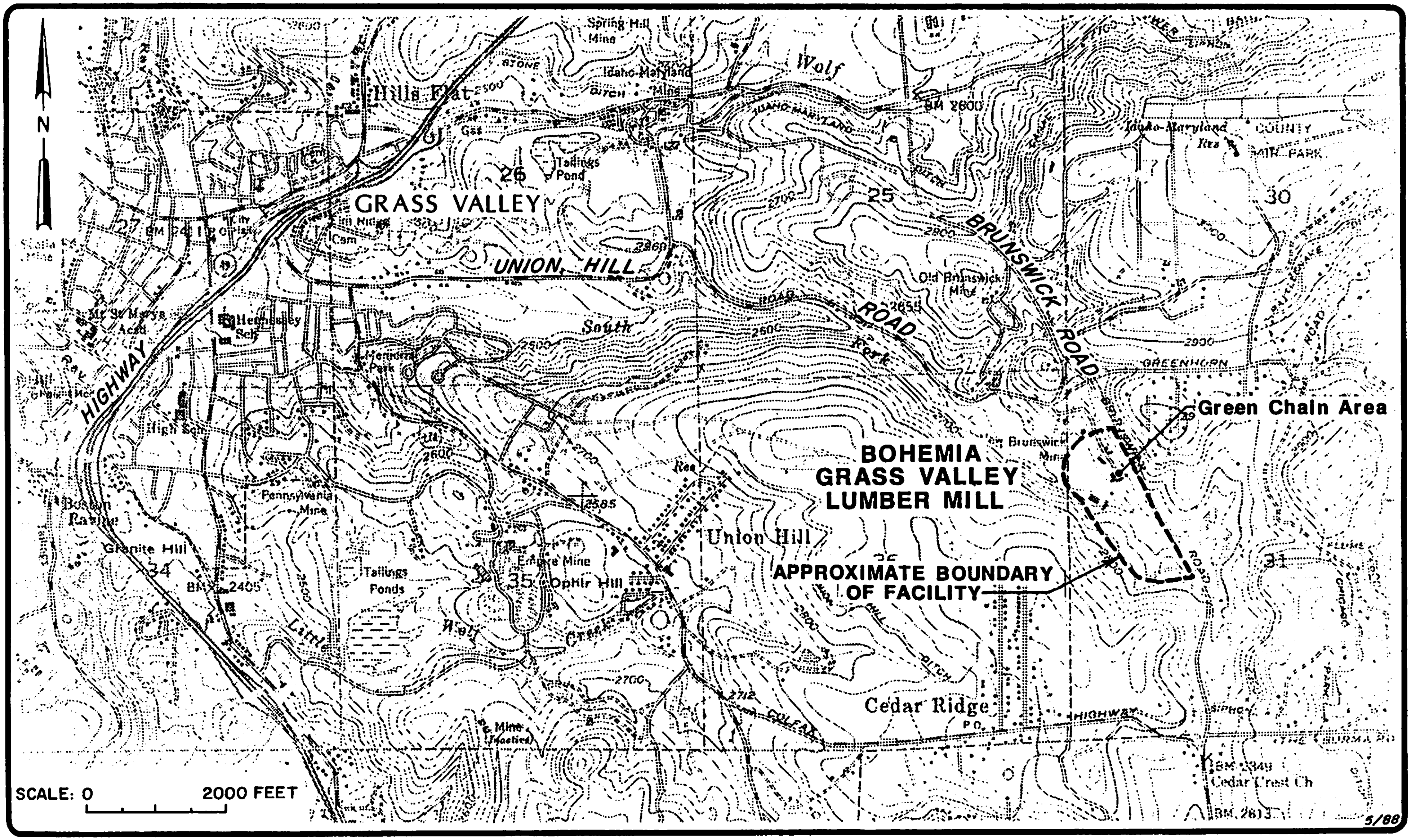
Parameter	Sample Location			DHS	DHS Equivalent		
	P-7	P-14	P-18	Factor	P-7	P-14	P-18
Furans							
Total tetra	0.11	0.68	ND**	0	ND	ND	ND
2,3,7,8*	ND	0.24	ND	1.0	ND	0.24	ND
Total penta	1.4	4.7	ND	0	ND	ND	ND
2,3,7,8	ND	0.38	ND	1.0	ND	0.38	ND
Total hexa	10.6	19.5	ND	0	ND	ND	ND
2,3,7,8	ND	0.73	ND	0.03	ND	0.02	ND
Total hepta	15.1	32.9	ND	0	ND	ND	ND
2,3,7,8	5.2	10.56	ND	0.03	0.16	0.32	ND
Dioxins							
Total tetra	ND	ND	ND	0	ND	ND	ND
2,3,7,8	ND	ND	ND	1.0	ND	ND	ND
Total penta	ND	ND	ND	0	ND	ND	ND
2,3,7,8	ND	ND	ND	1.0	ND	ND	ND
Total hexa	3.7	4.2	ND	0	ND	ND	ND
2,3,7,8	1.9	2.4	ND	0.03	0.06	0.07	ND
Total hepta	8.1	12.1	ND	0	ND	ND	ND
2,3,7,8	5.3	9.1	ND	0.03	0.16	0.27	ND
Total DHS Equivalent TCDD with hepta/without hepta	--	--	--		0.38/0.06	1.30/0.71	ND

---

* Concentration of the congeners that contains the 2,3,7,8 isomer.

** ND = not detected.

110169



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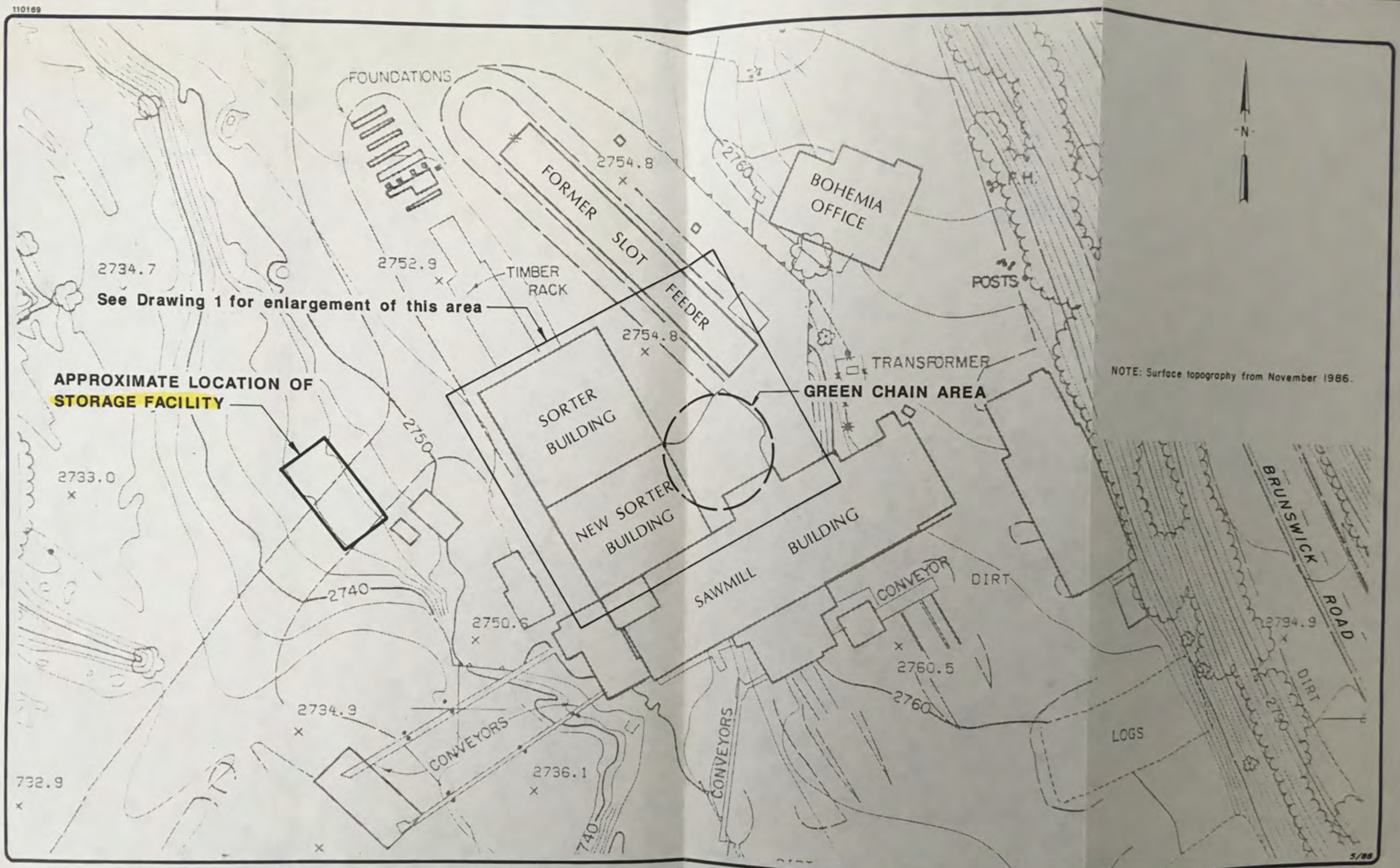
BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
BIOREMEDIATION PLAN
GRASS VALLEY, CALIFORNIA

SITE LOCATION MAP

FIGURE
1

PROJECT NO.
878 - 02.05

110169



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SCALE: 0 50 100 150 200 FEET

BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
BIOREMEDIATION PLAN
GRASS VALLEY, CALIFORNIA

GREEN CHAIN AND STORAGE FACILITY LOCATION MAP

FIGURE
2

PROJECT NO.
878-02.05

Appendix A

BOHEMIA GRASS VALLEY BENCH SCALE TREATABILITY WORK PLAN

Appendix A

BOHEMIA GRASS VALLEY
BENCH SCALE TREATABILITY WORK PLAN

INTRODUCTION

The following information outlines the methods and procedures to be used to investigate the effectiveness of using biodegradation to reduce pentachlorophenol (PCP) in soil at Bohemia's Grass Valley facility. Two variables affecting biodegradation rates will be studied: (1) nutrient addition, and (2) bacterial inoculation. Three test plots will be used: one control (not sterilized); one with nutrient addition, alone and one with nutrient addition and bacterial inoculation. A surfactant will be added to the latter to increase the susceptibility of PCP to biodegradation.

The parameters to be monitored are temperature, soil pH, moisture, and PCP and tetrachlorophenol (TCP) content. Temperature and pH will not be controlled because (1) it would be too expensive to control temperature during field implementation, and (2) the natural soil buffering capacity is assumed to be capable of handling the generation of chloride. The three additional processes affecting chemical "loss", volatilization, sorption, and photooxidation, will not be quantified.

PROCEDURES

1. Obtain 50 pounds of soil from four locations, 0.5 - 1 feet deep, in 40 ppm PCP area.

2. Use field observations to try to obtain relatively homogenous soil (i.e., discard rocks, etc.).

3. Homogenize soil in lab, sieve to 1/4 inch minus.

4. Prepare three soil batches for variable studies:

   (1) control - no additives, no sterilization
   (2) nutrient addition to 5 to 10 percent (C:N:P ratio 100:10:1)
   (3) nutrient addition to 5 to 10 percent and phenoxy-adapted bacterial addition

5. Prepare soil microcosm plots:

   - 3 metal pans, approximately 18" x 18"
   - soil to a depth of 2 inches

6. Perform initial chemical analyses - see Table 1.

7. Adjust moisture content on all test plots to approximately 35 percent.

8. Ongoing activities/monitoring during 20 day period.

   - adjust moisture 5 days/week to approximately 35 percent
   - mix soil 5 days/week to homogenize

9. Perform intermediate chemical analysis at 10 days - see Table 1.

10. Perform final chemical analysis at 20 days - see Table 1.

11. Evaluate data to determine the degree of biodegradation in:

    (1) control plot

    (2) nutrient addition plot, and increase/decrease over control plot

    (3) bacterial nutrient addition plot and increase/decrease over control plot

Table 1

BOHEMIA GRASS VALLEY
TREATABILITY TEST METHODS

Test Type	Method	Parameter	Use/ Evaluation	Sample Type
Initial Chemical Soils Analysis	STD[1]	pH organic percentage phosphate nitrate/ ammonium	soil properties affecting biodegradation rates.	composite[2]
	extraction/GC-ECD	PCP/TCP	determine initial composition	
	plate count	bacterial enumeration	monitor presence, growth	composite
Intermediate Chemical Soils Analysis	extraction/ GC-ECD	PCP/TCP bacterial	monitor chemical loss	composite
Final Chemical Soils Analysis	extraction/ GC-FID	PCP/TCP	monitor chemical loss	composite
	plate count	bacterial enumeration	monitor presence, growth	composite

---

1. STD designates method according to applicable EPA methods.

2. Samples will be collected from 4 to 6 locations in each plot and composited into one sample for analysis.

Appendix B

SAMPLING AND ANALYSIS METHODS

Appendix B

SAMPLING AND ANALYSIS METHODS

SAMPLING PROCEDURES

Given the shallow soil sampling depths involved in this program, hand sampling techniques will be employed for collection of all samples. EPA approved procedures as specified in Test Methods for Evaluating Solid Waste, U.S. EPA SW-846, 1986, will be followed.

Confirmation Sampling

At each sampling location within the excavation, the top inch of soil will first be removed. A surface soil sample will then be collected and packed into a clean, pre-labeled, glass jar. Care will be exercised to ensure that as little headspace as possible remains. After collection, samples will be logged onto chain-of-custody forms and transported to the laboratory on ice.

Samples beside the excavation will be cored using a hand auger. Samples will be taken at surface and 1 foot depths from the core. Samples will be packed into glass jars in the same manner as specified above.

Biotreatment Sampling

Biotreatment confirmation samples will be collected by scraping five to six inches of soil from the surface and collecting the sample using the above methods.

ANALYTICAL METHODS

Soil samples will be analyzed for pentachlorophenol using gas chromatography with an electron capture detector. Specific analytical methods are the same as those used in EMCON's report Soil and Ground-Water Contamination Investigation - Grass Valley Lumber Mill, 1987.

Appendix C

HEALTH AND SAFETY REQUIREMENTS

COMPUTATION SHEET

PROJECT TITLE: Bohemia - Grass Valley RAP **PROJECT NO.** 879-02.05
DESCRIPTION: Calculations for Health + Safety Requirements **SHEET** 1 **OF** 1
PREP. BY: M. Cavendish **DATE:** 5/19/88 **CHKD BY:** **DATE:** 5/20/88

Assumptions:

Dust concentrations = 10 mg/m3 for entire 8 hr work period

PCP - TLV = 0.5 mg/m3 (ACGIH, 1987) Time-weighted average

peak concentration in soil = 42 ppm (mg/kg)

$$\frac{42\ mg}{kg} * \frac{kg}{10^6\ mg} * \frac{10\ mg}{m^3} = \frac{0.00092\ mg}{m^3} \quad (< 0.5\ mg/m^3)$$

∴ PCP does not present a respiratory hazard to workers tilling soil at the Bohemia - Grass Valley site.

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EXPLANATION

▨	Area of exposed soil
P-8 ○	Surface soil sample location and designation
DB-3 ●	Exploratory boring location and designation
DB-6 ◉	Ground-water monitoring well location and designation
	Crack or seam in concrete slab
(3700)	PCP concentration in µg/kg (ppb)
30,000	Approximate PCP concentration contour in µg/kg (ppb) in surficial soil

NOTES:

1. Soil sampling and subsurface exploration southwest of the Green Chain Area was conducted between September and October 1986 prior to construction of the New Sorter Building. Investigation of the Green Chain Area was conducted in April 1987.
2. Layout of the Green Chain Area is depicted as it was at time of investigation.
3. Area covered by concrete slabs except where noted otherwise. Material underlying Sorter Building is not depicted.
4. See Figure 4 for cross section.
5. Sample P-21 consisted of sawdust. Therefore, the PCP value from this sample is not included on contour map.

SCALE 0 10 20 30 40 50 FEET

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE MAY 1988
DWN BY Wilson
DES BY
CHK BY
APP BY

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BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
BIOREMEDIATION PLAN
GRASS VALLEY, CALIFORNIA

CONCENTRATION CONTOUR MAP-
PCP IN SURFICIAL SOIL

DRAWING NO.
1

PROJECT NO
878-02.05

SURFACE WATER CONTROL PRELIMINARY DESIGNS AND COST ESTIMATES

GRASS VALLEY MILL
NEVADA COUNTY, CALIFORNIA

Prepared for
BOHEMIA, INC.

April 1988

EMCON Associates
1921 Ringwood Avenue
San Jose, California 95131

Project 878-02.04

TABLE OF CONTENTS

TABLE OF CONTENTS
(Continued)

Drawings

Appendix

SUMMARY

The Water Quality Control Board (WQCB) has requested that the Grass Valley mill redesign the existing recycle ponds. EMCON has evaluated alternatives for complying with this request. The surface water management plans evaluated by EMCON are:

1. Replacing the existing recycle pond.

2. Surface water runon control plan.

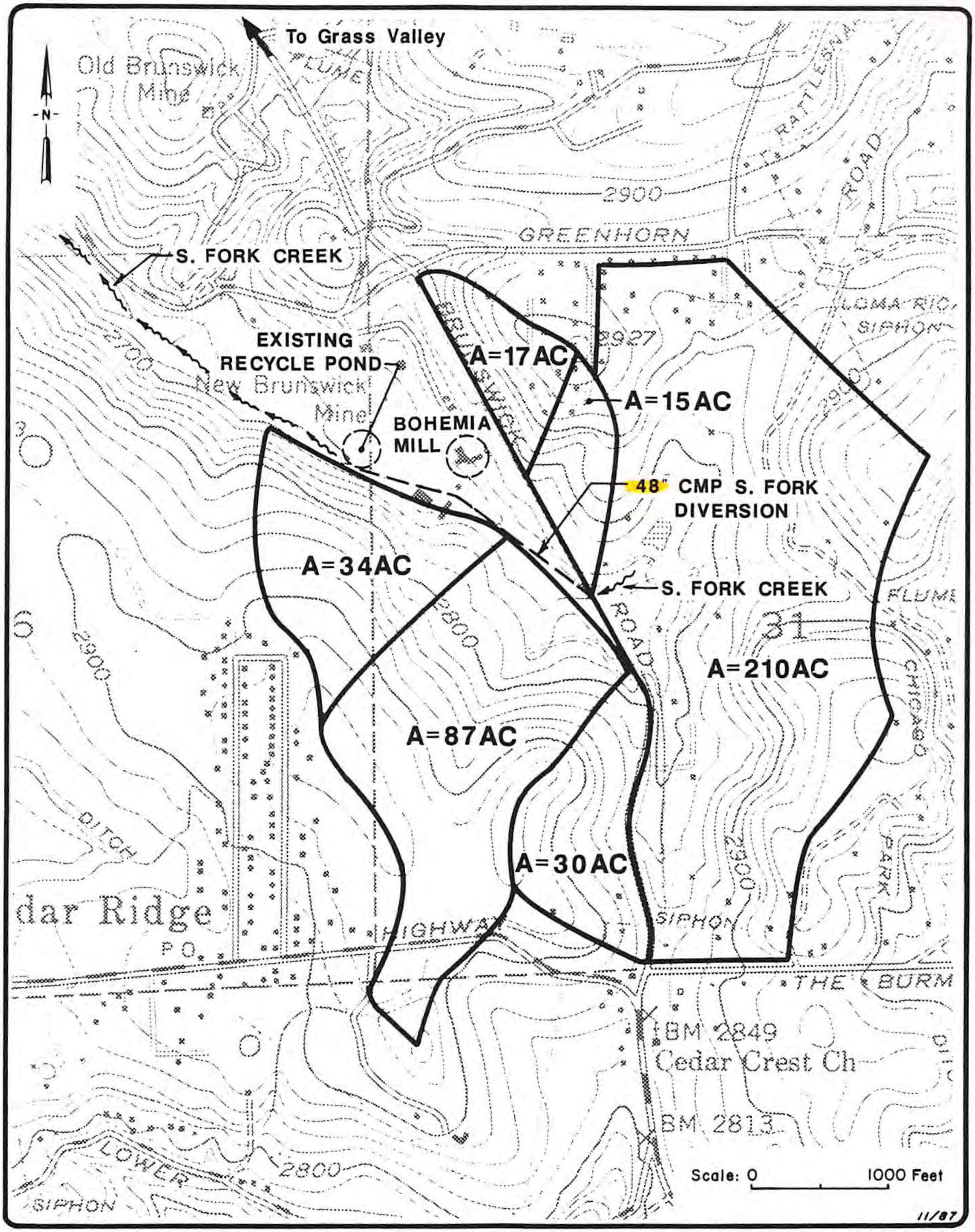
Our evaluation consisted of preparing preliminary designs and cost estimates for each water management plan. We analyzed and designed significant portions of the project to a level which supports general feasibility and from which preliminary cost estimates could be prepared.

The existing recycle pond could be replaced with a newly constructed pond for an estimated $1,100,000. Surface water drainage improvements to route run-on around the facility and into the South Fork Creek would cost an estimated $150,000. These estimated costs assume that the WQCB will allow discharge of storm water into South Fork or land application (spraying) on Grass Valley's timbered land.

INTRODUCTION

The Grass Valley mill property is located in the South Fork Creek valley as shown on Figure 1. The valley has been filled at the mill location to obtain the present surface grades. Maximum fill depths appear to be 20 to 30 feet. The mill and associated buildings are located at the north end of the property. The hot and cold log decks are located in the middle and south portions of the property. Ground surface elevation ranges from about 2740 to 2760 in the mill area and 2740 to 2770 in the log deck area.

South Fork Creek, once an open channel at the mill location, now flows under the mill property in a 48-inch-diameter metal culvert approximately 1,600 feet long. The culvert begins at the south end of the property at about elevation 2740 and ends on the northwest side of the property at about elevation 2710, close to the recycle pond.



EMCON Associates

BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
GRASS VALLEY, CALIFORNIA

SITE LOCATION AND DRAINAGE AREAS

FIGURE
1

PROJECT NO.
878-02.04

SURFACE WATER MANAGEMENT

Regulations generally require that surface water falling on dirty or contaminated areas be collected and either contained or treated to approved standards and then discharged. The required treatment level depends on the type of contaminants and their concentrations. The amount of surface water to be collected or treated can be reduced by separating clean surface water from contaminated surface water. This is usually done by routing clean surface water around contaminated areas by ditches, pipelines, and berms.

Effective surface water management at an industrial facility generally requires two systems, one system to handle contaminated surface water and another system to route clean surface water around contaminated areas. These systems are referred to as "runoff control" for water from contaminated areas and "run-on control" for water from clean areas. At the Grass Valley mill, runoff control refers to the control of surface water from areas such as the log decks and mill. Run-on control refers to the control of surface water flowing onto the mill property from the surrounding areas.

To control runoff, we prepared a preliminary design for a ditch collection system and for a storage pond to replace the existing recycle pond. (Note: at Grass Valley the storage pond is called the recycle pond because it is used to store surface water and to recirculate water for spraying the log decks.)

To control run-on, we prepared a preliminary design consisting of ditches and culverts to intercept and route surface water flowing onto the site around the facility and into the South Fork Creek.

RAINFALL AND EVAPORATION

Mean annual rainfall at Grass Valley is 54 inches. Rainfall in wetter years exceeds the mean rainfall by an additional 10 to 40 inches.

Mean annual evaporation is about 47 inches. Table 1 shows the month by month rainfall distribution for an average year and a very wet year. Table 2 shows the monthly evaporation. Table 3 shows the 24-hour precipitation depth for various return periods.

SURFACE WATER RUNOFF

Excluding off-site drainage, the total area contributing runoff from the pond, plant, and cold deck areas is about 17 acres. Only the pond and cold deck areas provide a significant year-round contribution to evaporation, with a combined area of about 11 acres. For an average rainfall year, we estimate that runoff from the pond, plant, and cold deck areas will be about 77 acre-feet and that evaporation from the pond and cold deck areas will be 39 acre-feet per year. The difference between runoff and evaporation, 38 acre-feet, is the amount of surface water which must be discharged in an average year. In a wetter year, the amount of discharge will be greater and could be approximately double for a year approaching the recorded maximum year.

RECYCLE POND SIZING

With discharge allowed, the optimum size for a recycle pond is a volume which provides adequate runoff collection and detention volume and provides enough stored water for log spraying in the months when evaporation losses exceed runoff.

Table 4 presents the calculated runoff from the pond, plant, cold deck, and hot deck areas for average monthly rainfall, and the monthly evaporation from the cold deck area and the recycle pond. Each inch of rainfall in the pond, plant, and log deck areas is estimated to produce approximately 1.4 acre-feet of runoff. From October through April, there is more runoff than evaporation. From May through September, estimated monthly evaporation exceeds runoff by 26 acre-feet.

If 26 acre-feet was stored from October to April, it could be used to provide the additional cold deck spray water required between May and September. Furthermore, a 26 acre-foot pond could be operated to provide both detention for winter runoff and storage for a larger storm event such as a 100-year, 24-hour storm.

A 26-acre-foot pond has the capacity to store runoff from about 19 inches of rainfall. Rainfall for a 100-year, 24-hour storm event is 9.3 inches. If 75 percent (20 acre-feet) of the pond volume were discharged in the wetter winter months by land application, this would provide storage for a 100-year, 24-hour storm and 5 inches of additional runoff.

? Increasing the pond size will not result in lower required discharges, since in the Grass Valley area rainfall exceeds evaporation. As shown on Figure 2, increasing the pond area not only increases the area available for evaporation but also increases the collection area. ? Since rainfall exceeds evaporation, increasing the pond area only results in increasing the amount of water stored.

DISCHARGE REQUIREMENTS

The WQCB may approve the discharge of surface water containing wastes depending on the type of waste, waste concentrations, and discharge volume. While it is unlikely that they will approve discharging all of the run-off from the Grass Valley mill property into the South Fork Creek, they may approve direct discharge during heavier rainfall periods, or discharge of runoff on timbered land by spraying.

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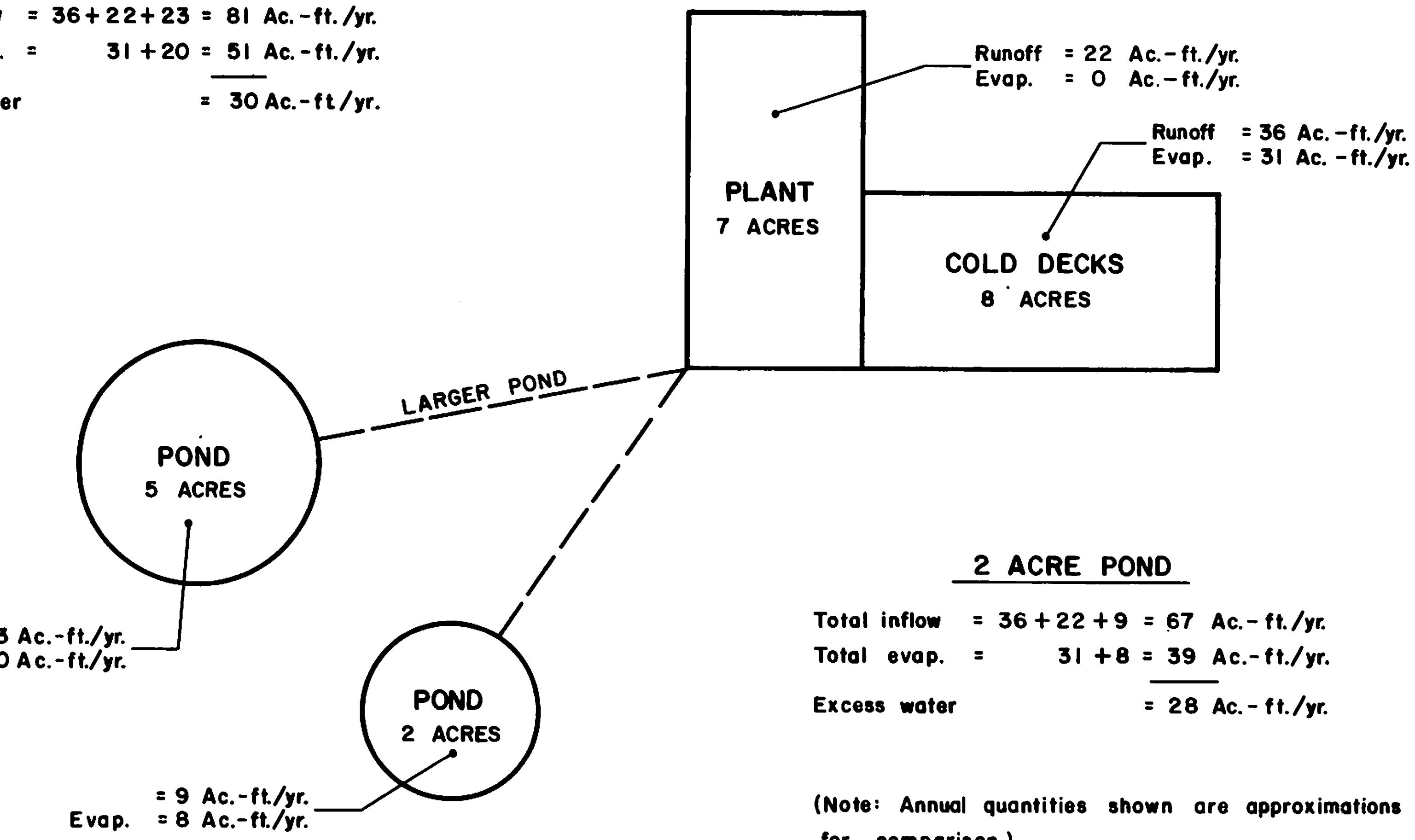


5 ACRE POND

Total inflow = 36+22+23 = 81 Ac.-ft./yr.
Total evap. = 31 +20 = 51 Ac.-ft./yr.

Excess water = 30 Ac.-ft./yr.

2 ACRE POND

Total inflow = 36+22+9 = 67 Ac.-ft./yr.
Total evap. = 31 +8 = 39 Ac.-ft./yr.

Excess water = 28 Ac.-ft./yr.

(Note: Annual quantities shown are approximations for comparison)

4/88

EMCON Associates

BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
GRASS VALLEY, CALIFORNIA

POND SIZE/EXCESS RUNOFF COMPARISON

FIGURE
2

PROJECT NO.
878 -02.04

As part of our scope of work we also made a preliminary evaluation of some alternative methods for controlling excess runoff. In increasing cost order, these are:

- water treatment
- evaporation enhancement
- covering run-off areas

All of these methods cost more than direct discharge or land application. Evaporation enhancement requires a significant energy cost for raising the discharge water's temperature to increase evaporation. Covering the plant and log deck areas would also be very expensive.

Water Treatment

Water treatment costs could be as much as $200,000 to $1,000,000 per year depending on the type and degree of treatment. However, some pretreatment, such as physical separation of bark from runoff by a Hydroscreen or similar equipment, could probably be provided for much less cost. If treatment is required by the WQCB, alternatives for treatment should be evaluated in more detail.

Evaporation Enhancement

We considered improving the efficiency of evaporation from log deck spraying. The evaporation cannot be increased significantly unless the temperature of the sprayed water is 20°F to 30°F greater than the air temperature. This would require a significant amount of fuel for energy. We estimated that about $1,000,000 per year would be required to raise the temperature of the log deck spray water enough to evaporate the excess surface water from an average rainfall year.

Cover for Runoff Areas

Cover for the runoff areas would be very expensive. Even at a very low cost of $10 per square foot, covering 17 acres would cost approximately $7,400,000. Canvas and cable covers might be obtainable for $2 to $3 per square foot for a total cost of $1,500,000 to $1,700,000. A structural frame and roof cover would cost much more than $10 per square foot.

SURFACE WATER RUN-ON

The run-on control plan consists of ditches and culverts to intercept and route surface water flowing onto the site into South Fork Creek. Figure 1 shows the areas contributing surface water run-on to the Grass Valley mill property.

The total drainage basin area above the lower end of the Grass Valley mill property is approximately 393 acres. Surface water run-on from about 327 acres above the upper end of the property is conveyed beneath the property in an existing 48-inch diameter culvert. The remaining 66 acres contribute surface water run-on from side hill areas ranging in size from 15 to 34 acres. Peak flows from these areas range from 5 to 30 cubic feet per second. Small, 1- to 3-foot deep "V" ditches, with 1 to 3 percent channel slopes, would be required to handle these flows.

RECYCLE POND DESCRIPTION

Drawing 1 shows the location of the new pond in relation to the existing pond. The new recycle pond has a surface area of 2.6 acres, an average depth of 14 feet, and a storage volume of 26 acre-feet. We estimate a total cost of around $1,100,000, including a 20 percent contingency, to construct the recycle pond.

The bottom elevation of the pond was set by assuming a ground-water elevation in this area of about 2705. The lowest elevation of the lining system materials must be separated from the highest expected seasonal ground-water level by at least 5 feet. This results in a pond with a bottom elevation that is above the existing ground surface and requires fill embankment slopes.

Runoff from the cold deck would flow from the bark collection basin to the pond in a concrete box channel or corrugated metal half culvert. Runoff from the plant area would be directed into the channel by grading and ditches.

During an average or wetter year, the pond would remain full through the winter season, December through April. By September or October, the pond would be nearly empty since the water would be used during the summer for spraying the cold deck. The increased rainfall during the late fall and early winter would fill the pond. Between December and April any excess surface runoff would have to be discharged.

When the water level in the pond is 2 feet below the crest, discharge would occur through an emergency spillway sized to pass a 100-year storm event.

PRELIMINARY DESIGN ASSUMPTIONS

We assumed that the WQCB will approve surface water discharge during heavier storm events either by controlled pumping or overflow, and by

BCN

land application onto the surrounding forest land. We have not included the cost of spray system piping but estimate that it will be small compared to the other costs of replacing the recycle pond.

Another assumption we made concerned evaporation. Evaporation is affected by several conditions such as water temperature, wet bulb temperature, wind, and spray droplet size, and is difficult to estimate without actual field data. Because field data were not available, we have assumed that evaporation from the cold decks will be equivalent to pan evaporation. However, evaporation from the cold decks could exceed pan evaporation. *

POND LINING SYSTEM

A double lining system may not be required by the WQCB for the replacement recycle pond because of the waste constituents (tanins and lignins) and their concentrations. However, to be conservative we have included a double lining system in our preliminary design and cost estimate. A typical double lining system usually consists of an outer liner, an inner liner, and a leachate collection and removal system between the two liners. The outer liner is required to be clay (soil) with a permeability less than or equal to 1 x 10^{-6} cm/sec. The inner liner may be a synthetic membrane or clay. The leachate system may be a granular material such as pea gravel, or a synthetic drainage material.

If a double liner is required for the replacement pond, we propose a composite inner and outer liner and a synthetic drainage layer. For the inner liner, we propose using a combination of a 60 mil high density polyethylene (HDPE) and a 2-foot-thick clay liner with a permeability less than 1 x 10^{-6} cm/sec. To maintain contact between the synthetic liner and the soil liner, a 1-foot-thick soil layer would be placed above the synthetic liner. The outer liner would also be a combination of 60 mil HDPE and a 2-foot-thick compacted soil layer.

We are proposing this lining system because a composite inner liner is expected to provide better performance. If only a synthetic material is used for the inner liner, a small hole in the liner could discharge enough water into the leachate system to require taking the pond out of service for repair. If a clay liner is used in conjunction with a synthetic liner, the leakage from a small hole would be much less and the pond could continue operating.

SURFACE RUN-ON CONTROL PLAN

A system of ditches and culverts was designed to intercept run-on from the surrounding land and divert it into the South Fork Creek either at the south or north end of the facility. Drawing 2 shows the layout of run-on control elements. We estimate the total engineering and construction cost for this work to be about $150,000 including a 20 percent contingency.

On the east side of the property, run-on will be collected by a ditch running along the pavement edge from the facility entrance to halfway along the log deck. At this point the grade of the log deck changes, and the ditch will empty into an inlet basin. The water will then be carried in a 30-inch culvert to the entrance basin of the South Fork diversion. The outflow from the Brunswick Road culvert near the mill would empty into the ditch, and the outflow from the next culvert along Brunswick Road would empty directly into the inlet.

On the west side, a drainage ditch would flow from each direction of the drainage divide. The north-flowing ditch follows a very steep grade along the road near the plant area. At this point, the ditch will empty into a drop box to dissipate the accumulated energy and minimize erosion. The drop box will open into a ditch running along the slope at the northwest corner of the property. The ditch would then empty directly into the South Fork Creek. The south-flowing drainage will flow in a ditch along the access road and around the log deck into the entrance of the South Fork diversion.

Most of the ditches will require lining to prevent erosion; for the preliminary design, we assumed shotcrete and wiremesh would be used; however, other lining alternatives could be considered in the final design. Slope protection consisting of either shotcrete and wiremesh, or riprap will be provided where the ditches open into natural drainages.

Table 1

MONTHLY RAINFALL DISTRIBUTION FOR GRASS VALLEY

Month	Average Year Precipitation (inches)	100-Year Precipitation (inches)
January	11.8	20.1
February	8.9	15.2
March	7.0	11.9
April	4.4	7.5
May	1.8	3.1
June	0.5	0.9
July	0.2	0.3
August	0.3	0.5
September	0.8	1.4
October	2.9	4.9
November	6.8	11.6
December	9.4	16.0
Total	54.8	93.4

Reference: NOAA, Climatography of the United Stated No. 20 - California, 1985

Table 2

MONTHLY EVAPORATION DISTRIBUTION

Month	Pan Evaporation (inches)
January	0.0
February	0.0
March	0.0
April	4.7
May	5.7
June	7.7
July	9.5
August	8.4
September	5.7
October	3.1
November	1.3
December	0.9
Total	47.0

Reference: California Department of Water Resources, Evaporation from Water Surfaces in California, Bulletin 73-79, November 1979.

Table 3

PRECIPITATION DEPTH IN 24 HOURS

Return Period (years)	Depth (inches)
2	4.32
5	5.77
10	6.70
25	7.57
50	8.66
100	9.44
1000	11.93

Reference: California Department of Water Resources, Rainfall Analysis for Drainage Design, V. II, Long Duration Precipitation Frequency Data, Bulletin No. 195, October, 1976.

Table 4

ESTIMATED MONTHLY RUNOFF AND EVAPORATIVE CONSUMPTION AT THE GRASS VALLEY MILL

Month	Average Monthly Precipitation (inches) (x14)	Runoff (acre-feet) 8 x P.E./12 (-)	Evaporation (acre-feet)	Excess Runoff (acre-feet) (=)	Evaporation Shortage (acre-feet)
October	2.9	4.1	2.6	1.5	
November	6.8	9.7	1.1	8.6	
December	9.4	13.3	0.7	12.6	
January	11.8	16.8	0	16.8	
February	9 8.8	12.4	0	12.4	
March	7.0	10.0	0	10.0	
April	4.4	6.3	4.0	2.3	
May	1.8	2.5	4.8		2.3
June	0.5	0.7	6.4		5.7
July	0.2	0.3	8.0		7.7
August	0.3	0.4	7.1		6.7
September	0.8	1.1	4.8	___	3.7
Total	54.7 (93.4 max - 100 yr)	77.6	39.5	64.2	26.1

Appendix A

PRELIMINARY COST ESTIMATES

BOHEMIA, INC.

PROJECT NO. 878-02.04
DATE: 11-5-87

PRELIMINARY COST ESTIMATE FOR REPLACING EXISTING RECYCLE POND

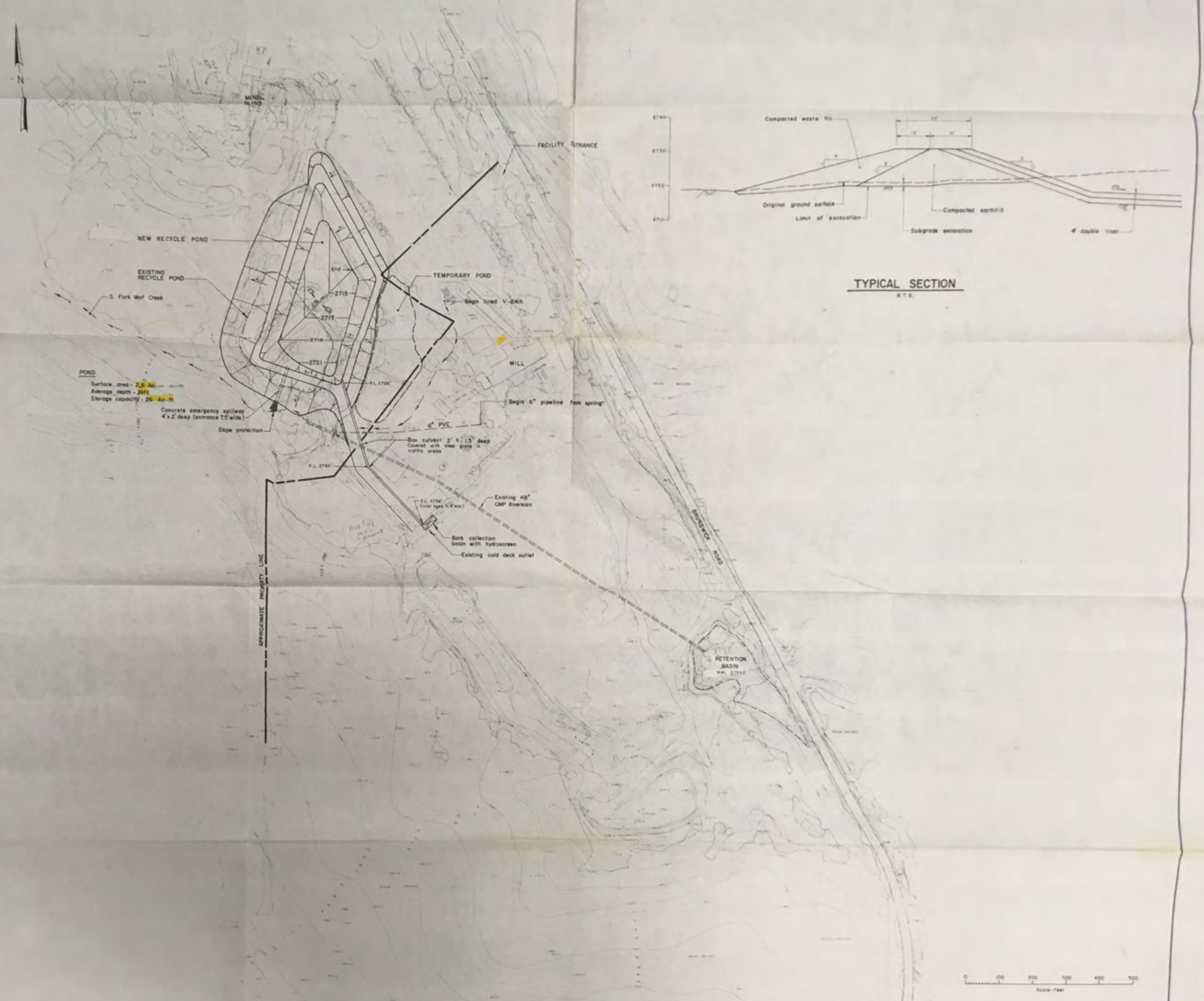
ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL
PROPERTY AQUISITION	LS	------	------	$300,000
MOBILIZATION	LS	------	------	$25,000
EXISTING POND CLEAN-UP				
EXCAVATE AND USE AS FILL	CY	15,000	$4.00	$60,000
RUN-OFF DRAINAGE CONTROL				
WOOD CHIP COLLECTION BASIN	EA	1	$25,000.00	$25,000
HYDRA-SCREEN	EA	1	$10,000.00	$10,000
STEEL GRATING	SF	900	$15.00	$13,500
V-DITCH EXCAVATION	CY	80	$5.00	$400
BOX CULVERT CONCRETE	CY	40	$300.00	$12,000
PIPELINE (8",PVC) TO SPRING	LF	550	$23.00	$12,650
SLOPE PROTECTION	SF	400	$3.00	$1,200
POND EARTHWORK				
EXCAVATE AND FILL	CY	28,360	$3.00	$85,080
SECONDARY LINER SYSTEM				
CLAY	CY	9,450	$5.00	$47,250
60-MIL HDPE	SF	130,000	$0.70	$91,000
SOIL REINFORCEMENT	SF	82,720	$0.50	$41,360
GEONET	SF	130,000	$0.25	$32,500
GEOTEXTILE FILTER	SF	130,000	$0.15	$19,500
SUMP ITEMS	LS	------	------	$5,000
PRIMARY LINER SYSTEM				
80-MIL HDPE	SF	130,000	$0.80	$104,000
BACKFILL (ANCHOR TRENCH)	CY	1,180	$5.00	$5,900
POND WATER MANAGEMENT				
SPILLWAY CONCRETE	CY	25	$300.00	$7,500
		SUBTOTAL =		$898,840
ENGINEERING FEE				
GEOTECHNICAL INVESTIGATION	LS	------	------	$25,000
FINAL DESIGN/SPECS	LS	------	------	$25,000
CONSTRUCTION OBSERVATION	LS	------	------	$30,000
CONTINGENCY (20%)	LS	------	------	$135,800
		TOTAL =		$1,114,640

BOHEMIA, INC.

PROJECT NO. 878-02.04
DATE: 11-5-87

PRELIMINARY COST ESTIMATE FOR RUN-ON DRAINAGE CONTROL

ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL
MOBILIZATION	LS	------	------	$4,000
V-DITCH EXCAVATION	CY	760	$5.00	$3,800
SHOTCRETE AND WIREMESH LINING(4")	SF	17,300	$3.00	$51,900
INLET/DROP BOX CONCRETE	CY	5	$300.00	$1,500
RCP CULVERT 30-IN DIA	LF	550	$70.00	$38,500
SLOPE PROTECTION	SF	1,200	$3.00	$3,600
MISC CONCRETE	CY	3	$300.00	$900
		SUBTOTAL =		$104,200
ENGINEERING FEE				
GEOTECHNICAL INVESTIGATION	LS	------	------	$2,500
FINAL DESIGN/SPECS	LS	------	------	$12,000
CONSTRUCTION OBSERVATION	LS	------	------	$6,000
CONTINGENCY (20%)	LS	------	------	$24,900
		TOTAL =		$149,600



REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE March 1988
DWN BY
DES BY
CHK BY
APP BY

EMCON Associates

BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
GRASS VALLEY, CALIFORNIA

PRELIMINARY RECYCLE POND LOCATION

DRAWING NO. 1
PROJECT NO. 578-0204

TYPICAL DITCH SECTION

N.T.S.

NOTES:

1. Runoff control for plant area shown on Drawing 1.
2. Alignment of RCP culverts may change depending on diversion pipe construction for South Fork Creek.
3. Existing culvert locations are approximate

LEGEND

S= .01	Ditch bottom slope, ft./ft.
RCP	Reinforced concrete pipe
CMP	Corrugated metal pipe
— — —	Hot deck, cold deck and plant area boundary

0 100 200 300 400 500

Scale-Feet

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE DWN BY J. Bailey CHK BY
DES BY APP BY

EMCON Associates

BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
GRASS VALLEY, CALIFORNIA

RUN-ON DRAINAGE CONTROL PLAN

DRAWING NO.
2

PROJECT NO.
578-02.04

REMEDIATION OF PENTACHLOROPHENOL-IMPACTED SOIL

GRASS VALLEY LUMBER MILL
GRASS VALLEY, CALIFORNIA

Prepared for
BOHEMIA, INC.

June 1989

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EMCON Associates
1921 Ringwood Avenue
San Jose, California 95131

Project 878-02.05

REMEDIATION OF PENTACHLOROPHENOL-IMPACTED SOIL
GRASS VALLEY LUMBER MILL
GRASS VALLEY, CALIFORNIA

EMCON Associates
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San Jose, California 95131

Project 878-03.07

REGISTERED PROFESSIONAL ENGINEER
RUSSELL J. SCHARLIN
Nº GE 751
Exp. 12/31/89
GEOTECHNICAL
STATE OF CALIFORNIA

FOR
Lynnette D. Mammino
Project Manager

June 6, 1989
Date

Russell J. Scharlin
Russell J. Scharlin, P.E.
Executive Manager

June 6, 1989
Date

TABLE OF CONTENTS

TABLE OF CONTENTS
(Continued)

Appendices

1.0 INTRODUCTION

This report documents the excavation and remediation of soils impacted by pentachlorophenol at the Grass Valley Lumber Mill in Grass Valley, California. This remediation was performed generally according to the plan EMCON Associates (EMCON) developed for Bohemia, Inc., owners of the Grass Valley Lumber Mill, and presented in EMCON's *Bioremediation Plan - Grass Valley Lumber Mill, Grass Valley, California* (1988). The cleanup levels, excavation plan, and remediation concept presented in this plan were approved, with minor revisions, by the California Regional Water Quality Control Board (RWQCB) - Central Valley Region before implementation.

In this report, EMCON presents background information about the site; documents soil removal; documents postexcavation soil sampling, analytical methods, and results; and discusses final remedial action measures.

2.0 BACKGROUND

2.1 SITE HISTORY

The Bohemia Grass Valley Lumber Mill is adjacent to the New Brunswick Mine, approximately 2.5 miles east of the town of Grass Valley, California (see Figure 1). The site is near the intersection of Brunswick Road with Union Hill Road. Access to the site is from Interstate 80 via Brunswick Road.

The Grass Valley site has been used to mill lumber since the late 1950's. In 1976, Bohemia, Inc. acquired the lumber mill and continues to operate it.

Before 1984, the final phase of milling consisted of treating the wood with pesticides. Wood was dipped into a pesticide solution after cutting and carried by conveyor (the "green chain") over an area of exposed soil to a slot feeder (see Figure 2). EMCON Associates was asked to characterize the soil and ground water after early studies (Franks, 1986) detected pentachlorophenol (PCP) and tetrachlorophenol (TCP), active ingredients of the pesticide solution, in the soil near the green chain. The results of this characterization were presented in EMCON's report, *Soil and Ground-Water Contamination Investigation - Grass Valley Lumber Mill, Grass Valley, California* (September 1987).

2.2 SITE CHARACTERIZATION SUMMARY

This section summarizes EMCON's soil and ground-water characterization, concentrating on the green chain area.

2.2.1 General Geology/Hydrogeology

The first 25 feet beneath the green chain area is composed of three distinct soil layers. The first layer consists of a thin, highly organic surficial soil zone that contains large amounts of sawdust from the lumber mill operations. The surficial zone is underlain by 3 to 10 feet of artificial fill. This artificial fill provided a terrace upon which much of the lumber mill was built and consists largely of tailings imported from nearby mines. The artificial fill is underlain by native fine-grained tuff breccia bedrock that represents the original ground surface before the horizontal benches were constructed. Near the interface between the native material and the artificial fill (approximately 1 to 2 feet), the tuff breccia bedrock is weathered to a high-plasticity clay, which locally contains abundant roots and other organic matter.

Ground water in the green chain area occurs primarily within the weathered tuff breccia bedrock approximately 8 feet below its contact with the artificial fill. Ground water also has been observed perched in the artificial fill southwest of the green chain area. This perched ground water is recharged primarily by infiltration of precipitation and site washdown water; it occurs intermittently depending on rainfall and water management practices on the site. Ground water in both zones flows toward the southwest.

2.2.2 Chemical Characterization of the Soil

The preferred plan for soil sampling would have been to collect samples of the surficial soil, artificial fill, and tuff breccia/artificial fill interface. The drilling method chosen to cut through the artificial fill mine tailings, however, did not allow collection of samples in the fill. Air-rotary drilling was used and the fines from the mine tailings (which would probably have retained the PCP) were dispersed during drilling. Samples were therefore collected only from the surficial soils and tuff breccia bedrock/artificial fill interface.

EMCON found PCP and TCP in the surficial soils of the green chain area. PCP was detected at concentrations of 1.2 parts per million (ppm) to 42 ppm. The Total Threshold Level Concentrations (TTLC) for PCP is 17 ppm. A waste is considered hazardous if it contains chemical concentrations greater than the TTLC for that particular chemical. One sawdust sample contained 150 ppm of PCP. TCP concentrations correlated with the observed levels of PCP; they were 2.2 to 53 ppm. Small amounts of dioxin, a contaminant of PCP, were also discovered in some of the soils. Total EPA equivalent dioxin and furan concentrations (discussed in the September 1987 EMCON report), however, were below the generally recommended EPA cleanup level of 1 part per billion (ppb). Because a TTLC does not exist for TCP and because total dioxin concentrations were below recommended cleanup levels, PCP was selected as the compound requiring remediation at the site.

Concentrations of PCP in soil samples from the interface between the artificial fill layer and the tuff breccia bedrock were much lower than those found in the surface soils. These concentrations averaged less than 1 ppm and, in many cases, were near the detection limits for PCP. EMCON therefore believed that the artificial fill did not contain significant concentrations of PCP. PCP would have been expected to migrate rapidly through the mine tailings to the tuff breccia bedrock layer.

2.2.3 Chemical Characterization of the Ground Water

Very low levels of PCP and TCP (<4 ppb) were detected in two wells that monitor the ground water within the tuff breccia aquifer directly beneath the green chain area. The levels observed were near the analytical detection limits for those compounds and were one order of magnitude lower than the DHS action level for PCP (30 ppb). Actions levels are unenforceable guidance levels intended for use by water purveyors. If the action levels are exceeded in drinking water, human health and welfare may be affected. Because the PCP levels in ground water were well below the actions levels, the RWQCB did not require ground-water remediation if the PCP source (PCP-affected soils) was removed.

2.3 CLEANUP LEVELS

Maintaining the ground-water quality beneath the site was the objective of the proposed cleanup levels for the PCP-affected soils. As a conservative approach, EMCON developed cleanup levels designed to protect the water quality in the perched ground water beneath the green chain area. The reasoning for developing these cleanup levels is presented in EMCON's *Bioremediation Plan - Grass Valley Lumber Mill, Grass Valley, California* (May 1988). EMCON's proposed cleanup level for PCP in the soils from the green chain area was 8 ppm. Negotiation with the RWQCB reduced this cleanup level to 5 ppm. The DHS then imposed a cleanup level of 3 ppm for the soils to be consistent with other similar sites.

3.0 SOIL REMOVAL

3.1 FIRST EXCAVATION

Based on the data presented in the EMCON report, *Soil and Ground-Water Contamination Investigation - Grass Valley Lumber Mill, Grass Valley, California* (1987), most of the PCP contamination was believed to be retained in the highly organic surficial soils in the green chain area. The original excavation plan, therefore, called for removal of these soils.

In July 1988, approximately 60 yards of soil were removed from the green chain area. The surficial soil was excavated to a depth between 6 inches and 1 foot. Figure 3 shows the limits of excavation. After the soils were removed, soil samples were collected to confirm that PCP levels remaining in the unexcavated soil were below the 3 ppm cleanup level.

3.1.1 Storage Pad

The excavated soil was placed on a previously constructed storage pad. This pad consisted of a bermed, lined impoundment and sump. The berm was designed to divert any potential run-on around the impoundment and prevent runoff from the pad. The lining over the berms and underneath the pad consisted of 10-mil polyethylene sheeting. This sheeting was intended to help prevent any contamination from the excavated soil from entering the soils under the pad. The soils beneath the pad were graded to allow water in the impoundment to drain to the sump.

3.1.2 Soil Sampling

Four soil samples were collected from the bottom of the excavation and four samples were collected from the unexcavated area at the north and south ends of the excavation. Sample locations are shown in Figure 3. Samples from within the excavation were taken to confirm that the soils with PCP concentrations above the cleanup level had been removed. The unexcavated soil immediately surrounding the removal area was sampled to confirm that the horizontal extent of the PCP contamination had been contained.

Samples were collected from the bottom of the excavation by scraping away approximately 1 inch of the surface soil and driving a clean, stainless steel ring into the soil. The ring was removed and the ends were sealed with Teflon® tape and plastic end caps. At sample locations C-4-1 and C-5-1, the rings had to be hand-packed because the soil was too hard to easily drive a ring into.

Samples taken on the north and south ends of the excavation were cored using a hand auger. Samples were collected from just below the soil surface and at a depth of 1 foot. These samples were collected using stainless steel rings in the same manner as specified above. After sealing the ends, each ring was placed in a glass jar; the jar was labeled and placed on ice. The field engineer logged the samples onto EMCON's chain-of-custody forms and transported them to a state-certified laboratory for analysis.

3.1.3 Analytical Results

Table 1 presents the analytical results from all the samples collected from the excavation. These samples were analyzed at the International Technology Corporation (IT) laboratory in Santa Clara, California. Certified analytical reports (CARs) are attached in Appendix A. Samples C-1-5, C-2-1, C-3-1, C-4-1, C-5-1, C-6-1, C-7-1, and C-8-5 were collected at the base of the soil excavation. Samples C-1-5 and C-2-1, taken from unexcavated soil on the north side of the green chain, contained PCP concentrations below the cleanup level of 3 ppm. This sampling indicated that northern limits of the excavation satisfied the PCP cleanup level. Confirmation samples from the southern side of the green chain area indicated that more surficial soil needed to be excavated in that area.

Samples from the base of the excavation, C-3-1, C-4-1, C-5-1, and C-6-1, all contained elevated levels of PCP. The samples with the highest levels of PCP (C-3-1 and C-5-1) contained large amounts of sawdust. Because PCP has a high affinity for organic materials, such as sawdust, elevated levels are often associated with these materials. Further excavation was therefore needed.

3.2 SECOND EXCAVATION

The objectives of the second excavation were to (1) confirm that the excavation reached the artificial fill and (2) remove the visible sawdust and organic matter that was expected to contain elevated PCP levels. EMCON suspected that sawdust and fines had migrated further down into the interstitial spaces of the mine tailings/artificial fill than was originally expected based on the 1987 site investigation. Removing areas within the artificial fill that contained visible traces of sawdust would then allow remediation of the PCP-affected soil while minimizing the volume of soil to be excavated.

Based on the above objectives, approximately 125 cubic yards of soil and artificial fill were excavated from the green chain area in August 1988. On the east side, artificial fill was removed from the excavation until the base of the excavation reached a depth of approximately 4 feet below the original grade. The west quadrant of the pit was excavated to a depth of 4.5 feet below the original grade because sawdust was prevalent in the fill. The southwest quadrant was only excavated to a depth of 2.5 feet. Surface soil was removed from the previously unexcavated area directly south of the pit.

3.2.1 Soil Sampling and Analysis

Four samples were again collected from the bottom of the excavation. Their locations are shown in Figure 4. Sampling techniques were the same as those described above. These samples were also analyzed by IT, although a split from C-11-4.5 was sent to ENSECO's laboratory in Sacramento for analysis. ENSECO had performed the analytical work for the site characterization (EMCON, September 1987). Analytical results from this sampling are presented in Table 1.

PCP concentrations observed in these samples were much lower than those from the previous excavation confirmation samples. Concentrations in two of the samples, C-9-4.5 and C-12-2.5, were an order of magnitude below the cleanup levels. Two other samples (C-10-3.8 and C-11-4.5), however, were above cleanup levels. The split of sample C-11-4.5 indicated a 30 percent variability in analytical results. This variability is within the approved range for the analytical method (*Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, United States Environmental Protection Agency, Third Ed., November 1986, SW-846).

Samples C-9-4.5 and C-10-3.8 were collected from the surface of the native weathered bedrock clay. Samples C-11-4.5 and C-12-2.5 were taken from the artificial fill. The lack of correlation between sample type and PCP concentration indicates that PCP distribution within the artificial fill and the upper portion of the original ground surface may be highly variable. Although the specific cause of this variability is not known, several factors may be responsible. Such factors include generally heterogeneous subsurface conditions, source "hot spots" (rather than uniform loading), or changing physical or environmental conditions. Because of this suspected "spotty" distribution of PCP beneath the green chain area, EMCON recommended that the bottom of the excavation be extended until all of the artificial fill and the first 6 inches of the native weathered bedrock clay were removed.

3.3 THIRD EXCAVATION

The remainder of the artificial fill was removed from the excavation near the end of August 1988. The top 6 inches of the weathered bedrock clay comprising the original ground surface was also excavated. Confirmation samples were collected from the bottom of the excavation (see Figure 5) using the techniques described above. Analytical results are in Table 1.

Analytical results from the confirmation sampling indicate that only trace amounts, if any, of PCP remain in the soil beneath the excavation. All the soil removed from the green chain area was placed on the lined storage pad to await disposition. A total of approximately 375 cubic yards of soil was removed from the excavation.

4.0 REMEDIATION

The apparent most cost-effective plan to remediate the PCP affected soil at Grass Valley was bioremediation. EMCON Associates performed a bench scale treatability study to evaluate whether the soils from Grass Valley could be bioremediated and how rapid biodegradation of the PCP would be. The results, however, were inconclusive. A trend was observed indicating that adding fertilizer to the soil and inoculating it with selectively adapted microorganisms designed to degrade chlorinated hydrocarbons caused PCP concentrations in the soil to decrease. Because of the variability allowed by the method used for PCP analyses, this trend could not be considered conclusive.

Because of the small volume of PCP-contaminated soils at the site, EMCON decided that a more extensive treatability study was not warranted. The first treatability study also indicated that biodegradation of the PCP at Grass Valley could be prohibitively slow. EMCON then recommended that the soils at Grass Valley be transported to and disposed of in a suitable Class I hazardous waste landfill.

The stockpiled soil was profiled in February 1989 and accepted for disposal at Chemical Waste Management's Kettleman Hills Class I disposal facility in April 1989. Bohemia, Inc. made arrangements with Reidel Environmental Services (RES) to load the stockpiled soil onto trucks and transport it to Kettleman City for disposal. RES mobilized on the site May 8, 1989. Soils were removed from the stockpile and transported to Kettleman Hills on May 9 and 10, 1989. Copies of the waste manifests are contained in Appendix B.

Table 1

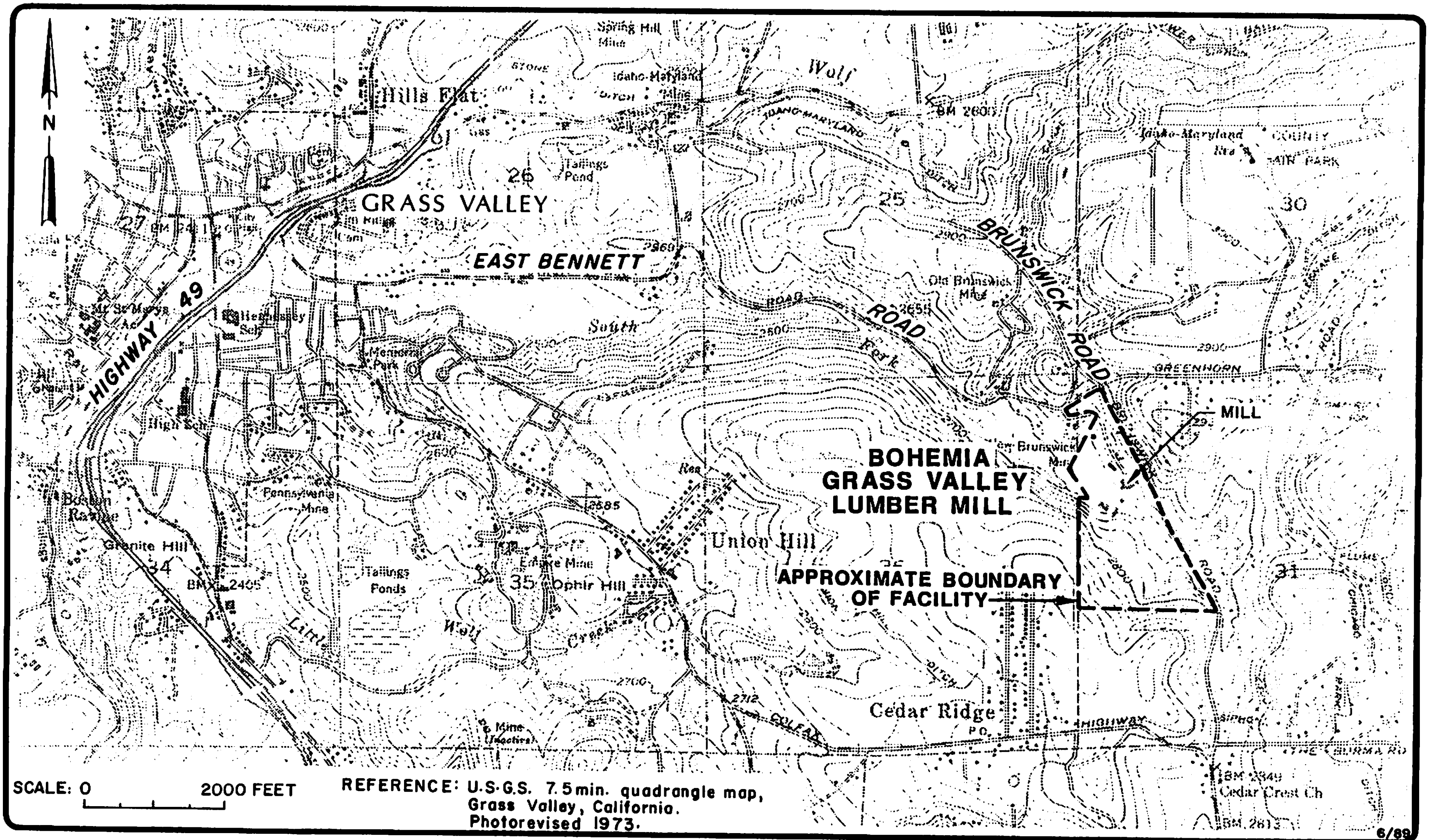
CONFIRMATION SOIL SAMPLING
GRASS VALLEY LUMBER MILL

Date	Sample ID	Location	Sample Depth Below Ground Surface	Pentachlorophenol Concentration Milligrams/Kilograms (mg/kg)
7/13/88	C-1-5	Outside Edge	6 inches	1.3
7/13/88	C-2-1	Outside Edge	1 foot	0.62
7/13/88	C-3-1	Excavation Base	1 foot	170
7/13/88	C-4-1	Excavation Base	1 foot	110
7/13/88	C-5-1	Excavation Base	1 foot	250
7/13/88	C-6-1	Excavation Base	1 foot	110
7/13/88	C-7-1	Outside Edge	1 foot	1.1
7/13/88	C-8-5	Outside Edge	6 inches	22
8/09/88	C-9-4.5	Excavation Base	4.5 feet	0.04
8/09/88	C-10-3.8	Excavation Base	3.8 feet	57
8/09/88	C-11-4.5	Excavation Base	4.5 feet	39
		Split of Sample		22
8/09/88	C-12-2.5	Excavation Base	2.5 feet	0.69
8/31/88	HM-1	Excavation Base	5 feet	ND[1]
8/31/88	HM-2	Excavation Base	10 feet	0.02
8/31/88	HM-3	Excavation Base	9 feet	ND
8/31/88	HM-4	Excavation Base	4 feet	0.16

---

1. ND = not detected

110169



REFERENCE: U.S.G.S. 7.5 min. quadrangle map,
Grass Valley, California.
Photorevised 1973.

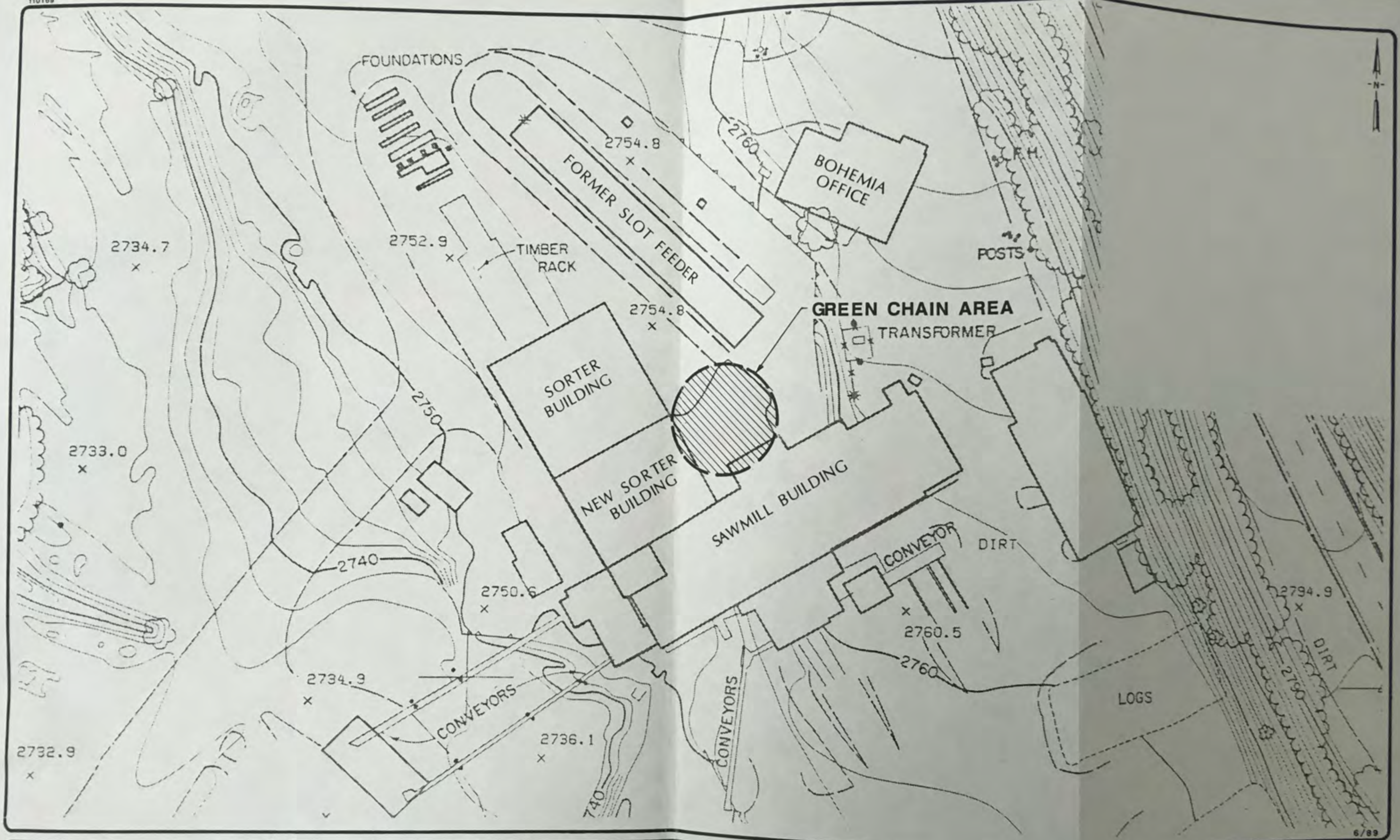
EMCON
Associates

BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
SOIL REMEDIATION REPORT
GRASS VALLEY, CALIFORNIA

SITE LOCATION MAP

FIGURE
1
PROJECT NO.
878 - 02.05

110169



6/89

EMCON Associates

SCALE: 0 50 100 150 FEET

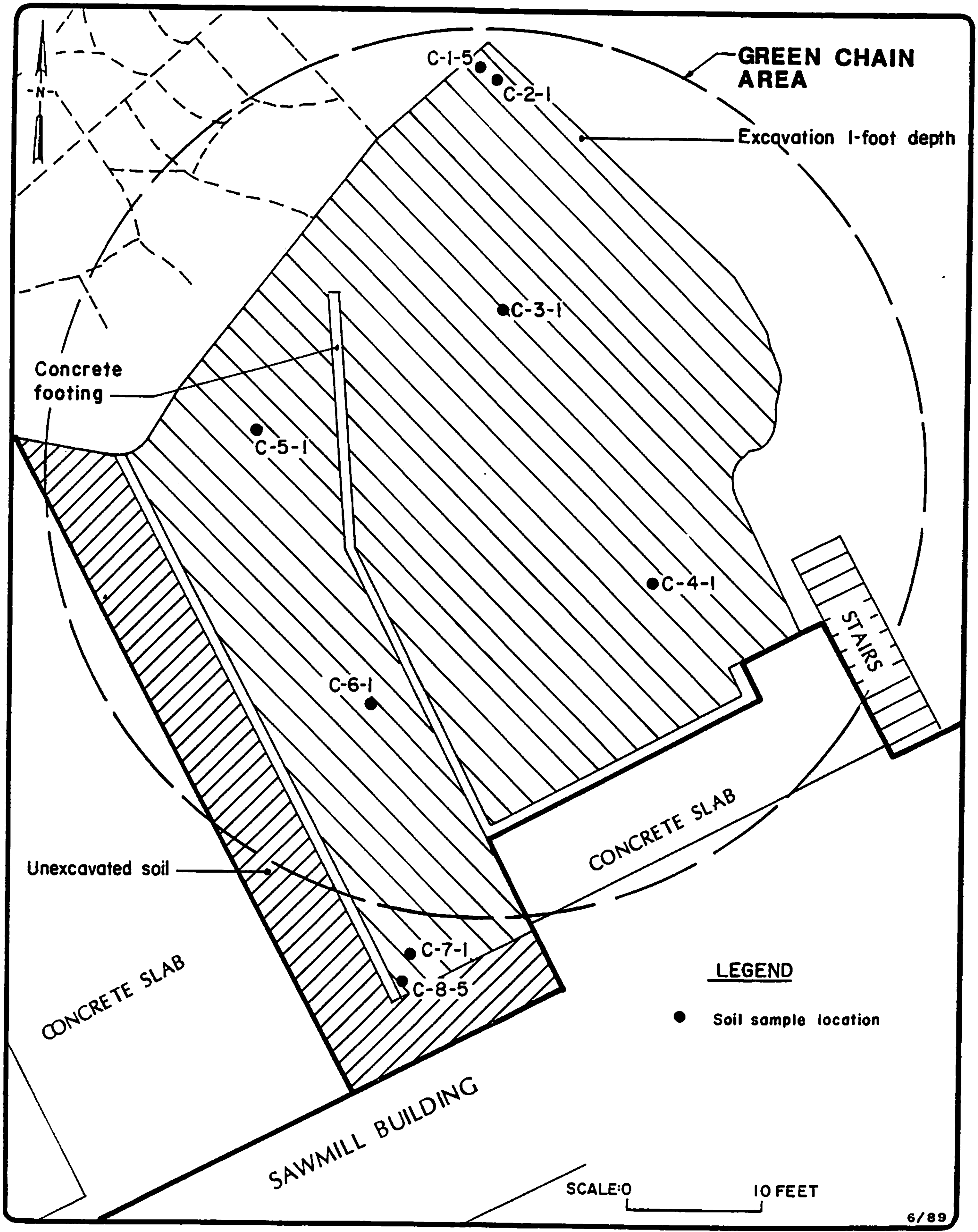
BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
SOIL REMEDIATION REPORT
GRASS VALLEY, CALIFORNIA

SITE PLAN

FIGURE
2

PROJECT NO.
878-02.05

124279



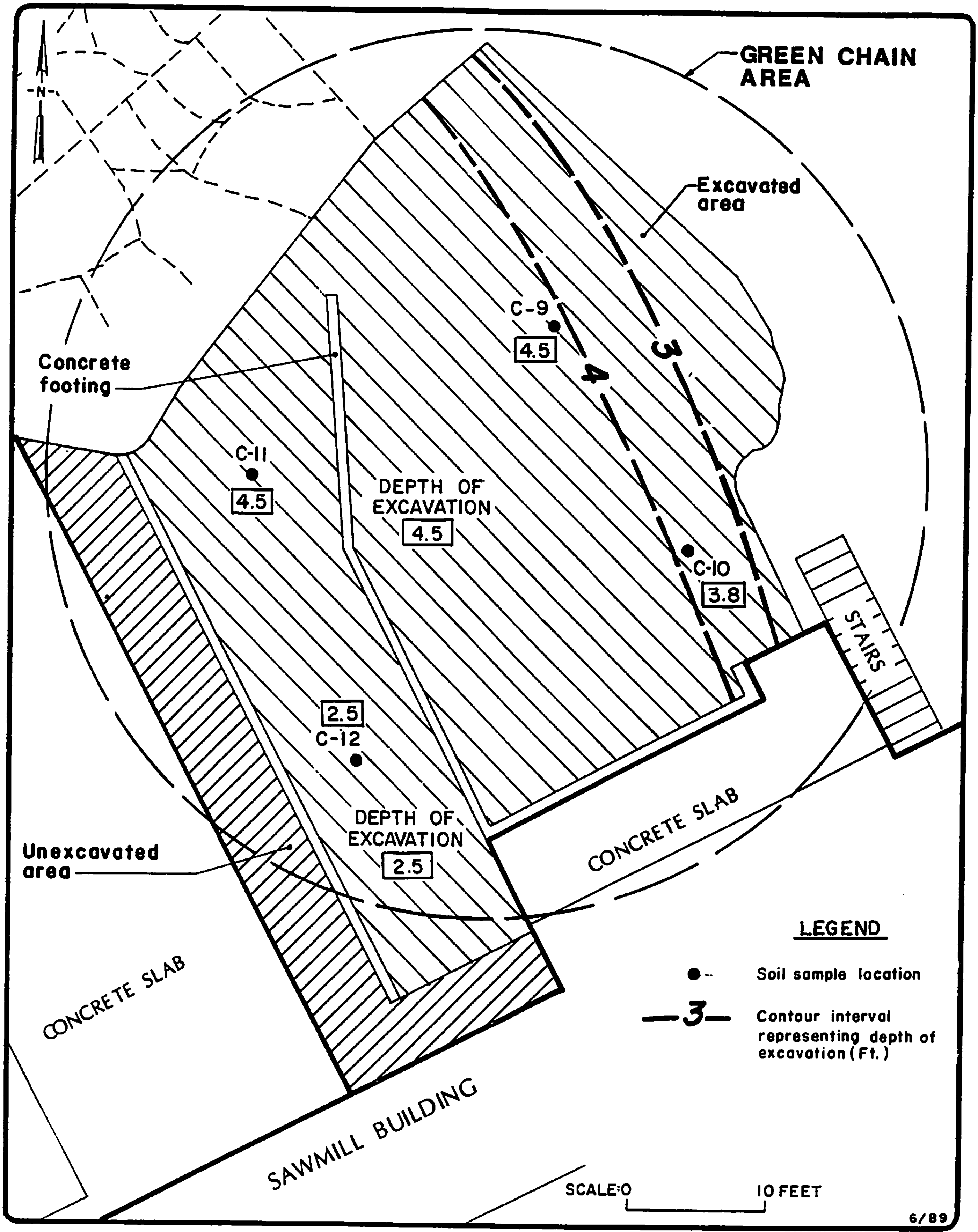
EMCON Associates

BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
SOIL REMEDIATION REPORT
GRASS VALLEY, CALIFORNIA

SAMPLE LOCATION MAP
FIRST EXCAVATION

FIGURE
3

PROJECT NO.
878-02.05



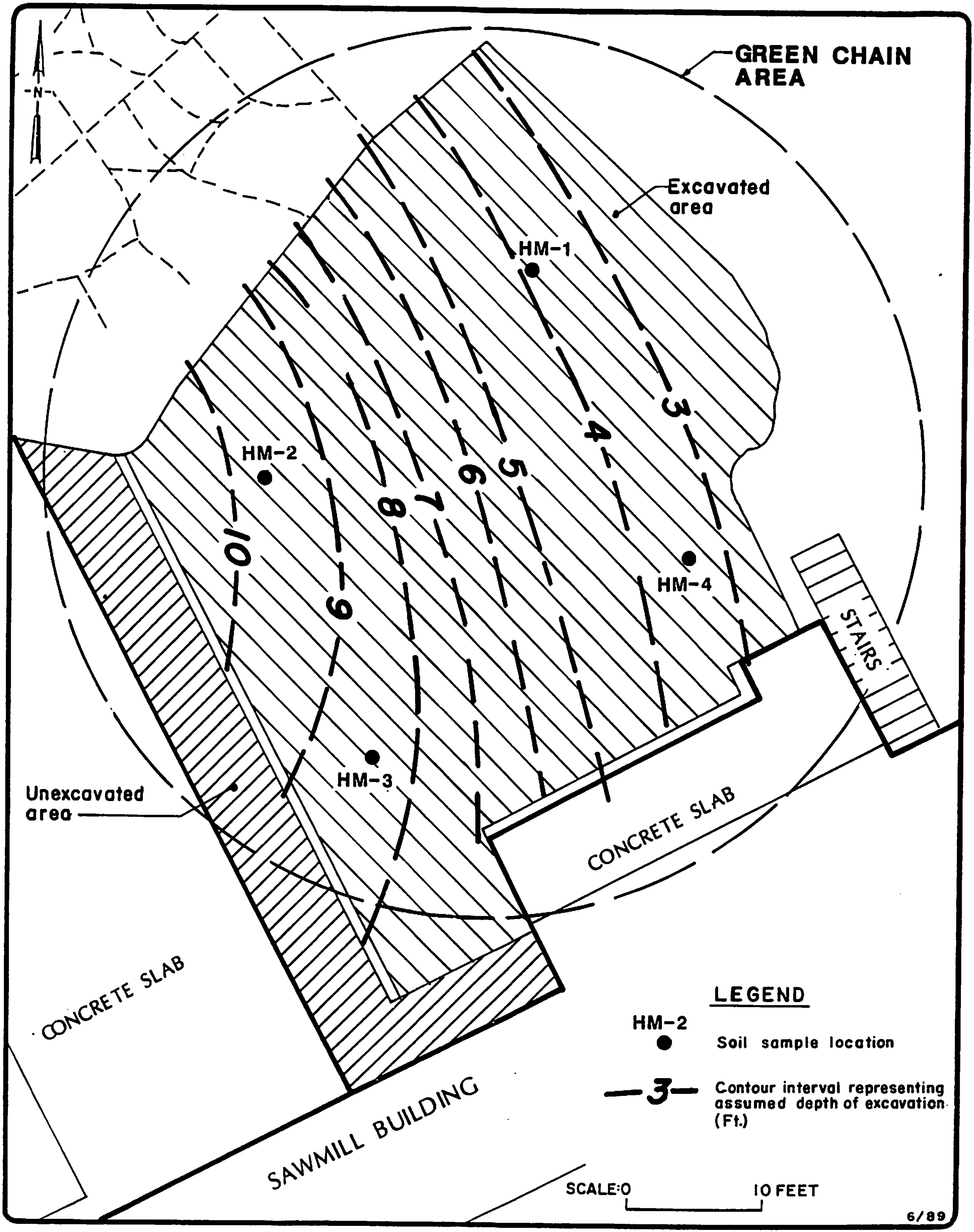
EMCON Associates

BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
SOIL REMEDIATION REPORT
GRASS VALLEY, CALIFORNIA

SAMPLE LOCATION MAP-SECOND EXCAVATION

FIGURE
4

PROJECT NO.
878-02.05



EMCON Associates

BOHEMIA, INC.
GRASS VALLEY LUMBER MILL
SOIL REMEDIATION REPORT
GRASS VALLEY, CALIFORNIA

SAMPLE LOCATION MAP-THIRD EXCAVATION

FIGURE
5

PROJECT NO.
878-02.05

Appendix A

CERTIFIED ANALYTICAL REPORTS

EMCON
JUL 26 1988

INTERNATIONAL
TECHNOLOGY
CORPORATION

Emcon Associates
1921 Ringwood Avenue
San Jose, CA 95131

July 26, 1988

ATTN: Annelise Bazar

Following are the results of analyses on the samples described below.

Project Number: 878-02.05, E88-0773
Lab Numbers: S8-07-151-01 thru S8-07-151-08
Number of Samples: 8
Date Received: 7/15/88
Sample Type: soil
Analysis Requested: Pentachlorophenol

The method of analysis of pentachlorophenol in soil involves extraction of the acidified samples by prolonged shaking with ethyl ether. The extract is partitioned into aqueous base, acidified, and partitioned into organic solvent. The extract is treated with diazomethane, and the methyl derivative is detected by gas chromatography using the electron capture detector.

Donald Magarian
Donald Magarian

DM/ksr

1 Page Following - Table of Results

Santa Clara Valley Laboratory
2055 Junction Avenue • San Jose, California 95131 • 408-943-1540
IT Corporation is a wholly owned subsidiary of International Technology Corporation

IT/Santa Clara to Emcon Associates
ATTN: Annelise Bazar

July 26, 1988
Page 1 of 1

Project: 878-02.05, E88-0773

Table of Results - Milligrams per Kilogram (Dry Soil Basis)

Lab Number	Sample Identification	Penta-chlorophenol
S8-07-151-01	C-1-5	1.3
S8-07-151-02	C-2-1	0.62
S8-07-151-03	C-3-1	170.
S8-07-151-04	C-4-1	110.
S8-07-151-05	C-5-1	250.
S8-07-151-06	C-6-1	110.
S8-07-151-07	C-7-1	1.1
S8-07-151-08	C-8-5	22.
Method Detection Limit		0.01

EMCON
AUG 26 1988

INTERNATIONAL
TECHNOLOGY
CORPORATION

Emcon Associates
1921 Ringwood Avenue
San Jose, CA 95131

August 24, 1988

ATTN: Annelise Bazar

Following are the results of analyses on the samples described below.

Project Number:	878-02.05, E88-0908
Lab Numbers:	S8-08-107-01 thru S8-08-107-04
Number of Samples:	4
Date Received:	8/10/88
Sample Type:	Soil
Analysis Requested:	Pentachlorophenol, 2,3,4,6-Tetrachlorophenol

The method of analysis of pentachlorophenol and tetrachlorophenol in soil involves extraction of the acidified samples by prolonged shaking with ethyl ether. The extract is partitioned into aqueous base, acidified, and partitioned into organic solvent. The extract is treated with diazomethane, and the methyl derivative is detected by gas chromatography using the electron capture detector.

Table of Results - Milligrams per Kilogram (Dry Soil Basis)

Lab Number	Sample Identification	2,3,4,6-Tetrachlorophenol	Pentachlorophenol
S8-08-107-01	C-9-4.5	0.04	0.04
S8-08-107-02	C-10-3.8	84.	57.
S8-08-107-03	C-11-4.5	54.	39.
S8-08-107-04	C-12-2.5	0.82	0.69
Method Detection Limit		0.01	0.01

Donald Magarian

DM/gg

Santa Clara Valley Laboratory
2055 Junction Avenue • San Jose, California 95131 • 408-943-1540
IT Corporation is a wholly owned subsidiary of International Technology Corporation

California Analytical Laboratory

EMCON
SEP 14 1988

Enseco

September 8, 1988
Lab ID: 042897

Keoni Murphy
Emcon Associates
1921 Ringwood Avenue
San Jose, CA 95131

Dear Mr. Murphy:

Enclosed is the report for the one soil sample for your Project ID 878-02.05, P.O. number 21016, which was received at Enseco-Cal Lab on 10 August 1988.

The report consists of the following sections:

I Sample Description
II Analysis Request
III Quality Control Report
IV Analysis Results

No problems were encountered with the analysis of your sample.

If you have any questions, please feel free to call.

Sincerely,

Lidya Gulizia

Lidya Gulizia
Client Services Representative

ka

Enseco Incorporated
2544 Industrial Boulevard
West Sacramento, California 95691
916/372-1393 Fax: 916/372-1059

I Sample Description

See attached Sample Description Information.

The sample was received under chain-of-custody.

II Analysis Request

The following analytical tests were requested.

Lab ID	Analysis Description
042897-0001	Pentachlorophenol & Tetrachlorophenol

III Quality Control

A. **Project Specific QC.** No project specific QC (i.e., spikes and/or duplicates) was requested.

B. **Method Blank Results.** A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blanks associated with your sample at the reporting limit levels noted on the data sheets in the Analytical Results section.

C. **Laboratory Control Samples**. An LCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The LCS results associated with your samples are on the attached Laboratory Control Sample Report.

Accuracy is measured by Percent Recovery as in:

$$\%\ \text{recovery} = \frac{(\text{measured concentration})}{(\text{actual concentration})} \times 100$$

Precision is measured using duplicate tests by Relative Percent Difference (RPD) as in:

$$\text{RPD} = \frac{(\%\ \text{recovery test 1} - \%\ \text{recovery test 2})}{(\%\ \text{recovery test 1} + \%\ \text{recovery test 2})/2} \times 100$$

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate LCS results) to the average, historical relative percent difference + 3 standard deviation units. These control limits are updated on a quarterly basis. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods may include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis; i.e., no correction is made for moisture content. All data is "blank corrected" by subtracting the level of contamination, if any, found in the laboratory method blank from the analytical result before it is reported.

Results are on the attached data sheets.

SAMPLE DESCRIPTION INFORMATION
for
Emcon Associates

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
042897-0001-SA	C-11-4.5	SOIL	09 AUG 88		10 AUG 88

LABORATORY CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Category: PCP-S
Matrix: SOIL
QC Lot: 880823A
Concentration Units: ug/kg

Analyte	Concentration			Accuracy(%)			Precision(RPD)	
	Spiked	Measured		LCS1	LCS2	Limits	LCS	Limits
		LCS1	LCS2					
Pentachlorophenol	100	48.8	53.5	49#	54	51-143	9.6	32
2,3,4,6-Tetrachlorophenol	100	53.9	59.1	54#	59	59-147	8.9	31

= Recovery outside standard QC limits.

Penta & Tetrachlorophenol

ENSECO

Client Name:	Emcon Associates				
Client ID:	Method Blank				
Lab ID:	042897-MB	Enseco ID:	NA		
Matrix:	Soil	Sampled:	NA	Received:	NA
Authorized:	NA	Prepared:	23 AUG 88	Analyzed:	24 AUG 88

Parameter	Result	Units	Reporting Limit
Pentachlorophenol	ND	ug/kg	0.5
2,3,4,6-Tetrachlorophenol	ND	ug/kg	0.5

ND=Not Detected
NA=Not Applicable

Reported by: Matt Monagle   Approved by: Lisa Stafford

The cover letter is an integral part of this report.

Enseco

Penta & Tetrachlorophenol

ENSECO

Client Name: Emcon Associates
Client ID: C-11-4.5
Lab ID: 042897-0001-SA
Enseco ID: 63172
Matrix: SOIL
Sampled: 09 AUG 88
Received: 10 AUG 88
Authorized: 11 AUG 88
Prepared: 23 AUG 88
Analyzed: 24 AUG 88

Parameter	Result	Wet wt. Units	Reporting Limit	
Pentachlorophenol	22000	ug/kg	2500	A
2,3,4,6-Tetrachlorophenol	22000	ug/kg	2500	

Note A : All Reporting Limits raised due to high level of Analyte present in sample.

ND=Not Detected
NA=Not Applicable

Reported By: Pat Trinidad

Approved By: Leslie Getman

The cover letter is an integral part of this report.
Rev 230787

EMCON
SEP 16 1988

INTERNATIONAL
TECHNOLOGY
CORPORATION

Emcon Associates
1921 Ringwood Avenue
San Jose, CA 95131

September 14, 1988

ATTN: Annelise Bazar

Following are the results of analyses on the samples described below.

Project Number: 878-02.05, E88-1012

Lab Numbers: S8-09-020-01 thru S8-09-020-04
Number of Samples: 4
Date Received: soil
Sample Type: 9/2/88
Analysis Requested: Pentachlorophenol

The method of analysis of pentachlorophenol in soil involves extraction of the acidified samples by prolonged shaking with ethyl ether. The extract is partitioned into aqueous base, acidified, and partitioned into organic solvent. The extract is treated with diazomethane, and the methyl derivative is detected by gas chromatography using the electron capture detector.

Table of Results - Milligrams per Kilogram (Dry Soil Basis)

Lab Number	Sample Identification	Pentachlorophenol
S8-09-020-01	HM-1	None Detected
S8-09-020-02	HM-2	0.02
S8-09-020-03	HM-3	None Detected
S8-09-020-04	HM-4	0.16
Method Detection Limit		0.01

Donald Magarian
Donald Magarian

DM/ksr

Appendix B

HAZARDOUS WASTE MANIFESTS

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

KD RED C'D.

Department of Health Services
Toxic Substances Control Division
Sacramento, California

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

UNIFORM HAZARDOUS WASTE MANIFEST

GENERATOR

1. Generator's US EPA ID No. C A C 0 00 1 5 0 2 3 7 Manifest Document No. 0 0 0 0 1

2. Page 1 of

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA, INC. GRASS VALLEY LUMBER MILL
P. O. BOX 2027
EAST BENNET & BRUNSWICK RD.-GRASS VALLEY, CA 95945

4. Generator's Phone (916 - 273-9572

A. State Manifest Document Number 87403474

B. State Generator's ID H A HQ 3 6 0 2 9 0 6 1 04

5. Transporter 1 Company Name DILLARD TRUCKING

6. US EPA ID Number C A D 9 8 1 6 9 2 8 0 9

C. State Transporter's ID ~~003214~~

D. Transporter's Phone 415-634-0567

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239

10. US EPA ID Number C A T 0 0 0 6 4 6 1 1 7

G. State Facility's ID C A T 0 0 0 6 4 6 1 1 7

H. Facility's Phone (209) 386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188	0 0 1	D T	0 0 0 1 6	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name JACK H. Hill
Signature Jack H Hill
Month Day Year 5 19 89

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year 05 19 89

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

FACILITY

19. Discrepancy Indication Space
10. Incomplete
2. Incomplete 11a improper DOT

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name ALAN MANEY
Signature Alan Maney
Month Day Year 1 5 1 8 8 9

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-86) Previous editions are obsolete.

White: TSDF SENDS THIS COPY TO DOHS WITHIN 30 DAYS
To: P.O. Box 3000, Sacramento, CA 95812

INSTRUCTIONS ON THE BACK

10373-11

Rcd RB6

Profit center: 680 **RECEIPT TICKET** Number:

DATE IN: 5/9/89 TIME IN: 1^{35}
SCHEDULED DATE: SCHEDULED TIME:

TRANSPORTER NAME: DiLLard

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		8740 3474	J06286	Bohemia	611

5-09-89

```
              69040 16   5104PM  A

              32560 16   5149PM

              36480 16

       LOG NO.  0       TRUCK ID    0

INBOUND    47   47           69040 16
```

Quantity 16 Yd Bin#
Driver's Name R. Gaurle
Load # 1 See Manifest 8740 3474

Site Driver Date
Start Finish

Releasing Signature
At Unit Time am pm
Washout Meter: Finish
Start
Gallons used

7.0

Soil
2/90
2^{10}

TCLP Required? yes no EPA Code
___waste ___water ___flyash ___poly-S

Analyst ARM
Treat/Code 3c Unit B19

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

Department of Health Services
Toxic Substances Control Division
Sacramento, California

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

UNIFORM HAZARDOUS WASTE MANIFEST

GENERATOR

1. Generator's US EPA ID No. CAC000150237 Manifest Document No. 00002
2. Page 1 of
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P. O. BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945

4. Generator's Phone (916) 273-9572

A. State Manifest Document Number 87403475

B. State Generator's ID HAHQ-36029061

5. Transporter 1 Company Name DILLARD TRUCKING
6. US EPA ID Number CAD981692809

C. State Transporter's ID ~~003214~~ 907006 KWM

D. Transporter's Phone (415) 634-0567

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239

10. US EPA ID Number 7 CAT000646117

G. State Facility's ID CAT000646117

H. Facility's Phone 209-386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188	001	DT	00017	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name KARL W. MUNDT
Signature Karl W Mundt
Month Day Year 050989

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name JEFF WHEELER
Signature Jeff Wheeler
Month Day Year 050989

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

FACILITY

19. Discrepancy Indication Space
1. CAC000166597 11A improper DOT
2. Page 1 of ?

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name RICK A. SENIFF
Signature Rick A. Seniff
Month Day Year 050989

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-86) Previous editions are obsolete.

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To: P.O. Box 3000, Sacramento, CA 95812

INSTRUCTIONS ON THE BACK

R10379-24

Profit center: 680

RECEIPT TICKET

Number:

DATE IN: 5-9-89
SCHEDULED DATE:

TIME IN: 4:15
SCHEDULED TIME:

TRANSPORTER NAME: Dillard

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403475	J06286	Bohemia Grass	6.4

```
5-09-89
      68120 lb    9:07PM  A
      31040 lb    9:25PM
      37080 lb
   LOG NO.  0      TRUCK ID
INGOUND   35   35        68120 lb
```

Quantity 17y Bin#
Driver's Name Jeff Wheeler
Load # 10 See Manifest 87403774

Site Driver ______ Date ______
Start ______ Finish ______

Releasing Signature ______
At Unit ______ Time ______ am pm
Washout Meter: Finish ______
Start ______
Gallons used ______

8

Soil
2.27.90
7:20P.M.
RS.

[illegible] DT

TCLP Required? yes no EPA Code ______

___waste ___water ___flyash ___poly-S

Analyst

Treat/Code 03L Unit B-A

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

[redacted]
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC000150237
Manifest Document No. 00003
2. Page 1 of
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P.O. BOX 2027-EAST BENNET & BRUNSWICK RDS.
GRASS VALLEY, CA 95945
4. Generator's Phone (916 273-9572

A. State Manifest Document Number 87403476
B. State Generator's ID HAHO-36029061

5. Transporter 1 Company Name DILLARD TRUCKING
6. US EPA ID Number CAD981169280
C. State Transporter's ID ~~003316~~ 902007
D. Transporter's Phone (415) 634-0567

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239
10. US EPA ID Number
G. State Facility's ID CAT000646117
H. Facility's Phone (209) 386-9711

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188	001	DT	99917	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name KARL W. MUNDT
Signature Karl W Mundt
Month Day Year 05 09 89

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name Guy REED
Signature Guy Reed
Month Day Year 05 09 89

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

19. Discrepancy Indication Space
10. NO ENTRY
2 INCOMPLETE

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name M SOUND
Signature MICHAEL SOUND
Month Day Year 05 09 89

GENERATOR
TRANSPORTER
FACILITY

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-86) Previous editions are obsolete.

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To: P.O. Box 3000, Sacramento, CA 95812

INSTRUCTIONS ON THE BACK

R103797

Profit center: 680 RECEIPT TICKET Number:

DATE IN: 5-9-89
SCHEDULED DATE:

TIME IN: 350
SCHEDULED TIME:

TRANSPORTER NAME: Dillard

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403476	J06286	Bohemia Grass	611

5-09-89

67540 lb 7:12PM A

31200 lb 7:49PM

36260 lb

LOG NO. 0 TRUCK ID 0

INBOUND 47 47 67540 lb

Quantity 17y Bin#
Driver's Name Guy Reed
Load # 9 See Manifest 87403224

Site Driver ______ Date ______
Start 03 Finish ______

Releasing Signature ______
At Unit ______ Time ______ am pm
Washout Meter: Finish ______
Start ______
Gallons used ______

2D

10. [illegible]

soil
22790
1540

Analyst ms
Treat/Code 2C Unit B19

TCLP Required? yes no EPA Code ____
___waste ___water ___flyash ___poly-S

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
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21

Department of Health Services
Toxic Substances Control Division
Sacramento, California

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

UNIFORM HAZARDOUS WASTE MANIFEST

GENERATOR

1. Generator's US EPA ID No. CAC000150237 Manifest Document No. 00004

2. Page 1 of

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P. O. BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945

4. Generator's Phone (916) 273-9572

A. State Manifest Document Number 87403477

B. State Generator's ID H AH 01-3602 9061 1

5. Transporter 1 Company Name DILLARD TRUCKING

6. US EPA ID Number CAD981169280 9

C. State Transporter's ID 003215 Kum

D. Transporter's Phone (415) 634-0567

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239

10. US EPA ID Number

G. State Facility's ID CA T000646117

H. Facility's Phone (209) 386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188	001	DT	00016	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

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Printed/Typed Name KARL W. MUNDT
Signature Karl W Mundt
Month Day Year 1050989

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name MAURICE J. OBRIEN
Signature Maurice J OBrien
Month Day Year 1 10 989

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

FACILITY

19. Discrepancy Indication Space
10. NO ENTRY
2. NO ENTRY
11A improper DOT

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name M SOUND
Signature MICHAEL SOUND
Month Day Year 15 1989

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-86) Previous editions are obsolete.

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To: P.O. Box 3000, Sacramento, CA 95812

INSTRUCTIONS ON THE BACK

10378-03

Profit center: 680 RECEIPT TICKET 21 Number:

DATE IN: 5-9-89
SCHEDULED DATE:

TIME IN: 5:27
SCHEDULED TIME:

TRANSPORTER NAME: Dillard

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403477	J06586	Bohemia Grav	611

5-09-89

69580 lb 5:40PM A

29940 lb 7:42PM

39640 lb

LOG NO. 0 TRUCK ID 0

INBOUND 48 48 69580 lb

Quantity 16y Bin# -

Driver's Name Maurice

Load # 4 See Manifest 87403774

Site Driver ____ Date ____

Start ____ Finish ____

Releasing Signature ____

At Unit ____ Time ____ am pm

Washout Meter: Finish ____

Start ____

Gallons used ____

00

[illegible]

1. [illegible]

2. [illegible] Soil

2 27 90

2 55

TCLP Required? yes no EPA Code ____

___waste ___water ___flyash ___poly-S

Analyst ms

Treat/Code 3C Unit B 19

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

307L

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: CAC000150237 — Manifest Document No.: 00005
2. Page 1 of
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P.O. BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945

4. Generator's Phone (916) 273-9572

A. State Manifest Document Number: 87403478
B. State Generator's ID: HAHQ-36029061

5. Transporter 1 Company Name: DILLARD TRUCKING
6. US EPA ID Number: CAD961692809
C. State Transporter's ID: 0032[illegible] Kun
D. Transporter's Phone: (415) 634-0567

7. Transporter 2 Company Name:
8. US EPA ID Number:
E. State Transporter's ID:
F. Transporter's Phone:

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239

10. US EPA ID Number: CAT000646117
G. State Facility's ID: CAT000646117
H. Facility's Phone: (209) 386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188	001	DT	00016	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

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Printed/Typed Name: KARL W MUNDT
Signature: Karl W Mundt
Month Day Year: 05 09 89

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: David W Ramsey
Signature: David W Ramsey
Month Day Year: 05 09 89

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Month Day Year:

19. Discrepancy Indication Space
10. Incomplete
2. NO ENTRY 11A improper DOT

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: M SOUND
Signature: MICHAEL SOUND
Month Day Year: 15 18 89

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

GENERATOR
TRANSPORTER
FACILITY

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-86) Previous editions are obsolete.

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To: P.O. Box 3000, Sacramento, CA 95812

INSTRUCTIONS ON THE BACK

8/05
105

3.07 L Ramsey Express

Profit center: 680 **RECEIPT TICKET** Number:

DATE IN: 5-9-89
SCHEDULED DATE:

TIME IN: 2:25
SCHEDULED TIME:

TRANSPORTER NAME: Dillard

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403478	J06586	Bohemia Grass	611

~~5-10-85~~

```
64600 lb   5:42PM  A

28740 lb   6:47PM

35860 lb

LOG NO.  0     TRUCK ID  0

INBOUND   50   50          64600 lb
```

Quantity 1 ly Bin#_____
Driver's Name David Ramsey
Load # 3 See Manifest 87403774

Site Driver_____ Date_____
Start_____ Finish_____

Releasing Signature_____
At Unit_____ Time_____ am pm
Washout Meter: Finish_____
Start_____
Gallons used_____

8

1. [illegible]
2. [illegible] SOIL 11/90
2 27 90
3 05

Analyst ms
Treat/Code 3 C Unit B19

TCLP Required? yes no EPA Code____
[✓ waste] ___water ___flyash ___poly-S

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

#13

Department of Health Services
Toxic Substances Control Division
Sacramento, California

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

UNIFORM HAZARDOUS WASTE MANIFEST

GENERATOR

1. Generator's US EPA ID No. CAC001502370 **Manifest Document No.** 00006

2. Page 1 of

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P.O. BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945

4. Generator's Phone (916) 273-9572

A. State Manifest Document Number 87403479

B. State Generator's ID HAHQ-36029061

5. Transporter 1 Company Name DILLARD TRUCKING

6. US EPA ID Number CAD981692809

C. State Transporter's ID 003208

D. Transporter's Phone (415)634-0567

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239

10. US EPA ID Number CAT~~XXXXXX~~ 006461117

G. State Facility's ID CAT000646117

H. Facility's Phone (209) 386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188	001	DT	00016	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: KARL W. MUNDT
Signature: Karl W Mundt
Month Day Year: 1050989

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Jr Rogers
Signature: Jr Rogers
Month Day Year: 1050989

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Month Day Year:

FACILITY

19. Discrepancy Indication Space
10. incomplete 11/14 improper DOT
2. 1 of 1

20. Facility [illegible] or [illegible]rator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed [illegible]: M S[illegible]UND
Signature: Michael Sound
Month Day Year: 1050989

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

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To: P.O. Box 3000, Sacramento, CA 95812

INSTRUCTIONS ON THE BACK

R-10378-04

#113

Profit center: 680 **RECEIPT TICKET** Number:

DATE IN: 5-9-89 TIME IN: 2:25
SCHEDULED DATE: SCHEDULED TIME:

TRANSPORTER NAME: Dillard

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403479	J06286	Bohemia Glass	611

5-09-89
67580 lb 5:44PM A
31500 lb 6:46PM
36080 lb

LOG NO. 0 TRUCK ID 0

INBOUND 53 53 67580 lb

Quantity 16y Bin#
Driver's Name W Rogers
Load # 2 See Manifest 87403774

Site Driver Date
Start Finish

Releasing Signature
At Unit Time am pm
Washout Meter: Finish
Start
Gallons used

00

16 [illegible]
2.1 [illegible] SOIL
2 27 90
3 00

[illegible]

TCLP Required? yes no EPA Code
___waste ___water ___flyash ___poly-S

Analyst AS
Treat/Code 35 Unit B19

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. C A C 0 0 0 1 5 0 2 3 7 Manifest Document No. 0 0 0 0 7
2. Page 1 of
Information in the shaded areas is not required by Federal law.

A. State Manifest Document Number 87403481

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P.O.BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945
4. Generator's Phone (916) 273-9572

B. State Generator's ID HAHDL 361029061 KWM

5. Transporter 1 Company Name DILLARD TRUCKING
6. US EPA ID Number C A D 9 8 1 6 9 2 8 0 9

C. State Transporter's ID ~~003214~~ 901101
D. Transporter's Phone (415) 634-0567

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239
10. US EPA ID Number C A T 0 0 6 4 6 1 1 1 7

G. State Facility's ID C A T 0 0 0 6 4 6 1 1 7
H. Facility's Phone (209) 386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188		D T	0 0 0 16	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name KARL W. MUNDT
Signature Karl W Mundt
Month Day Year 05 09 89

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name Allen DUTRA
Signature Allen Dutra
Month Day Year 05 09 89

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

FACILITY

19. Discrepancy Indication Space
1. Improper -CAC000166597 11A improper DOT
2. Page 1 of ?

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name RICK A. SENIFF
Signature Rick A. Seniff
Month Day Year 05 09 89

GENERATOR

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

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INSTRUCTIONS ON THE BACK

R10379-25

Profit center: 680 **RECEIPT TICKET** Number:

DATE IN: 5-7-89
SCHEDULED DATE:

TIME IN: 7:45
SCHEDULED TIME:

TRANSPORTER NAME: Dillard

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403481	JC6286	Bohemia Grass	611

5-09-89

67100 lb 7:47PM A

31240 lb 8:11PM

35860 lb

LOG NO. 0 TRUCK ID 0

INBOUND 36 36 67100 lb

Quantity 16y Bin#
Driver's Name Allen Citra
Load # 11 See Manifest

Site Driver Date
Start Finish

Releasing Signature
At Unit Time am pm
Washout Meter: Finish
Start
Gallons used

7.10

reddish/firm solids, w/ gravel
2.27.90
6:20P.M.
RS.

TCLP Required? yes no EPA Code
___waste ___water ___flyash ___poly-S

Analyst
Treat/Code OBL Unit BA

State of California—Health and Welfare Agency
Form Appr~~oved OMB~~ No. 2050—0039 (Expires 9-30-88)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

#38

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC000150237 Manifest Document No. 00008

2. Page 1 of

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P.O. BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945

4. Generator's Phone (916 273-9572

A. State Manifest Document Number 87403482

B. State Generator's ID HAHQ-36029061

5. Transporter 1 Company Name DILLARD TRUCKING

6. US EPA ID Number CAD981169280 9

C. State Transporter's ID ~~003214~~ 003214

D. Transporter's Phone (415) 634-0567

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239

10. US EPA ID Number CAT000646117

G. State Facility's ID CAT000646117

H. Facility's Phone (209) 386-9711

	11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188	001	DT	~~XXXXX~~ 00017	YD	State 611 EPA/Other
b.						State EPA/Other
c.						State EPA/Other
d.						State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name KARL W. MUNDT
Signature Karl W Mundt
Month Day Year 050989

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name Ron Maxedon
Signature Ron Maxedon
Month Day Year 050989

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

19. Discrepancy Indication Space
2. 1 of 1
10. incomplete
11a improper DOT

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name Steve [illegible]
Signature
Month Day Year 050989

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

GENERATOR
TRANSPORTER
FACILITY

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

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INSTRUCTIONS ON THE BACK

R 10379-09

#58

Profit center: 680

RECEIPT TICKET

Number:

DATE IN: 5-9-89
SCHEDULED DATE:

TIME IN: 3:10
SCHEDULED TIME:

TRANSPORTER NAME: Dillard

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403482	J06686	Bohemia Gross	611
	~~5-09-89~~				

```
73520 lb   6:42PM  A
33820 lb   7:21PM
39700 lb
LOG NO.  0     TRUCK ID  0
INBOUND  40  40     73520 lb
```

Quantity 17y Bin#

Driver's Name Ron Maxedon

Load # 6 See Manifest 87403774

Site Driver Date

Start Finish

Releasing Signature

At Unit Time am pm

Washout Meter: Finish

Start

Gallons used

8

[illegible]

Soil

2/90

400

SP

TCLP Required? yes no EPA Code

___waste ___water ___flyash ___poly-S

Analyst SP

Treat/Code 03C Unit B-19

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC000150237
Manifest Document No. 00009
2. Page 1 of
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P.O. BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945
4. Generator's Phone (916) 273-9572

A. State Manifest Document Number 87403483
B. State Generator's ID HA HQ-36029061

5. Transporter 1 Company Name ~~DILLARD TRUCKING~~
6. US EPA ID Number ~~GAD981692809~~
C. State Transporter's ID ~~003214~~
D. Transporter's Phone (415) 634-0567

7. Transporter 2 Company Name Acklam Trucking
8. US EPA ID Number GA0981420813
E. State Transporter's ID 912691
F. Transporter's Phone 415-935-0766

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239
10. US EPA ID Number CAT000646117
G. State Facility's ID CAT000646117
H. Facility's Phone

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R. Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188	001	DT	00017	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name KARL W. MUNDT
Signature Karl W Mundt
Month Day Year 050989

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name Todd Acklam
Signature Todd Acklam
Month Day Year 050989

19. Discrepancy Indication Space
10. incomplete
2 incomplete 11A improper DOT

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name Steve Pickel
Signature
Month Day Year 050989

GENERATOR
TRANSPORTER
FACILITY

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

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INSTRUCTIONS ON THE BACK

R10379-22

Profit center: 680 RECEIPT TICKET Number:

DATE IN: 5-9-89
SCHEDULED DATE:

TIME IN: 3:45
SCHEDULED TIME:

TRANSPORTER NAME: ACKIAM

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403483	J06286	Bohemia Glass	611

5-09-89

78920 lb 6:50PM A

32660 lb 7:25PM

46260 lb

LOG NO. 5 TRUCK ID 0

INBOUND 45 45 78920 lb

Quantity 17 Bin#

Driver's Name Todd Ackam

Load # 7 See Manifest 87403774

Site Driver ______ Date ______

Start ______ Finish ______

Releasing Signature ______

At Unit ______ Time ______ am pm

Washout Meter: Finish ______

Start ______

Gallons used ______

8

[illegible]

Soil

2 2790

530

TCLP Required? yes no EPA Code ____

___waste ___water ___flyash ___poly-S

Analyst MS

Treat/Code 3C Unit B19

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

Department of Health Services
Toxic Substances Control Division
Sacramento, California

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

UNIFORM HAZARDOUS WASTE MANIFEST

GENERATOR

1. Generator's US EPA ID No. CAC000150237
Manifest Document No. 00110
2. Page 1 of
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P.O. BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945

4. Generator's Phone (916) 273-9572

A. State Manifest Document Number 87403484

B. State Generator's ID HAHQ-36029061

5. Transporter 1 Company Name DILLARD TRUCKING
6. US EPA ID Number CAD981692809

C. State Transporter's ID [illegible]

D. Transporter's Phone (415) 634-0567

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239

10. US EPA ID Number CAT000646117

G. State Facility's ID 0006 4 6 1 1 7
CAT ~~xxxxxxxxxxx~~

H. Facility's Phone (209) 386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number).	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R. Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188	002	DT	00017	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

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Printed/Typed Name KARL W. MUNDT
Signature Karl W Mundt
Month Day Year 050989

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name BRIAN LEE VOLZ
Signature Brian Lee Volz
Month Day Year 050989

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

FACILITY

19. Discrepancy Indication Space
1. CAC000166597 11a improper DOT
2. Page 1 of ?

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name RICK A. SENIFF
Signature Rick A. Seniff
Month Day Year 050989

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-86) Previous editions are obsolete.

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INSTRUCTIONS ON THE BACK

R 10379-30

KBS

Profit center: 680

RECEIPT TICKET

Number:

DATE IN: 5-9-89
SCHEDULED DATE:

TIME IN: 4:30
SCHEDULED TIME:

TRANSPORTER NAME: Allard

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403484	J06286	Bohemia Grass Fill	

5-09-89

73160 lb 8:09PM A

7740 lb 8:48PM B

65420 lb

LOG NO. 0 TRUCK ID 0

INBOUND 42 42 73160 lb

Quantity 12y Bin#
Driver's Name Brian Lee Volz
Load # M See Manifest 87403481

Site Driver Date
Start Finish

Releasing Signature
At Unit Time am pm
Washout Meter: Finish
Start
Gallons used

Soil
2-27-90
6:45 P.M.

TCLP Required? yes no EPA Code
___waste ___water ___flyash ___poly-S

Analyst R.S.
Treat/Code 036 Unit B19

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
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RB-1

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC000150237 Manifest Document No. 00011
2. Page 1 of
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P.O.BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945
4. Generator's Phone (916) 273-9572

A. State Manifest Document Number 87403485
B. State Generator's ID HAHQ1-3602906 1

5. Transporter 1 Company Name DILLARD TRUCKING
6. US EPA ID Number CAD981692809
C. State Transporter's ID ~~003214~~ 900890-91
D. Transporter's Phone (415) 634-0567

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239
10. US EPA ID Number cat006416117
G. State Facility's ID CAT000646117
H. Facility's Phone (209) 386-9711

11. US DOT Description (Including Proper Shipping Name, ~~Hazard Class, and~~ ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188	001	DT	00016	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name KARL W. MUNDT Signature Karl W Mundt Month Day Year 050989

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name MIKE BAUERLE Signature Mike Bauerle Month Day Year 050989

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name Signature Month Day Year

19. Discrepancy Indication Space
1. CAC000166597 10. improper code#
2. Page 1 of ?

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name RICK A. SENIFF Signature Rick A. Seniff Month Day Year 050989

GENERATOR
TRANSPORTER
FACILITY
IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-86) Previous editions are obsolete.

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INSTRUCTIONS ON THE BACK

R 10379-28

RB7

Profit center: 680

RECEIPT TICKET

Number:

DATE IN: 5-9-89
SCHEDULED DATE:

TIME IN: 4:30
SCHEDULED TIME:

TRANSPORTER NAME: Dillard

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		89403485	J06286	Bohemia Grass	611

5-09-89

71840 lb 8:14PM A

31000 lb 8:58PM

40840 lb

LOG NO. 0 TRUCK ID 0

INBOUND 45 45 71840 lb

Quantity 16y Bin#

Driver's Name Mike Bauerle

Load # 16 See Manifest 89403481

Site Driver Date

Start Finish

Releasing Signature

At Unit Time am pm

Washout Meter: Finish

Start

Gallons used

8

K. [illegible] #

Soil
2.27.90
6:47P.M.

TCLP Required? yes no EPA Code

___waste ___water ___flyash ___poly-S

Analyst RS.

Treat/Code 02 Unit B-19

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

Department of Health Services
Toxic Substances Control Division
Sacramento, California

~~UNI~~FORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC000150237
Manifest Document No. 00012
2. Page 1 of
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P.O. BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945

4. Generator's Phone (916) 273-9572

A. State Manifest Document Number 87403486

B. State Generator's ID HAHQ-36029061

5. Transporter 1 Company Name DILLARD TRUCKING
6. US EPA ID Number CAD981692809

C. State Transporter's ID ~~003214~~ 900888-89

D. Transporter's Phone (415) 634-0567

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239

10. US EPA ID Number

G. State Facility's ID CAT000646117

H. Facility's Phone (209) 386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188	002	DT	00016	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name KARL W MUNOT
Signature Karl W Mundt
Month Day Year 05 09 89

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name JEFF CASTLIO
Signature Jeff
Month Day Year 05 09 89

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

19. Discrepancy Indication Space
1. CAC000166597 10. NO ENTRY
2. Page 1 of 2 11A improper DOT

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name RICK A. SENIFF
Signature Rick A. Seniff
Month Day Year 05 09 89

GENERATOR
TRANSPORTER
FACILITY

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-86) Previous editions are obsolete.

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INSTRUCTIONS ON THE BACK

R 10379-29

KD4

Profit center: 680　　　　RECEIPT TICKET　　　　Number:

DATE IN: 5-9-89　　　　TIME IN: 4:30
SCHEDULED DATE:　　　　SCHEDULED TIME:

TRANSPORTER NAME: Cellard

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403486	J06286	Bohemia Grass	611

```
     5-09-89

          74060 lb   8:13PM  A

          30600 lb   8:52PM

          43460 lb

    LOG NO.  0       TRUCK ID   0

INBOUND    43  43         74060 lb
```

Quantity 16y　Bin#
Driver's Name Jeff Caslio
Load # 13　See Manifest 87403481

Site Driver　　Date
Start　　Finish

Releasing Signature
At Unit　　Time　　am　pm
Washout Meter: Finish
Start
Gallons used

8

Soil
2.27.90
6:46 P.M.

[illegible]

TCLP Required?　yes　no　EPA Code

___waste　___water　___flyash　___poly-S

Analyst　KS
Treat/Code　03C　Unit　B-A

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
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Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC000150237 Manifest Document No. 00013
2. Page 1 of
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P.O. BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945
4. Generator's Phone (916) 273-9572

A. State Manifest Document Number 87403487
B. State Generator's ID HAHQ-36029061

5. Transporter 1 Company Name DILLARD TRUCKING
6. US EPA ID Number CAD981692809
C. State Transporter's ID ~~003214~~ 901421
D. Transporter's Phone (415)634-0567

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC
KETTLEMAN HILLS TREATMENT FACILITY
35251 old skyline road
KETTLEMAN CITY, CA 93239
10. US EPA ID Number
G. State Facility's ID CAT000646117
H. Facility's Phone (209) 386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188	001	DT	99917	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER ~~EX~~ J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name KARL W MUNDT
Signature Karl W Mundt
Month Day Year 05 09 89

GENERATOR

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name MARK BANKS
Signature Mark Bank
Month Day Year 05 [illegible] 89

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

TRANSPORTER

19. Discrepancy Indication Space
10. NO ENTRY
2. NO ENTRY 11a improper DOT

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name M SOUND
Signature MICHAEL SOUND
Month Day Year 05 [illegible] 89

FACILITY

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

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To: P.O. Box 3000, Sacramento, CA 95812

INSTRUCTIONS ON THE BACK

R 10379-06

Profit center: 680 RECEIPT TICKET Number:

DATE IN: 5-9-89
SCHEDULED DATE:

TIME IN: 9:00
SCHEDULED TIME:

TRANSPORTER NAME: Dillard

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403487	Job286	Bohemia Glass	611

5-09-89

66900 lb 5:57PM A

30720 lb 6:32PM

36180 lb

LOG NO. 0 TRUCK ID 0

INGOUND 43 43 - 66900 lb

Quantity 12
Bin#
Driver's Name Mark Banks
Load # 5 See Manifest 87403774

Site Driver ______ Date ______
Start ______ Finish ______

Releasing Signature ______
At Unit ______ Time ______ am pm
Washout Meter: Finish ______
Start ______
Gallons used ______

0
0

[illegible]
2. [illegible]

TCLP Required? yes no EPA Code ____
___waste ___water ___flyash ___poly-S

SOIL
2 29 90
3 50

Analyst MS
Treat/Code 3C
Unit B19

State of California—Health and Welfare Agency
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Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC001502837 Manifest Document No. 00014
2. Page 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-grass valley lumber mill
P. O. BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945
4. Generator's Phone (209) 273-9572

A. State Manifest Document Number 87403488
B. State Generator's ID HAHQ-360 29061

5. Transporter 1 Company Name DILLARD TRUCKING
6. US EPA ID Number CAD981692809
C. State Transporter's ID ~~003214~~ 00319 003193
D. Transporter's Phone (415) 634-0567

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239
10. US EPA ID Number CAT000646117
G. State Facility's ID CAT000646117
H. Facility's Phone (209) 386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE ~~XXXX~~ SOLID N.O.S. ORME NA 9188	0012	DT	00017	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name KARL W. MUNDT
Signature Karl W Mundt
Month Day Year 05 09 89

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name Bill Den Beste
Signature Bill Den Beste
Month Day Year 5 9 89

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

19. Discrepancy Indication Space
2.10F!
11A IMPROPER DOT

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name M SOURD
Signature MICHAEL SOURD
Month Day Year 05 09 89

GENERATOR
TRANSPORTER
FACILITY

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

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EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

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To: P.O. Box 3000, Sacramento, CA 95812

INSTRUCTIONS ON THE BACK

R10379-1F

Flack

Profit center: 680

RECEIPT TICKET

Number:

DATE IN: 5-9-89
SCHEDULED DATE:

TIME IN: 350
SCHEDULED TIME:

TRANSPORTER NAME: Dillard

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403458	J06686	Bohemia Glass	611

5-09-89

73400 lb 7:08PM A

31360 lb 7:46PM

42040 lb

LOG NO. 0 TRUCK ID 0

INBOUND 36 36 73400 lb

Quantity 17y Bin#
Driver's Name Bill DePeste
Load # 8 See Manifest 87403774

Site Driver ______ Date ______
Start ______ Finish ______

Releasing Signature ______
At Unit ______ Time ______ am pm
Washout Meter: Finish ______
Start ______
Gallons used ______

00

2.1.-1
11.- 11... SOIL
2 27 90
530

Analyst ms
Treat/Code 3C Unit B19

TCLP Required? yes no EPA Code ______
___waste ___water ___flyash ___poly-S

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
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Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC000150237 Manifest Document No. 69015
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P.O. BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945
4. Generator's Phone (916 273-9572

A. State Manifest Document Number 87403489
B. State Generator's ID HAHQ-36029061

5. Transporter 1 Company Name DILLARD TRUCKING
6. US EPA ID Number CAD981692809
C. State Transporter's ID 003214
D. Transporter's Phone (415) 634-0567

7. Transporter 2 Company Name JAMES R. CROOKS
8. US EPA ID Number CAD981404105
E. State Transporter's ID 006059 006060
F. Transporter's Phone 805 - 4817806

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239
10. US EPA ID Number CAT000646117
G. State Facility's ID CAT000646117
H. Facility's Phone (209) 386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188	002	DT	00017	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name KARL W. MUNDT
Signature Karl W Mundt
Month Day Year 10 5 0 9 8 9

GENERATOR

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name JAMES R. CROOKS
Signature James R. Crooks
Month Day Year 10 5 0 9 8 9

TRANSPORTER

19. Discrepancy Indication Space
1. CAC000166597 11a improper DOT
5/ no signature

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name RICK A. SENIFF
Signature Rick A. Seniff
Month Day Year 10 5 0 9 8 9

FACILITY

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-86) Previous editions are obsolete.

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INSTRUCTIONS ON THE BACK

R10379-32

Profit center: 680 RECEIPT TICKET Number:

DATE IN: 5-9-89
SCHEDULED DATE:

TIME IN: 4:30
SCHEDULED TIME:

TRANSPORTER NAME: Crooks

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403469	J06286	Bohemia Grass	6//

5-09-89

66740 lb 8:15PM A

29200 lb 8:59PM

37540 lb

LOG NO. 0 TRUCK ID 0

INBOUND 47 47 66740 lb

Quantity 17 Bin#

Driver's Name James Crooks

Load # 13 See Manifest 87403481

Site Driver ___ Date ___

Start ___ Finish ___

Releasing Signature ___

At Unit ___ Time ___ am pm

Washout Meter: Finish ___

Start ___

Gallons used ___

8

Soil
2.27.90
6:42P.M.

17

Analyst R.S.

Treat/Code 03C Unit B-19

TCLP Required? yes no EPA Code___

___waste ___water ___flyash ___poly-S

State of California—Health and Welfare Agency
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164

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. QAC000150237 Manifest Document No. 00016

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P.O. BX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945

4. Generator's Phone (916) 273-9572

A. State Manifest Document Number 87403490

B. State Generator's ID HAHO-360290061

5. Transporter 1 Company Name DILLARD TRUCKING

6. US EPA ID Number CAD981692809

C. State Transporter's ID 005214

D. Transporter's Phone (415) 634-0567

7. Transporter 2 Company Name James R. Crooks

8. US EPA ID Number CAD981409015

E. State Transporter's ID 006061-00662

F. Transporter's Phone 805-481-7806

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239

10. US EPA ID Number CAT000646117

G. State Facility's ID CAT000646117

H. Facility's Phone (209) 386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188	02	DT	00017	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name KARL W. MUNDT
Signature Karl W. Mundt
Month Day Year 050989

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name MIChael C. Zoost
Signature Michael C. Zoost
Month Day Year 050989

19. Discrepancy Indication Space
1. CAC000166597 10. incomplete
11A improper DOT 17. No Signature

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name RICK A. SENIFF
Signature Rick A. Seniff
Month Day Year 050989

GENERATOR

TRANSPORTER

FACILITY

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

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To: P.O. Box 3000, Sacramento, CA 95812

INSTRUCTIONS ON THE BACK

R10379-33

...164

Profit center: 680 RECEIPT TICKET Number:

DATE IN: 5-9-89
SCHEDULED DATE:

TIME IN: 4:30
SCHEDULED TIME:

TRANSPORTER NAME: Crooks

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403490	J06286	Bohemia Grass	611

```
       5-09-89

           67000 lb    8:12PM  A

           29400 lb    8:57PM

           37600 lb

     LOG NO.   0      TRUCK ID   0

INBOUND    36   36         67000 lb
```

Quantity 12 Bin#

Driver's Name Michael Zoost

Load # 12 See Manifest 87403451

Site Driver ____ Date ____

Start ____ Finish ____

Releasing Signature ____

At Unit ____ Time ____ am pm

Washout Meter: Finish ____

Start ____

Gallons used ____

8

Soil
2.27.90
6:40P.M.
R.

10. TCLP Required? yes no EPA Code____

17. __waste __water __flyash __poly-S

Analyst R.

Treat/Code 03C Unit B-A

Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

Toxic Substances Control Division
Sacramento, California

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

UNIFORM HAZARDOUS WASTE MANIFEST

GENERATOR

1. Generator's US EPA ID No. CAC000150237
Manifest Document No. 00117
2. Page 1 of
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P.O. ~~BOX~~ 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945
4. Generator's Phone (916) 273-9572

A. State Manifest Document Number 87403491
B. State Generator's ID HA HO-36029061

5. Transporter 1 Company Name DILLARD TRUCKING
6. US EPA ID Number CAD981692809
C. State Transporter's ID 003214
D. Transporter's Phone (415) 634-0567

7. Transporter 2 Company Name Jim Chism Trucking
8. US EPA ID Number CAD980584810
E. State Transporter's ID 005137
F. Transporter's Phone (209) [illegible]404854

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239
10. US EPA ID Number CAT000646117
G. State Facility's ID CAT000646117
H. Facility's Phone (209) 386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188		DT	000	yd	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name KARL W. MUNDT
Signature Karl W Mundt
Month Day Year 05 09 89

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name CARLOS BARBOZA
Signature Carlos Barboza
Month Day Year 05 [illegible] 89

FACILITY

19. Discrepancy Indication Space
1. CAC000166597 13. Improper [illegible] POT
2. Page 1 of ? 12 incomplete

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name RICK A. SENIFF
Signature Rick A. Seniff
Month Day Year 05 10 89

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-86) Previous editions are obsolete.

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To: P.O. Box 3000, Sacramento, CA 95812

INSTRUCTIONS ON THE BACK

R10381-05

07

Profit center: 680 RECEIPT TICKET Number:

DATE IN: 5-9-89.
SCHEDULED DATE:

TIME IN: 7:45
SCHEDULED TIME:

TRANSPORTER NAME: Chism

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403491	J06286	Bohemia Glass	61

5-09-89

71920 16 10:05PM A

32460 16 2:48PM

39460 16

LOG NO. 0 TRUCK ID 0

INBOUND 43 43 71920 16

Quantity 18 Bin#
Driver's Name Carlos B
Load #21 See Manifest

Site Driver Date
Start Finish

Releasing Signature
At Unit Time am pm
Washout Meter: Finish
Start
Gallons used

8

7.00

Soil
2.27.90
8:40AM.
RS

TCLP Required? yes no EPA Code
___waste ___water ___flyash ___poly-S

Analyst
Treat/Code 036 Unit B-A

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC000150287 Manifest Document No. 00118
2. Page 1 of
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
~~P.O.~~ BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945
4. Generator's Phone (916 273-9572

A. State Manifest Document Number 87403492
B. State Generator's ID HAH01-360290611

5. Transporter 1 Company Name ~~DILLARD TRUCKING~~
6. US EPA ID Number ~~CAD981692809~~
C. State Transporter's ID ~~003214~~
D. Transporter's Phone ~~(415) 634-0567~~

7. Transporter 2 Company Name Sem Chem Trucks
8. US EPA ID Number CAD980584817
E. State Transporter's ID 005125
F. Transporter's Phone 209 8674884

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239
10. US EPA ID Number CAT000646117
G. State Facility's ID CAT000646117
H. Facility's Phone (209-386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188	1	DT	0001	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name KARL W. MUNDT
Signature Karl W Mundt
Month Day Year 050989

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name Gene Wells
Signature Gene Wells
Month Day Year 050989

19. Discrepancy Indication Space
1. CAC000166597 10. incomplete 11. improper DOT
2. Page 1 of ? 12. incomplete 13. incomplete

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name RICKA SENIFF
Signature Rich A. Seniff
Month Day Year 050989

GENERATOR
TRANSPORTER
FACILITY

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

White: TSDF SENDS THIS COPY TO DOHS WITHIN 30 DAYS
To: P.O. Box 3000, Sacramento, CA 95812

INSTRUCTIONS ON THE BACK

R1038-08

C6 yellow

Profit center: 680 **RECEIPT TICKET** Number:

DATE IN: 5-9-89
SCHEDULED DATE:

TIME IN: 7:45
SCHEDULED TIME:

TRANSPORTER NAME: Chism

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87405492	J06286	Bohemia Grass	611

```
5-09-89

      70680 lb  10:08PM  A

      30280 lb  10:57PM

      40400 lb

LOG NO.  0       TRUCK ID   0

INBOUND   48   48        70680 lb
```

Quantity 16y Bin#

Driver's Name Gene Wells

Load # 17 See Manifest 87403451

Site Driver ______ Date ______

Start ______ Finish ______

Releasing Signature ______

At Unit ______ Time ______ am pm

Washout Meter: Finish ______

Start ______

Gallons used ______

8

Soil
2.27.90
8:42 PM.
RS.

K ...

12 ...

TCLP Required? yes no EPA Code ____

___waste ___water ___flyash ___poly-S

Analyst RS.

Treat/Code 03C Unit B-A

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC000150237
Manifest Document No. 00019
2. Page 1 of
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P. O. BOX 2027-EAST BENNET & BRUNSWICK ROQDS
GRASS VALLEY, CA 95945

4. Generator's Phone (916 273-9572

A. State Manifest Document Number 87403493
B. State Generator's ID HAH01-36029061

5. Transporter 1 Company Name DILLARD TRUCKING
6. US EPA ID Number CAD981692809
C. State Transporter's ID 003214
D. Transporter's Phone (415) 634-0567

7. Transporter 2 Company Name
8. US EPA ID Number CAd9800684817
E. State Transporter's ID 5138
F. Transporter's Phone 209- 867 4854

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239

10. US EPA ID Number CAT000646117
G. State Facility's ID CA T000646117
H. Facility's Phone (209) 386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188		DT	000	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name KARL W. MUNDT
Signature Karl W Mundt
Month Day Year 10 5 0989

GENERATOR

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name Tony Coelho
Signature Tony Coelho
Month Day Year 05 10 89

TRANSPORTER

19. Discrepancy Indication Space
1. CAC000166597 13. Improper no entry 11A improper DOT
2, Page 1 of ? 12. incomplete 17. no signature 10. incomplete

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name RICK A. SENIFF
Signature Rick A. Seniff
Month Day Year 10 5 0 1989

FACILITY

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-86) Previous editions are obsolete.

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To: P.O. Box 3000, Sacramento, CA 95812

INSTRUCTIONS ON THE BACK

R 10381-04

[illegible] yellow

01

Profit center: 680

RECEIPT TICKET

Number:

DATE IN: 5-9-89

SCHEDULED DATE:

TIME IN: 7:45

SCHEDULED TIME:

TRANSPORTER NAME: Chism

TRUCK NUMBER:

TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403493	Job286	Bohemia Grass	611

5-09-89

57980 lb 10:04PM A

28780 lb 10:23PM

29200 lb

LOG NO. 0 TRUCK ID 0

INBOUND 42 42 57980 lb

Quantity 18y Bin#

Driver's Name Tony Coelho

Load # 20 See Manifest 87403481

Site Driver ______ Date ______

Start ______ Finish ______

Releasing Signature ______

At Unit ______ Time ______ am pm

Washout Meter: Finish ______

Start ______

Gallons used ______

Soil
2.27.90
8:31AM.

TCLP Required? yes no EPA Code ____

___waste ___water ___flyash ___poly-S

Analyst B.

Treat/Code 03C Unit B-A

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

C5

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC000150237 Manifest Document No. 00020
2. Page 1 of
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P.O. BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945
4. Generator's Phone (916) 273-9572

A. State Manifest Document Number 87403494
B. State Generator's ID HAHQ-36029061

5. Transporter 1 Company Name DILLARD TRUCKING
6. US EPA ID Number CAD981692809
C. State Transporter's ID ~~00321~~ 05139
D. Transporter's Phone (415) 634-0567

7. Transporter 2 Company Name Jim Chism Trucking
8. US EPA ID Number CAD980584817
E. State Transporter's ID 5139
F. Transporter's Phone 209 867 4854

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239
10. US EPA ID Number CAT000646117
G. State Facility's ID CAT000646117
H. Facility's Phone (209) 386-9711

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188	001	DT	00016	yd	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name KARL W MUNDT
Signature Karl W Mundt
Month Day Year 10 5 0 9 8 9

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name Fred Christian
Signature Fred Christian
Month Day Year 10 6 0 9 8 9

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name Fred Christian
Signature Fred Christian
Month Day Year 10 5 0 9 8 9

FACILITY

19. Discrepancy Indication Space
1. CAC000166597 10. incomplete
2. Page 1 of ? 11a improper DOT

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name RICK A. SENIFF
Signature Rick A. Seniff
Month Day Year 10 5 0 9 8 9

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-86) Previous editions are obsolete.

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To: P.O. Box 3000, Sacramento, CA 95812

INSTRUCTIONS ON THE BACK

R10381-02

C5

Profit center: 680 RECEIPT TICKET Number:

DATE IN: 5-9-89
SCHEDULED DATE:

TIME IN: 7:00
SCHEDULED TIME:

TRANSPORTER NAME: Chism

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403494	J06286	Bohemia Grass	611

5-09-89

70620 lb 10:07PM A

30120 lb 10:30PM

40500 lb

LOG NO. 0 TRUCK ID 0

INBOUND 47 47 70620 lb

Quantity 16y Bin#

Driver's Name Fred Chastain

Load # 18 See Manifest 87403481

Site Driver ______ Date ______

Start ______ Finish ______

Releasing Signature ______

At Unit ______ Time ______ am pm

Washout Meter: Finish ______

Start ______

Gallons used ______

8

Soil
2.27.90
8:30PM.

[illegible]

TCLP Required? yes no EPA Code ____

___waste ___water ___flyash ___poly-S

Analyst R.S.

Treat/Code 036 Unit BA

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
Please print or type. (Form designed for use on elite (12-pitch typewriter).

C-21

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC000150237
Manifest Document No. 00021
2. Page 1 of
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P.O. BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945
4. Generator's Phone (916 273-9572

A. State Manifest Document Number 87403495
B. State Generator's ID HAHQ-3602906 1

5. Transporter 1 Company Name DILLARD TRUCKING
6. US EPA ID Number CAD981692809
C. State Transporter's ID 003214
D. Transporter's Phone (415) 634-0567

7. Transporter 2 Company Name Jim Chism Truck
8. US EPA ID Number CAD[illegible]
E. State Transporter's ID 005136
F. Transporter's Phone 209-8624854

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239
10. US EPA ID Number CAT000646117
G. State Facility's ID CAT000646117
H. Facility's Phone (209) 386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188		DT	000	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name KARL W. MUNDT
Signature Karl W Mundt
Month Day Year 05 09 89

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name ALVIN VIEIRA
Signature
Month Day Year 05 09 89

19. Discrepancy Indication Space
1. CAC000166597 13. Improper 11a improper DOT
2. Page 1 of 2 10. incomplete 12. no entry 13. incomplete

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name RICK A. SENIFF
Signature Rich A. Seniff
Month Day Year 05 08 89

GENERATOR
TRANSPORTER
FACILITY

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

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To: P.O. Box 3000, Sacramento, CA 95812

INSTRUCTIONS ON THE BACK

R 10381-05

Solid brown C21

Profit center: 680

RECEIPT TICKET

Number:

DATE IN: 5-9-89
SCHEDULED DATE:

TIME IN: 7:00
SCHEDULED TIME:

TRANSPORTER NAME: Chism

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403495	J06286	Bohemia Grass	611

5-09-89

62100 lb 10:06PM A

30580 lb 10:46PM

31520 lb

LOG NO. 0 TRUCK ID 0

INBOUND 45 45 62100 lb

Quantity 16y Bin#
Driver's Name Alvin
Load # 17 See Manifest 87403481

Site Driver ___ Date ___
Start ___ Finish ___

Releasing Signature ___
At Unit ___ Time ___ am pm
Washout Meter: Finish ___
Start ___
Gallons used ___

8

Soil
2-27-90
8:24
R.S.

TCLP Required yes no EPA Code ___
___waste ___water ___flyash ___poly-S

Analyst R.S.
Treat/Code 036 Unit B-19

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

#13

Department of Health Services
Toxic Substances Control Division
Sacramento, California

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAC000150287 Manifest Document No. 00012

2. Page 1 of

Information in the shaded areas is not required by Federal law.

A. State Manifest Document Number 87403496

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P.O. BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945

4. Generator's Phone (916) 273-9572

B. State Generator's ID HAH01-360290061

GENERATOR

5. Transporter 1 Company Name DILLARD TRUCKING
6. US EPA ID Number CAD981169280 09

C. State Transporter's ID 003208
D. Transporter's Phone (415) 634-0567

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239

10. US EPA ID Number CAT00646117

G. State Facility's ID CAT00 0646117
H. Facility's Phone (209) 386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188		DT	000/6	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name KARL W. MUNDT
Signature Karl W Mundt
Month Day Year 05 08 89

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name JR ROGERS
Signature J Rogers
Month Day Year 05 08 89

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

FACILITY

19. Discrepancy Indication Space
2. no entry
10. incomplete
12. incomplete
11A improper DOT

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name RICK A. SENIFF
Signature Rick A. Seniff
Month Day Year 05 08 89

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-86) Previous editions are obsolete.

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To: P.O. Box 3000, Sacramento, CA 95812

INSTRUCTIONS ON THE BACK

R10434-35

#13

Profit center: 680 RECEIPT TICKET Number:

DATE IN:5-10-89 TIME IN:6:00
SCHEDULED DATE: SCHEDULED TIME:

TRANSPORTER NAME: Dillard

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87463496	J06286	Bohemia Grass	611

5-10-89

76580 lb 9:00PM A

31600 lb 9:36PM

44980 lb

LOG NO. 0 TRUCK ID 0

INBOUND 47 47 / 76580 lb

Quantity 164 Bin#
Driver's Name JK Rogers
Load # 6 See Manifest ~~[illegible]~~

Site Driver Date
Start Finish

Releasing Signature
At Unit Time am pm
Washout Meter: Finish
Start 0
Gallons used 0

TCLP Required? yes no ~~EPA~~ Code
waste water flyash poly-S

Soil
2-27-90
7:23 P.M.

Analyst R.S.
Treat/Code 03C Unit B-D

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-88)
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

Dillard #38

Department of Health Services
Toxic Substances Control Division
Sacramento, California

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

UNIFORM HAZARDOUS WASTE MANIFEST

GENERATOR

1. Generator's US EPA ID No. CAC000150237
Manifest Document No. 00023
2. Page 1 of
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BOHEMIA INC.-GRASS VALLEY LUMBER MILL
P.O. BOX 2027-EAST BENNET & BRUNSWICK ROADS
GRASS VALLEY, CA 95945

4. Generator's Phone (916 273-9572

A. State Manifest Document Number 87403497

B. State Generator's ID H AHQ-36029061

5. Transporter 1 Company Name DILLARD TRUCKING
6. US EPA ID Number CAD981169280
C. State Transporter's ID 003214
D. Transporter's Phone ~~XXX~~(415)634-0567

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT INC.
KETTLEMAN HILLS TREATMENT FACILITY
35251 OLD SKYLINE ROAD
KETTLEMAN CITY, CA 93239

10. US EPA ID Number CAT000646117

G. State Facility's ID CAT000646117

H. Facility's Phone (209) 386-9711

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. R.Q. HAZARDOUS SUBSTANCE SOLID N.O.S. ORME NA 9188		DT	000	YD	State 611 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
SOIL CONTAMINATED WITH PENTACHLOROPHENOL

K. Handling Codes for Wastes Listed Above
a. 03
b.
c.
d.

15. Special Handling Instructions and Additional Information
PROFILE NUMBER J 06286

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name KARL W MUNDT
Signature Karl W Mundt
Month Day Year 05 10 89

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name RON MAXEDON
Signature Ron Maxedon
Month Day Year 05 10 89

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

FACILITY

19. Discrepancy Indication Space
2. Page 1 of ? 10. incomplete 12. incomplete
13) no entry 11A improper DOT

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name RICK A. SENIFF
Signature Rick A. Seniff
Month Day Year 05 10 89

DHS 8022 A (1/87)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

White: TSDF SENDS THIS COPY TO DOHS WITHIN 30 DAYS
To: P.O. Box 3000, Sacramento, CA 95812

INSTRUCTIONS ON THE BACK

R 1043444

#38

Profit center: 680 RECEIPT TICKET Number:

DATE IN: 5/10
SCHEDULED DATE:

TIME IN: 6:50
SCHEDULED TIME:

TRANSPORTER NAME: Dillard

TRUCK NUMBER:
TRAILER NUMBER:

LOAD TYPE:

Receipt Sequence	Work Order Number	Manifest Number	Profile Number	Generator Name	Waste Class
		87403497	S06286	Bohemia Gross	Oil

5-30-89

68040 lb 9:04PM A

34320 lb 10:04PM

33720 lb

LOG NO. 0 TRUCK ID 0

INBOUND 49 49 68040 lb

Quantity 18y Bin#
Driver's Name Ron Maxeda
Load # 2 See Manifest 87403447

Site Driver ____ Date ____
Start ____ Finish ____

Releasing Signature ____
At Unit ____ Time ____ am pm
Washout Meter: Finish ____
Start 0
Gallons used

8

Soil
7-27-90
4:25P.M.

TCLP Required? yes no EPA Code ____
___waste ___water ___flyash ___poly-S

Analyst R.S.
Treat/Code 03C Unit B-A

l/a

Extra copy

Sierra Pacific Industries

Human Resources • PO Box 496011 • Redding, CA 96049-6011 • (530) 378-8200

RECEIVED
SACRAMENTO
CVRWQCB
00 FEB 28 AM 11:32

January 22, 1999

Mr. James Brathove
California Regional Water Quality
Control Board
Central Valley Region
3443 Rouiter Road, Suite A
Sacramento, CA 95827-3098

RE: 1999 Ground Water Monitoring Report
For Sierra Pacific Industries Brunswick Mill Site

Dear Mr. Brathove:

Enclosed, please find the 1999 Ground Water Monitoring Report for the former Bohemia, Inc. Brunswick Sawmill located on Brunswick Road in Grass Valley, California (Plate 1). Cranmer Engineering, Inc. (CEI), conducted the water quality sampling as specified by Sierra Pacific Industries (SPI). The proposal included water quality sampling under the Monitoring and Reporting Requirements (MRR) adopted by the California Regional Water Quality Control Board, Central Valley Region (CRWQCB).

BACKGROUND

In October 1994, SPI was issued draft MRR by the CRWQCB for the Brunswick Sawmill. Previously, two monitoring wells had been utilized to monitor the quality of ground water in an area that had been used for solvent storage. The impacted soil in this area was excavated and back-filled prior to CEI's involvement at the site. An additional down-gradient well was installed on January 19, 1995 to further delineate the extent of ground water contamination. The ground water monitoring wells are designated as MW-1, MW-4, and MW-5. Please refer to Plate 2 for the locations of each well.

As specified in the MRR, the ground water from each well would be analyzed quarterly for purgeable halocarbons and aromatics using EPA method 624/8240. Based on the requirements established by the MRR, the quarterly reports would include a potentiometric map indicating ground water flow direction, the status of the ongoing water quality program and any remediation being conducted. The water quality data, depths to ground water from the reference elevation, and the reference elevation would be presented in tabular form. The fourth quarter report would serve as the annual report.

Due to the relatively consistent concentrations of volatile organic constituents reported in each well during past sampling events and the removal of impacted soils at the site, SPI proposed to collect samples from each monitoring well once during the spring of each sampling year. This sampling frequency would provide long term monitoring in all wells that exhibited low and relatively stable concentrations of volatile organics at a time of the year , which typically coincides with high ground water. This sampling schedule replaced the quarterly monitoring program originally adopted. Based on the proposed sampling schedule, one water quality report would be submitted annually which would include a potentiometric surface map indicating ground water flow direction, the status of the ongoing water quality program and any remediation being conducted. Additionally, the water quality data, depths to ground water from the reference elevation, and the reference elevation would be presented in tabular form.

SAMPLE COLLECTION AND METHODS

CEI collected water samples from MW-1, MW-4, and MW-5 and submitted them to a state-certified laboratory to be analyzed for the constituents of concern identified in the MRR. Water samples were collected from the monitoring wells on June 18, 1999 and sent to Alpha Analytical, Inc. (Alpha) in Sparks, Nevada for analysis. Before sampling, three well-casing volumes of water were purged to stabilization of pH, temperature, and conductivity in order to obtain a representative sample. All sampling equipment was cleaned immediately prior to sampling activities. Ground water level measurements and total depths were obtained in all wells prior to purging, they are presented in Tables I and II.

ANALYTICAL RESULTS

The ground water gradient was calculated at 0.2 feet/foot, and the ground water flow was in a west-southwesterly direction. Please refer to Plate 2 for the location of each monitoring well and the potentiometric map showing the ground water flow direction.

Analytical results for the 1999 sampling event (June 1999) are listed in Table III. In general, analytical results are very similar to those of the November 1998 sampling event.

No target constituents were detected in MW-1, which is located cross-gradient of the excavated area and is the farthest distance from the area where impacted soils were removed.

Several volatile organic constituents (VOCs) were detected in MW-4 and MW-5, which are in closer proximity and hydraulically down-gradient from the excavated area. Concentrations of 1,1-dichloroethane were reported in MW-4 above detection limits established by the laboratory. The laboratory reported a concentration of 1,1-dichloroethane in MW-4 below the MCL at 3.6 ug/L.

Concentrations of 1,1-dichloroethane, 1,1-dichloroethene, tetrachloroethene, 1,1,1-trichloroethane, thrichloroethene and cis-1,2-dichloroethene were reported in MW-5 above the detection limits established by the laboratory. Of these detected constituents, concentrations of tetrachloroethene, trichloroethene, 1,1,1-trichloroethane and cis-1,2-dichloroethene were reported below their respective MCL. Concentrations of 1,1-dichloroethane and 1,1-dichloroethene were reported at 30 ug/L and 8.0 ug/L, respectively. All of the target constituents analyzed by EPA method 624/8240 not listed in this section were reported as non-detectable in each well.

The certified analytical results and chain-of-custody form for the 1999 sampling event are included in Appendix A. The static ground water elevation was recorded in MW-1 at 2756.44 feet mean sea level (MSL), in MW-4 at 2755.79 feet MSL and in MW-5 at 2748.4 feet MSL.

The ground water gradient was calculated at 0.2 feet/foot, and the ground water flow direction is to the west-southwest. Please refer to Plate 2 for the location of each monitoring well and the potentionmetric map showing the ground water flow direction.

SUMMARY

Several different VOCs were detected in MW-4 and MW-5. Additionally, a majority was detected slightly above the minimum detection limit (MDL) and below the established MCL. 1,1-dichloroethane was reported in MW-4 above the MCL. Concentrations of 1,1-dichloroethane, 1,1-dichloroethene, 1,1,1-trichloroethane, trichloreoethene, cis1,2-dichloroethene, and tetrachloroethene were reported in MW-5 above the MDL at varying levels, but only 1,1-dichloroethane and 1,1-dichloroethene were reported above the MCL. Please refer to Table III for a tabular summary of these results as compared to the previous sampling events.

The next sampling event is scheduled for June, 2000, and will constitute the spring sampling event. The sampling plan discussed above will be duplicated next year unless the CRWQCB has reason to object. If you have any questions or comments regarding the information provided, please do not hesitate to contact me at (530) 378-8282.

Sincerely,

Scott Leiby
Safety & Environmental Director

Cc: Tim Snellings, Nevada County Department of Environmental Health
Cory Unfried - Willamette Ind.
Emperor Gold Corporation
Enclosure

TABLE I

WATER LEVEL MEASUREMENTS

Sierra Pacific Industries Brunswick Mill Site
June 18, 1999

WELL NO.	TOP OF CASING (FT. MSL)[1]	DEPTH TO STATIC GROUND WATER (FT.)	ELEVATION OF STATIC GROUND WATER (FT.MSL)	TOTAL DEPTH OF WELL (FT.)
MW-1	2765.50	9.06	2756.44	29.20
MW-4	2766.50	10.71	2755.79	24.85
MW-5	2763.00	14.60	2748.40	20.00

1. These elevations are unsurveyed and were estimated from established topographic maps of the site and measurements taken in the field.

TABLE II

SUMMARY OF GROUND WATER ELEVATIONS

Sierra Pacific Industries Brunswick Mill Site

DATE	MW-1[1]	G.W. ELEV.[2]	MW-4	G.W. ELEV.	MW-5	G.W. ELEV.
1/95	9.05	2756.45	9.90	2756.60	14.00	2749.00
7/95	8.50	2757.00	12.30	2754.20	14.30	2748.70
9/95	18.80	2746.70	17.20	2749.30	18.40	2744.60
1/96	15.95	2749.55	15.75	2750.75	17.70	2745.30
6/97	10.80	2754.70	12.90	2753.60	15.70	2747.30
11/98	17.23	2748.27	16.63	2749.87	18.16	2744.84
6/99	9.06	2756.44	10.71	2755.79	14.60	2748.40

1. Depths to ground water were measured from ground level prior to 1998. Starting in 1998, depth to groundwater was measured from the top of casing.
2. Datum = mean sea level.

TABLE III

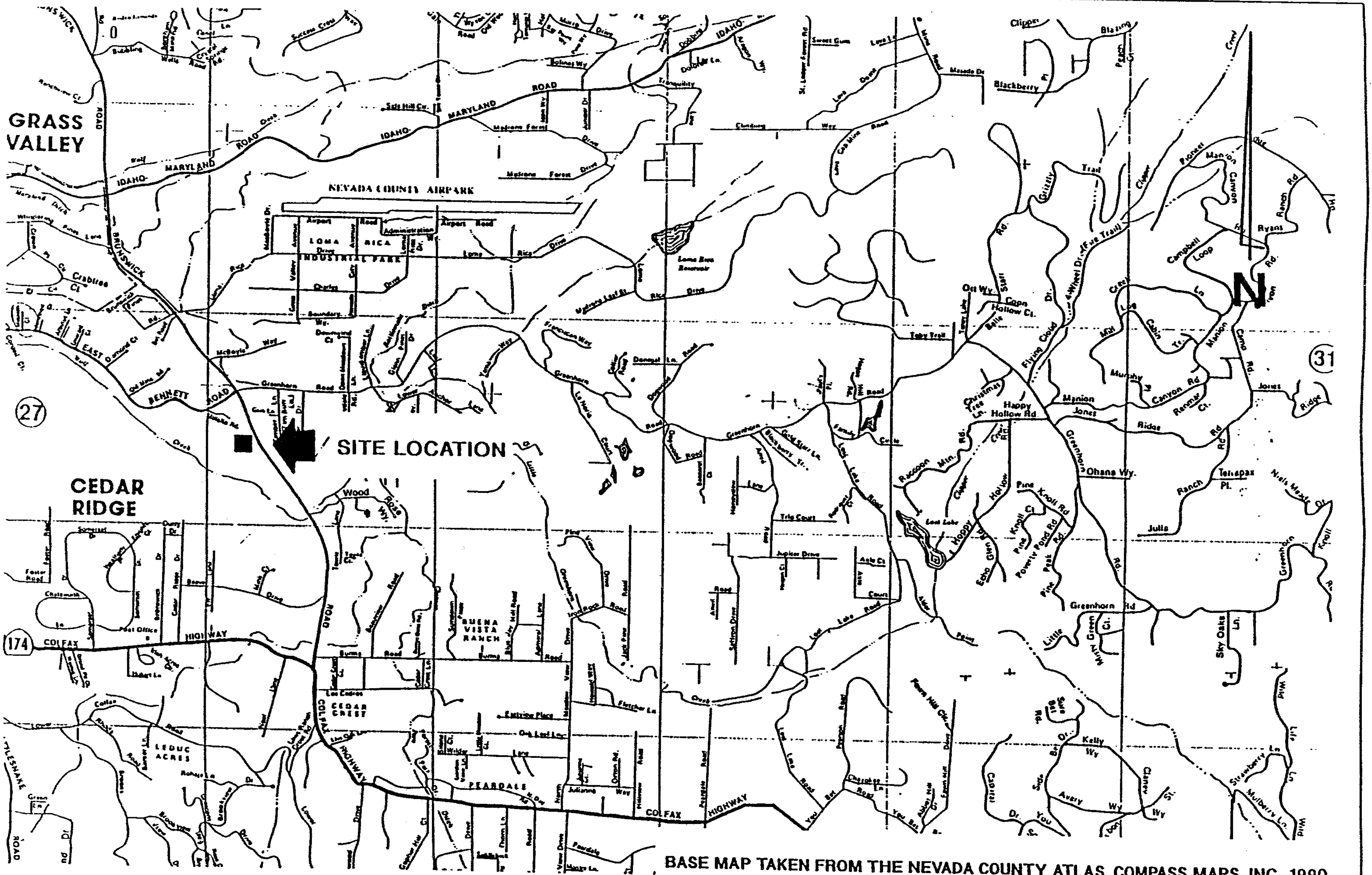
SUMMARY OF EPA METHOD 624/8240 and 601/602 ANALYTICAL RESULTS[1]

Sierra Pacific Industries Brunswick Mill Site
Concentrations reported in µg/L[2]

WELL NO.	ANALYTE	Title 22 MCL [3]	JAN. 1995 [4]	JULY 1995	SEPT. 1995	JAN. 1996	JUNE 1997	NOV. 1998	JUNE 1999
MW-1	Chloroform	100	2.8	1.5	1.6	1.4	ND	ND	ND
	Methylene chloride [5]	5.0	ND	ND	ND	ND	1.3	ND	ND
	1,1,1-Trichloroethane	200	2.8	ND	ND	ND	ND	ND	ND
	Tetrachloroethene	5.0	1.3	ND	ND	ND	ND	ND	ND
MW-4	Chloroform	100	1.8	ND	ND	ND	ND	ND	ND
	1,1-Dichloroethane	5.0	58	11	22	ND	9.3	17	3.6
	1,2-Dichloroethane	0.5	ND	1.6	ND	ND	ND	ND	ND
	1,1-Dichloroethene	6.0	8.9	1.1	5.0	6.1	ND	ND	ND
	Methylene chloride [5]	5.0	ND	ND	ND	30	1.3	ND	ND
	Tetrachloroethene	5.0	ND	ND	2.2	1.5	0.67	1.0	ND
	1,1,1-Trichloroethane	200	82	12	25	31	2.0	3.1	ND
	Trichloroethene	5.0	1.9	ND	ND	1.3	ND	ND	ND
MW-5	Chlorobenzene	70	ND	ND	ND	0.51	ND	ND	ND
	Chloroform	100	7.1	4.6	5.5	4.0	1.8	1.1	ND
	1,1-Dichloroethane	5.0	116	84	63	92	50	47	30
	1,2-Dichloroethane	0.5	ND	8.0	ND	ND	ND	ND	ND
	1,1-Dichloroethene	6.0	27	20	25	32	11	12	8.0
	cis-1,2-Dichloroethene	6.0	ND	5.2	ND	ND	1.9	2.2	1.2
	1,1,1-Trichloroethane	200	88	50	55	42	20	13	10
	Trichloroethene	5.0	6.7	3.0	3.2	3.8	1.6	1.4	1.0
	Methylene chloride [5]	5.0	ND	1.0	1.6	1.3	1.4	ND	ND
	Tetrachloroethene	5.0	5.3	2.4	3.3	2.7	1.4	1.3	1.1

1. All other target constituents analyzed by the EPA method used were reported as non-detectable and are not included in this table. Please refer to the analytical reports
2. Micrograms per liter or ppb.
3. Drinking water Maximum Contaminant Level as set forth in Title 22 (CAC) Table 64444-A, µg/L
4. Jan. 1995 samples were analyzed by EPA Methods 601/8010 and 602/8020. Samples for all other sampling events were analyzed by EPA Method 624/8240.
5. Same as dichloromethane.

NA = Data not available.
< = Less than reporting limit, i.e. none was detected.



BASE MAP TAKEN FROM THE NEVADA COUNTY ATLAS, COMPASS MAPS, INC., 1990

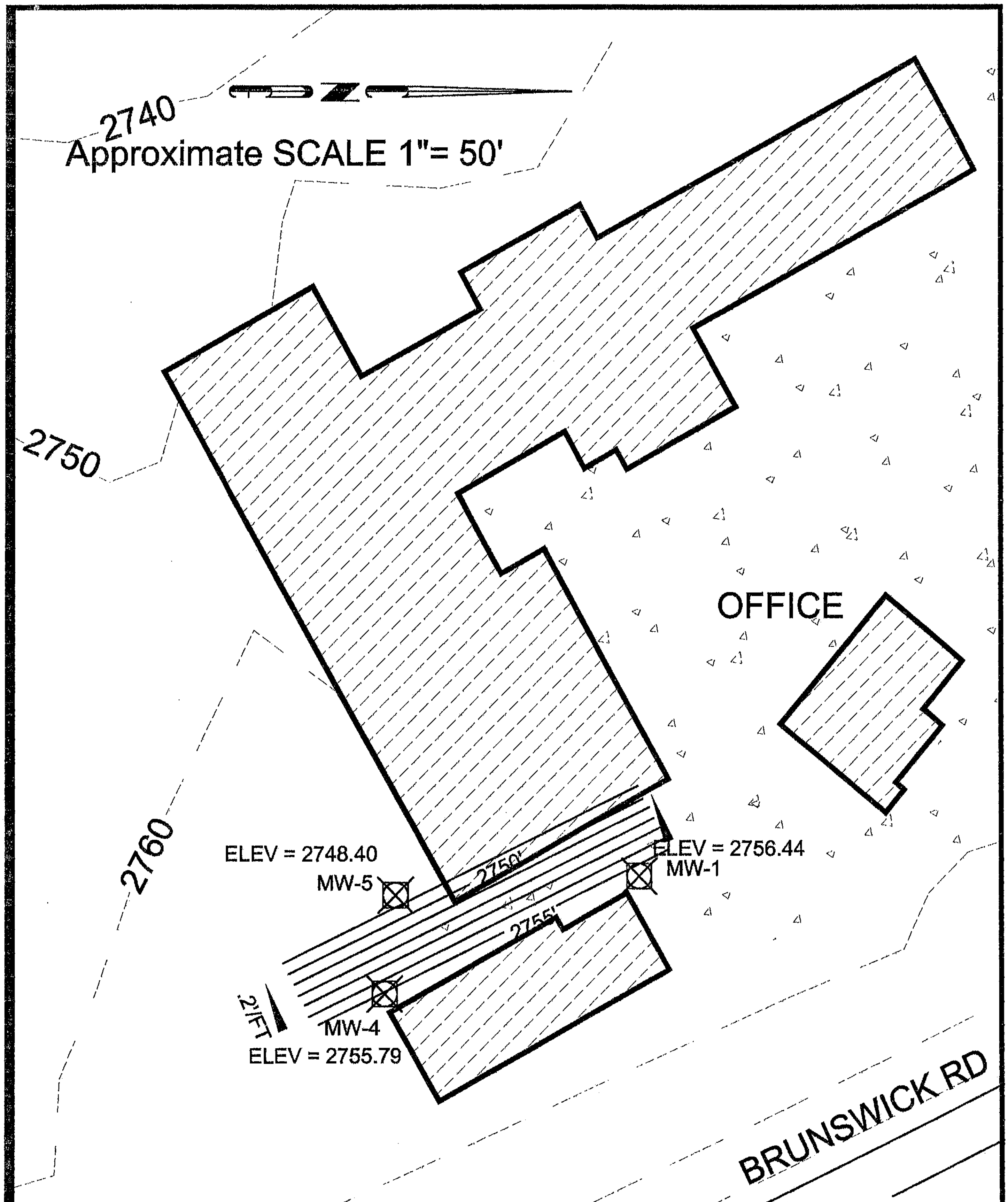
VECTOR
ENGINEERING, INC
1601 Fairview Avenue - Suite II, Carson City, NV 89701

JOB NO. 945026.00 APPR. DATE:

SITE VICINITY MAP

GRASS VALLEY BRUNSWICK MILL
GRASS VALLEY, CALIFORNIA

PLATE
1



CRANMER ENGINEERING, INC.
1188 EAST MAIN STREET
GRASS VALLEY, CALIF.

FORMER BRUNSWICK SAWMILL

POTENTIOMETRIC MAP

CALIFORNIA

PROJECT ENGINEER	JBC	DESIGNED:		DATE: FEB. 2000	JOB NO. 20-001	
DRAWN. BY:	TMI	DWG. NAME:	SAWMILL	SHEET 1	OF 1	SHEETS

Cranmer
Analytical
Laboratory

Chemical Report

1188 East Main Street, Grass Valley, CA 95945-5710 (530) 273-7284, FAX (530) 273-9507 E.L.A.P. Certification No. 1936

Sierra Pacific Industries - Brunswick Mill Site
ATTN: Scott Leiby
P.O. Box 496011
Redding CA 960496011

Job Number: 990893
Date Reported: 07/12/99
Date / Time Received: 06/18/99 16:02

Sample Number: 990893 - 1

Sample Site: MW-1
Date / Time Collected: 06/18/99 9:20
Sampled Collected By: Don Flint

Samples were collected for analysis of Volatile Organics by GC/MS by EPA 8260. They were sent to Alpha Analytical Laboratory. A copy of their report is enclosed.

Sample Number: 990893 - 2

Sample Site: MW-4
Date / Time Collected: 06/18/99 10:35
Sampled Collected By: Don Flint

Samples were collected for analysis of Volatile Organics by GC/MS by EPA 8260. They were sent to Alpha Analytical Laboratory. A copy of their report is enclosed.

Sample Number: 990893 - 3

Sample Site: MW-5
Date / Time Collected: 06/18/99 11:05
Sampled Collected By: Don Flint

Samples were collected for analysis of Volatile Organics by GC/MS by EPA 8260. They were sent to Alpha Analytical Laboratory. A copy of their report is enclosed.

---

cc: Emperor Gold Corporation

Rudolph C. Darling
Approved By

0840

SIERRA PACIFIC INDUSTRIES – BRUNSWICK FACILITY
FIELD DATA LOG SHEET

FIELD LOG NO: F 99047 **DATE:** 6.18.99 **TECHNICIAN:**

SAMPLE NO: 990893-1 **WEATHER:** Sunny

GROUNDWATER (WELL) MONITORING

9.67

WELL NO: MW1 **DEPTH TO WATER:** 9.06 **GALLONS IN WELL:** 3.22

EVERY JUNE: MW-1, MW-4, MW-5 – 3 HCl VOA's for each well, plus 1 trip blank for each event. Analyze for EPA 8260 (Alpha Analytical)

Total Depth of Wells: MW-1 = 29.20; MW-4 = 24.85; MW-5 = 20.00

STABILIZATION RECORD

TIME	SECONDS	GPM	CUM. GAL.	TEMP °C	pH	SC
0900		0.86		15.2	5.81	69.8
0910		0.81	8.35	13.7	5.65	57.1
0920		0.81	16.45	13.4	5.70	57.0

TIME OF SAMPLE COLLECTION: 0920

COMMENTS AND OBSERVATIONS:

SIERRA PACIFIC INDUSTRIES – BRUNSWICK FACILITY
FIELD DATA LOG SHEET

FIELD LOG NO: F 99047 **DATE:** 6.18.99 **TECHNICIAN:**

SAMPLE NO: 990893-2 **WEATHER:** Sunny

GROUNDWATER (WELL) MONITORING

27.62

WELL NO: MW4 **DEPTH TO WATER:** 10.71 **GALLONS IN WELL:** 9.21

EVERY JUNE: MW-1, MW-4, MW-5 – 3 HCl VOA's for each well, plus 1 trip blank for each event. Analyze for EPA 8260 (Alpha Analytical)

Total Depth of Wells: MW-1 = 29.20; MW-4 = 24.85; MW-5 = 20.00

STABILIZATION RECORD

TIME	SECONDS	GPM	CUM. GAL.	TEMP °C	pH	SC
0935		0.62		15.2	5.75	202
0945		0.60	6.10	15.5	5.76	203
0955		0.54	11.80	15.1	5.76	207
1005		0.55	17.25	15.0	5.71	207
1015		0.42	22.10	15.2	5.74	210
1025		0.40	26.20	15.5	5.74	219
1035		0.20	29.20	15.6	5.79	217

TIME OF SAMPLE COLLECTION: 1035

COMMENTS AND OBSERVATIONS:

0848/118

4.0 miles

SIERRA PACIFIC INDUSTRIES – BRUNSWICK FACILITY
FIELD DATA LOG SHEET

FIELD LOG NO: F 99047 **DATE:** ______ **TECHNICIAN:** ______

SAMPLE NO: 990893-3 **WEATHER:** Sunny

GROUNDWATER (WELL) MONITORING

WELL NO: MW5 **DEPTH TO WATER:** 14.60 **GALLONS IN WELL:** 2.59 0.86

EVERY JUNE: MW-1, MW-4, MW-5 – 3 HCl VOA's for each well, plus 1 trip blank for each event. Analyze for EPA 8260 (Alpha Analytical)

Total Depth of Wells: MW-1 = 29.20; MW-4 = 24.85; MW-5 = 20.00

STABILIZATION RECORD

TIME	SECONDS	GPM	CUM. GAL.	TEMP °C	pH	SC
1045		0.57		18.3	5.53	121
1055		0.63	6.00	16.8	5.47	116
1105		0.47	11.50	16.7	5.50	116

TIME OF SAMPLE COLLECTION: 1105

COMMENTS AND OBSERVATIONS:

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
(775) 355-1044
FAX: (775) 355-0406
1-800-283-1183

Wichita, Kansas
(316) 722-5890
FAX: (316) 722-6008

Las Vegas, Nevada
(702) 498-3312
FAX: (702) 736-7523
Sacramento, California
(916) 366-9089
FAX: (916) 366-9138

ANALYTICAL REPORT

Cranmer Engineering
1188 E. Main Street
Grass Valley, CA 95945

Job#: 990893 SPI - Brunswick
Phone: (530) 273-7284
Attn: Rudy Darling

Alpha Analytical Number: CRA99062348-01A
Client I.D. Number: MW-1

Sampled: 6/18/99
Received: 6/23/99
Analyzed: 6/26/99

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration μg/L	Reporting Limit
1	Dichlorodifluoromethane	ND	1.0 μg/L
2	Chloromethane	ND	2.0 μg/L
3	Vinyl chloride	ND	1.0 μg/L
4	Chloroethane	ND	1.0 μg/L
5	Bromomethane	ND	1.0 μg/L
6	Trichlorofluoromethane	ND	1.0 μg/L
7	1,1-Dichloroethene	ND	1.0 μg/L
8	Dichloromethane	ND	2.0 μg/L
9	trans-1,2-Dichloroethene	ND	1.0 μg/L
10	1,1-Dichloroethane	ND	1.0 μg/L
11	cis-1,2-Dichloroethene	ND	1.0 μg/L
12	Bromochloromethane	ND	1.0 μg/L
13	Chloroform	ND	1.0 μg/L
14	2,2-Dichloropropane	ND	1.0 μg/L
15	1,2-Dichloroethane	ND	1.0 μg/L
16	1,1,1-Trichloroethane	ND	1.0 μg/L
17	1,1-Dichloropropene	ND	1.0 μg/L
18	Carbon tetrachloride	ND	1.0 μg/L
19	Benzene	ND	0.50 μg/L
20	Dibromomethane	ND	1.0 μg/L
21	1,2-Dichloropropane	ND	1.0 μg/L
22	Trichloroethene	ND	1.0 μg/L
23	Bromodichloromethane	ND	1.0 μg/L
24	cis-1,3-Dichloropropene	ND	1.0 μg/L
25	trans-1,3-Dichloropropene	ND	1.0 μg/L
26	1,1,2-Trichloroethane	ND	1.0 μg/L
27	Toluene	ND	0.50 μg/L
28	1,3-Dichloropropane	ND	1.0 μg/L
29	Dibromochloromethane	ND	1.0 μg/L
30	1,2-Dibromoethane	ND	2.0 μg/L
31	Tetrachloroethene	ND	1.0 μg/L
32	1,1,1,2-Tetrachloroethane	ND	1.0 μg/L
33	Chlorobenzene	ND	1.0 μg/L
34	Ethylbenzene	ND	0.50 μg/L
35	m,p-Xylene	ND	0.50 μg/L
36	Bromoform	ND	1.0 μg/L
37	Styrene	ND	1.0 μg/L

	Compound	Concentration μg/L	Reporting Limit
38	o-Xylene	ND	0.50 μg/L
39	1,1,2,2-Tetrachloroethane	ND	1.0 μg/L
40	1,2,3-Trichloropropane	ND	2.0 μg/L
41	Isopropylbenzene	ND	1.0 μg/L
42	Bromobenzene	ND	1.0 μg/L
43	n-Propylbenzene	ND	1.0 μg/L
44	4-Chlorotoluene	ND	1.0 μg/L
45	2-Chlorotoluene	ND	1.0 μg/L
46	1,3,5-Trimethylbenzene	ND	1.0 μg/L
47	tert-Butylbenzene	ND	1.0 μg/L
48	1,2,4-Trimethylbenzene	ND	1.0 μg/L
49	sec-Butylbenzene	ND	1.0 μg/L
50	1,3-Dichlorobenzene	ND	1.0 μg/L
51	1,4-Dichlorobenzene	ND	1.0 μg/L
52	4-Isopropyltoluene	ND	1.0 μg/L
53	1,2-Dichlorobenzene	ND	1.0 μg/L
54	n-Butylbenzene	ND	1.0 μg/L
55	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.0 μg/L
56	1,2,4-Trichlorobenzene	ND	2.0 μg/L
57	Naphthalene	ND	2.0 μg/L
58	Hexachlorobutadiene	ND	2.0 μg/L
59	1,2,3-Trichlorobenzene	ND	2.0 μg/L

ND = Not Detected

Approved By: R Scholl Date: 7/6/99

Roger L. Scholl, Ph.D.
Laboratory Director

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
(775) 355-1044
FAX: (775) 355-0406
1-800-283-1183

Wichita, Kansas
(316) 722-5890
FAX: (316) 722-6008

Las Vegas, Nevada
(702) 498-3312
FAX: (702) 736-7523
Sacramento, California
(916) 366-9089
FAX: (916) 366-9138

ANALYTICAL REPORT

Cranmer Engineering
1188 E. Main Street
Grass Valley, CA 95945

Job#: 990893 SPI - Brunswick
Phone: (530) 273-7284
Attn: Rudy Darling

Alpha Analytical Number: CRA99062348-02A
Client I.D. Number: MW-4

Sampled: 6/18/99
Received: 6/23/99
Analyzed: 6/26/99

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration µg/L	Reporting Limit
1	Dichlorodifluoromethane	ND	1.0 µg/L
2	Chloromethane	ND	2.0 µg/L
3	Vinyl chloride	ND	1.0 µg/L
4	Chloroethane	ND	1.0 µg/L
5	Bromomethane	ND	1.0 µg/L
6	Trichlorofluoromethane	ND	1.0 µg/L
7	1,1-Dichloroethene	ND	1.0 µg/L
8	Dichloromethane	ND	2.0 µg/L
9	trans-1,2-Dichloroethene	ND	1.0 µg/L
10	1,1-Dichloroethane	3.6	1.0 µg/L
11	cis-1,2-Dichloroethene	ND	1.0 µg/L
12	Bromochloromethane	ND	1.0 µg/L
13	Chloroform	ND	1.0 µg/L
14	2,2-Dichloropropane	ND	1.0 µg/L
15	1,2-Dichloroethane	ND	1.0 µg/L
16	1,1,1-Trichloroethane	ND	1.0 µg/L
17	1,1-Dichloropropene	ND	1.0 µg/L
18	Carbon tetrachloride	ND	1.0 µg/L
19	Benzene	ND	0.50 µg/L
20	Dibromomethane	ND	1.0 µg/L
21	1,2-Dichloropropane	ND	1.0 µg/L
22	Trichloroethene	ND	1.0 µg/L
23	Bromodichloromethane	ND	1.0 µg/L
24	cis-1,3-Dichloropropene	ND	1.0 µg/L
25	trans-1,3-Dichloropropene	ND	1.0 µg/L
26	1,1,2-Trichloroethane	ND	1.0 µg/L
27	Toluene	ND	0.50 µg/L
28	1,3-Dichloropropane	ND	1.0 µg/L
29	Dibromochloromethane	ND	1.0 µg/L
30	1,2-Dibromoethane	ND	2.0 µg/L
31	Tetrachloroethene	ND	1.0 µg/L
32	1,1,1,2-Tetrachloroethane	ND	1.0 µg/L
33	Chlorobenzene	ND	1.0 µg/L
34	Ethylbenzene	ND	0.50 µg/L
35	m,p-Xylene	ND	0.50 µg/L
36	Bromoform	ND	1.0 µg/L
37	Styrene	ND	1.0 µg/L
38	o-Xylene	ND	0.50 µg/L
39	1,1,2,2-Tetrachloroethane	ND	1.0 µg/L
40	1,2,3-Trichloropropane	ND	2.0 µg/L
41	Isopropylbenzene	ND	1.0 µg/L
42	Bromobenzene	ND	1.0 µg/L
43	n-Propylbenzene	ND	1.0 µg/L
44	4-Chlorotoluene	ND	1.0 µg/L
45	2-Chlorotoluene	ND	1.0 µg/L
46	1,3,5-Trimethylbenzene	ND	1.0 µg/L
47	tert-Butylbenzene	ND	1.0 µg/L
48	1,2,4-Trimethylbenzene	ND	1.0 µg/L
49	sec-Butylbenzene	ND	1.0 µg/L
50	1,3-Dichlorobenzene	ND	1.0 µg/L
51	1,4-Dichlorobenzene	ND	1.0 µg/L
52	4-Isopropyltoluene	ND	1.0 µg/L
53	1,2-Dichlorobenzene	ND	1.0 µg/L
54	n-Butylbenzene	ND	1.0 µg/L
55	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.0 µg/L
56	1,2,4-Trichlorobenzene	ND	2.0 µg/L
57	Naphthalene	ND	2.0 µg/L
58	Hexachlorobutadiene	ND	2.0 µg/L
59	1,2,3-Trichlorobenzene	ND	2.0 µg/L

ND = Not Detected

Approved By: R Scholl Date: 7/6/99
Roger L. Scholl, Ph.D.
Laboratory Director

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
(775) 355-1044
FAX: (775) 355-0406
1-800-283-1183

Wichita, Kansas
(316) 722-5890
FAX: (316) 722-6008

Las Vegas, Nevada
(702) 498-3312
FAX: (702) 736-7523
Sacramento, California
(916) 366-9089
FAX: (916) 366-9138

ANALYTICAL REPORT

Cranmer Engineering
1188 E. Main Street
Grass Valley, CA 95945

Job#: 990893 SPI - Brunswick
Phone: (530) 273-7284
Attn: Rudy Darling

Alpha Analytical Number: CRA99062348-03A
Client I.D. Number: MW-5

Sampled: 6/18/99
Received: 6/23/99
Analyzed: 6/26/99

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration µg/L	Reporting Limit
1	Dichlorodifluoromethane	ND	1.0 µg/L
2	Chloromethane	ND	2.0 µg/L
3	Vinyl chloride	ND	1.0 µg/L
4	Chloroethane	ND	1.0 µg/L
5	Bromomethane	ND	1.0 µg/L
6	Trichlorofluoromethane	ND	1.0 µg/L
7	1,1-Dichloroethene	8.0	1.0 µg/L
8	Dichloromethane	ND	2.0 µg/L
9	trans-1,2-Dichloroethene	ND	1.0 µg/L
10	1,1-Dichloroethane	30	1.0 µg/L
11	cis-1,2-Dichloroethene	1.2	1.0 µg/L
12	Bromochloromethane	ND	1.0 µg/L
13	Chloroform	ND	1.0 µg/L
14	2,2-Dichloropropane	ND	1.0 µg/L
15	1,2-Dichloroethane	ND	1.0 µg/L
16	1,1,1-Trichloroethane	10	1.0 µg/L
17	1,1-Dichloropropene	ND	1.0 µg/L
18	Carbon tetrachloride	ND	1.0 µg/L
19	Benzene	ND	0.50 µg/L
20	Dibromomethane	ND	1.0 µg/L
21	1,2-Dichloropropane	ND	1.0 µg/L
22	Trichloroethene	1.0	1.0 µg/L
23	Bromodichloromethane	ND	1.0 µg/L
24	cis-1,3-Dichloropropene	ND	1.0 µg/L
25	trans-1,3-Dichloropropene	ND	1.0 µg/L
26	1,1,2-Trichloroethane	ND	1.0 µg/L
27	Toluene	ND	0.50 µg/L
28	1,3-Dichloropropane	ND	1.0 µg/L
29	Dibromochloromethane	ND	1.0 µg/L
30	1,2-Dibromoethane	ND	2.0 µg/L
31	Tetrachloroethene	1.1	1.0 µg/L
32	1,1,1,2-Tetrachloroethane	ND	1.0 µg/L
33	Chlorobenzene	ND	1.0 µg/L
34	Ethylbenzene	ND	0.50 µg/L
35	m,p-Xylene	ND	0.50 µg/L
36	Bromoform	ND	1.0 µg/L
37	Styrene	ND	1.0 µg/L

	Compound	Concentration µg/L	Reporting Limit
38	o-Xylene	ND	0.50 µg/L
39	1,1,2,2-Tetrachloroethane	ND	1.0 µg/L
40	1,2,3-Trichloropropane	ND	2.0 µg/L
41	Isopropylbenzene	ND	1.0 µg/L
42	Bromobenzene	ND	1.0 µg/L
43	n-Propylbenzene	ND	1.0 µg/L
44	4-Chlorotoluene	ND	1.0 µg/L
45	2-Chlorotoluene	ND	1.0 µg/L
46	1,3,5-Trimethylbenzene	ND	1.0 µg/L
47	tert-Butylbenzene	ND	1.0 µg/L
48	1,2,4-Trimethylbenzene	ND	1.0 µg/L
49	sec-Butylbenzene	ND	1.0 µg/L
50	1,3-Dichlorobenzene	ND	1.0 µg/L
51	1,4-Dichlorobenzene	ND	1.0 µg/L
52	4-Isopropyltoluene	ND	1.0 µg/L
53	1,2-Dichlorobenzene	ND	1.0 µg/L
54	n-Butylbenzene	ND	1.0 µg/L
55	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.0 µg/L
56	1,2,4-Trichlorobenzene	ND	2.0 µg/L
57	Naphthalene	ND	2.0 µg/L
58	Hexachlorobutadiene	ND	2.0 µg/L
59	1,2,3-Trichlorobenzene	ND	2.0 µg/L

ND = Not Detected

Approved By: R Scholl Date: 7/6/99

Roger L. Scholl, Ph.D.
Laboratory Director

Cranmer Analytical Laboratory

1188 E. Main Street – Grass Valley, CA 95945
530-273-7284 FAX: 530-273-9507

CHAIN OF CUSTODY

Page 1 of 1

11°C

Preservation (P)
A = Cold
B = HNO_3
C = HCl
D = H_2SO_4
E = NaOH

Container
I = Intact
B = Broken
L = Leaked
* = Bubbles in VOA

Appearance
C = Clear
T = Turbid
S = Sediment

Client: Cranmer Eng.
Phone:
Mailing Address:
FAX:
PO #:
Project Name: SPI - Brunswick
Project #: 990893
Project Manager: Rudy Darling
Sampled By (sign):
(Print): Don Flint
Special Instructions:

Lab No.	Sample Identity	Date	Time	Matrix	ANALYSIS REQUIRED													CONTAINERS/PRESERVATION							RECEIPT		
					EPA 8260													PLASTIC #	PLASTIC P	GLASS #	GLASS P	VOA #	VOA P	STERILE #	COOL?	CONTAINER	APPEARANCE
	MW-1	4/8/99	0920	GW	x												-	1				3	C				
	MW-4	↓	1035	↓	x												-	2				3	C				
	MW-5	↓	1105	↓	x												-					3	C				
	Hold TB																										

RELINQUISHED BY (SIGN)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (SIGN)	PRINT NAME/COMPANY
Rudolph C. Darling	R Darling CEI	4/2/99 1600		

Rec'd at lab by:
~~Date/Time~~:

SHIPPED VIA ☐ FED X ☐ UPS [✓ ☐ CA O/N] ☐ OTHER: ______

Comments:

All hazardous waste samples will be returned to client or billed for disposal.

11°C CA - Sample

Billing Information :

CHAIN-OF-CUSTODY RECORD

Page: 1 of 1

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder:
CRA99062348

Client:
Cranmer Engineering
1188 E. Main Street

Grass Valley, CA 95945-

Report Attention : Rudy Darling

Company Phone/Fax
TEL : (530) 273-7284
FAX : (530) 273-9507

Secondary Phone/Fax
TEL : (530) 273-7284
FAX : (530) 273-9507

Job : 990893
PO :

Client's COC # : none

Sampled by : unknown

Cooler Temp : 11 °C

23-Jun-99

QC Level : 1 = Final Rpt Only

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles	TAT	PWS #	Requested Tests: HOLD	Requested Tests: VOC_W	Sample Remarks
CRA99062348-01A	MW-1	AQ	6/18/99	3	10			8260_C	
CRA99062348-02A	MW~~2~~ 4 YS	AQ	6/18/99	3	10			8260_C	
CRA99062348-03A	MW-5	AQ	6/18/99	3	10			8260_C	
CRA99062348-04A	Trip Blank	AQ	6/18/99	1	10		Hold		

Comments: ca-sample/reg. TAT

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:		Simone Miller	Alpha	6/23/99
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days.after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

TABLE III (cont'd)

SUMMARY OF EPA METHOD 624-8240 and 601/602 ANALTTICAL RESULTS[1]
Sierra Pacific Industries Brunswick Mill Site
Concentrations reported in ug/L[2]

WELL NO.	ANALYTE	TITLE 22 MCL3	June 2000	July 2001	June 2002	September 2003	November 2004[6]
MW-1	Chloroform	100	ND	ND	ND	ND	ND
	Methylene chloride[5]	5.0	ND	ND	ND	ND	ND
	1,1,1-Trichlorethane	200	ND	ND	ND	ND	ND
	Tetrachloroethene	5.0	ND	ND	ND	ND	ND
MW-4	Chloroform	100	ND	ND	ND	ND	ND
	1,1-Dichloroethane	5.0	ND	1.2	ND	ND	ND
	1,2-Dichloroethane	0.5	ND	ND	ND	ND	ND
	1,1-Dichloroethene	6.0	ND	ND	ND	ND	ND
	Methylene chloride[5]	5.0	ND	ND	ND	ND	ND
	Tetrachloroethene	5.0	ND	ND	ND	ND	ND
	1,1,1-Trichlorethane	200	ND	ND	ND	ND	ND
	Toluene	150	ND	7.1	ND	ND	ND
	Trichloroethene	5.0	ND	ND	ND	ND	ND
MW-5	Chlorobenzene	70	ND	ND	ND	ND	
	Chloroform	100	ND	ND	ND	ND	
	1,1-Dichloroethane	5.0	25	32	25	24	
	1,2-Dichloroethane	0.5	ND	ND	ND	ND	
	1,1-Dichloroethene	6.0	6.3	7.7	7.0	8.5	
	cis-1,2-Dichloroethene	6.0	1.3	1.9	ND	ND	
	1,1,1-Trichloroethane	200	8.8	9.1	6.6	6.5	
	Trichloroethene	5.0	1.1	1.8	ND	ND	
	Methylene chloride[5]	5.0	ND	ND	ND	ND	
	Tetrachloroethene	5.0	1.1	2	ND	ND	

1. All other target constituents analyzed by the EPA method used were reported as non-detectable and are not included in this table. Please refer to the analytical reports.
2. Micrograms per liter or ppb.
3. Drinking water Maximum Contaminant Level as set forth in Title 22 (CAC) Table 64444-A, ug/L.
4. Jan. 1995 samples were analyzed by EPA Methods 601/8020. Samples for all other sampling events were analyzed by EPA Method 624/8240.
5. Same as dichloromethane.

NA = Data not available.
< = Less than reporting limit, I.e. none was detected.
ND = None detected.

6 Well no. 5 damaged, not sampled. New well no. 6 no VOCs detected above reporitng limits

St

Transmittal Letter

29-Sep-05

RECEIVED
SACRAMENTO
CVRWQCB

05 SEP 30 PM 2:29

CARLTON
Engineering Inc.

For: Susan Timm
RWQCB, Central Valley Regional Water Quality Control Board
11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

Work 916.464.4657
Fax 916.464.4797

From: Mike Vander Dussen
Subject: VOCs vs. Time Projection Graph, MW5
Project: 4154-08-05 SPI Brunswick Mill Dv Wtr Smplg-Hydrpnch

These are Transmitted: As Requested

Sent Via: Courier

We are sending you: Attached

Copies	Pages	Date	Description
1	1	23Sep2005	VOCs vs. Time Projection Graph, MW5
1	1	29Sep2005	VOCs vs. Time Projection Graph, MW5 (w/ 6-05 data)

Comments:

Susan,
Please find the attached graph you requested for MW5 that estimates possible time frames for the VOC constituents to reach background (Method Reporting Limit - MRL) concentrations. Please note that graph uses only the data from MW5 through 2003 and ignores the substantially lower concentrations found immediately adjacent to MW5 during the June 2005 hydropunch study.

We've also included a second graph with the hydropunch data. The second graph is presented for your review and consideration as it's been about 2-years since the last data was obtained directly from MW5, and additional constituent concentration reduction has likely occurred in MW5 since 2003. Inclusion of the recent data on the graph provides curve projections that suggest MRLs will be reached sooner than the projections of the graph without the 2005 data.

Feel free to call with any questions you may have about the project.

Best Regards,
Mike

cc: Scott Leiby, SPI

CARLTON
Engineering Inc.

August 23, 2005

Mr. Gary Blanc
Sierra Pacific Industries, Inc.
P.O. Box 496014
Redding, CA 96049-6014

Subject: SPI – Brunswick
Hydropunch Groundwater Sampling Report of Findings
Carlton Project No. 4154-08-05

Dear Mr. Blanc,

As Authorized by Sierra Pacific Industries (SPI), Carlton Engineering, Inc. (Carlton) has prepared the following report of results following collection of five (5) groundwater samples using Hydropunch methods at the above referenced site.

Carlton is pleased to assist SPI in this endeavor, and will forward this report to the Central Valley Region of the California Regional Water Quality Control Board (RWQCB) as well as the others on the distribution list below. Please feel free to call our office if you wish to discuss any aspect of this report.

Sincerely,
Carlton Engineering, Inc.

MICHAEL A. VANDER DUSSEN
No. 2047
CERTIFIED ENGINEERING GEOLOGIST

Michael Vander Dussen R.G., C.E.G.
Senior Project Engineering Geologist

ROBERT N. KULL
No. C55037
Exp. 06/06
CIVIL

Robert N. Kull, P.E.
Environmental Department Manager

Attachments: Figure 1
Analysis Results Table
Soil Boring Logs
Laboratory Reports
Water Sample Borings Permit from NCDEH

Distribution: Gary Blanc, SPI
Scott Leiby, SPI
Tim Feller, SPI
Susan Timm, RWQCB
Dave Huff, NCDEH, Grass Valley

3883 Ponderosa Road, Shingle Springs, CA 95682 Tel: (530) 677-5515 Fax: (530) 677-6645 E-mail: info@carlton-engineering.com

STRUCTURAL • CIVIL • LAND SURVEYING • GEOTECHNICAL • ENVIRONMENTAL

Site Address:
Brunswick Lumber Mill
Brunswick Road and Greenhorn Road
Grass Valley, CA 95667
Telephone: (530) 272-2297
Contact: Tim Feller, District Manager
SPI

Project Consultant:
Carlton Engineering, Inc.
3883 Ponderosa Road
Shingle Springs, CA 95682
Telephone: (530) 677-5515
Contact: Michael Vander Dussen R.G., C.E.G.

1.0 Background

The Site is approximately 80 acres in size and is located in Section 31, Township 16N, Range 9E, Mount Diablo Base & Meridian. It lies at approximately 2,800 feet above mean sea level and is surrounded by private residential land, private forestlands, and public roads. The Site was formerly occupied by a sawmill and support facilities. The mill equipment and support buildings have been decommissioned and removed, and the site is currently undeveloped.

2.0 General Information

Soil and groundwater impacted with Volatile Organic Compounds (VOCs) were discovered in the area of the facility's Millwright Shop east of the mill building. The impacted soil was removed (RWQCB acknowledgement communication to SPI on September 21, 1994), and monitoring wells were installed in the area up and down gradient of the identified impacted soil. The VOC concentrations in the groundwater have been monitored since 1995. Since discovery of the impacted groundwater, monitoring has indicated a decline in VOCs concentrations in the wells through natural degradation. The latest monitoring/analysis data (November 2004) indicates no VOCs above reporting limits were detected in the samples from the well up gradient and well cross gradient of the former impacted soil area (MW1 and MW4), and from the new down gradient well (MW6). The down gradient well closest to the former Millwright shop (MW5) was damaged during site demolition activities in 2003, and no samples were obtained from that well during the latest sampling event. Analytical results from the last sample collected from MW5 (2003) reported two VOCs at concentrations slightly above California's Drinking Water Maximum Contaminant Levels (1,1-Dichloroethane detected at 24 ug/L, and 1,1-Dichloroethene detected at 8.5 ug/L).

Water sampling was conducted on June 29, 2005 as requested by the RWQCB to obtain additional groundwater quality information near and down gradient of well MW5. Sampling was conducted according to the May 19, 2005 work plan submitted to and approved by the RWQCB with the requested addition of one down gradient boring. The water analysis data is summarized in this report and submitted to the RWQCB with a request for concurrence that VOCs concentrations have not migrated as far as the closest down gradient Hydropunch boring (approximately 50 feet from MW5), and have attenuated through natural degradation processes to levels low enough to justify a closure status for the site.

2.1 Geology

The former Brunswick Lumber Mill is located near the headwaters of the South Fork of Wolf Creek. The Geologic Map of Nevada County indicates the bedrock in the site area consists of Jurassic Hypabyssal rocks, diabase (Jdb).

2.2 Hydrogeology

Groundwater is relatively shallow in the area of the wells and ranges from approximately 7 feet below the surface at MW1, to approximately 23 feet below the surface in the area of Hydropunch boring

HP1 (as measured on June 21 and 29, 2005). The gradient is generally to the southwest and west in the tested area.

3.0 Groundwater Sampling Procedures

Groundwater samples were collected near damaged well MW5 to assess the remaining presence or extent of VOCs in that area using Hydropunch equipment and methods.

Cuttings from the borings were logged by a California Registered Geologist. The head-space in zip-loc bagged cuttings samples was screened for VOCs using a photo ionization detector. A maximum of 0.3 ppm was detected from one sample collected from boring HP3, all others were 0 ppm. This maximum concentration was consistent with ambient air readings taken at the site and not considered to indicate evidence of VOC-impacted soil in the borings.

Upon termination of the borings, the Hydropunch probe was advanced into the groundwater zone and water samples were collected from the screened portion of the probe and transported to the laboratory where they were analyzed according to the protocol and methods outlined in the approved Work Plan.

The borings were backfilled with a cement slurry following sample collection, and a Nevada County Department of Environmental Health representative inspected the backfilled borings according to the County's permit conditions.

4.0 Sampling Results/Recommendations

The table attached to this report lists the constituents detected by the water sample analyses, and those include:

Acetone	(max. concentration of 160 ug/L in boring HP4)
1,1-Dichloroethane	(max. concentration of 10 ug/L in boring HP4)
1,1-Dichloroethene	(max. concentration of 1.3 ug/L in boring HP5)
1,1,1-Trichloroethane	(max. concentration of 1.1 ug/L in boring HP4)

The constituents 1,1-Dichloroethane, 1,1-Dichloroethene, and 1,1,1-Trichloroethane were also the only VOCs detected in the last sampling event conducted at MW-5 in September 2003. During this Hydropunch sampling event, the same constituents were detected only in groundwater samples from the two Hydropunch borings closest to MW-5, and at concentrations significantly lower than those detected in the September 2003 sampling.

The constituent Acetone has not been reported in the monitoring well sampling events previous to this Hydropunch sampling event. Acetone may be present in the environment as a naturally occurring constituent of plants or breakdown of animal fats. It may also result from the breakdown of alcohols or organic acids. The laboratory was instructed to analyze the samples for Organic Acids and Non-halogenated Organics (alcohols) to assess the potential for the detected acetone to have resulted from the breakdown of these constituents in the water. Organic acids and alcohols were not detected in the samples at concentrations above the method reporting limits. The presence of the low concentrations of Acetone detected in two of the Hydropunch samples is considered to have resulted from some form of plant or organic material in the area, and is not considered unusual where abundant bark and buried wood materials are observed at the former lumber mill site. The only water quality goals found for Acetone in groundwater (taste & odor – 20,000 ug/L, and IRIS – 6,300 ug/L, RWQCB, *A Compilation of*

Water Quality Goals, August 2003) are listed at concentrations well above the concentrations detected in the water samples.

The soil boring/Hydropunch water sample analysis results indicate the extent of detectable concentrations of the identified constituents of concern in the groundwater at the site is likely limited to the area within approximately 50 feet up-, cross- and down-gradient of well MW-5. The concentrations of those constituents in the area of MW-5 have decreased significantly since the last sample event at MW-5. Considering the impacted water zone appears to be limited, and that the constituent concentrations continue to decrease with time, it is recommended that the RWQCB issue a closure status for the site.

5.0 Limitations and Exceptions

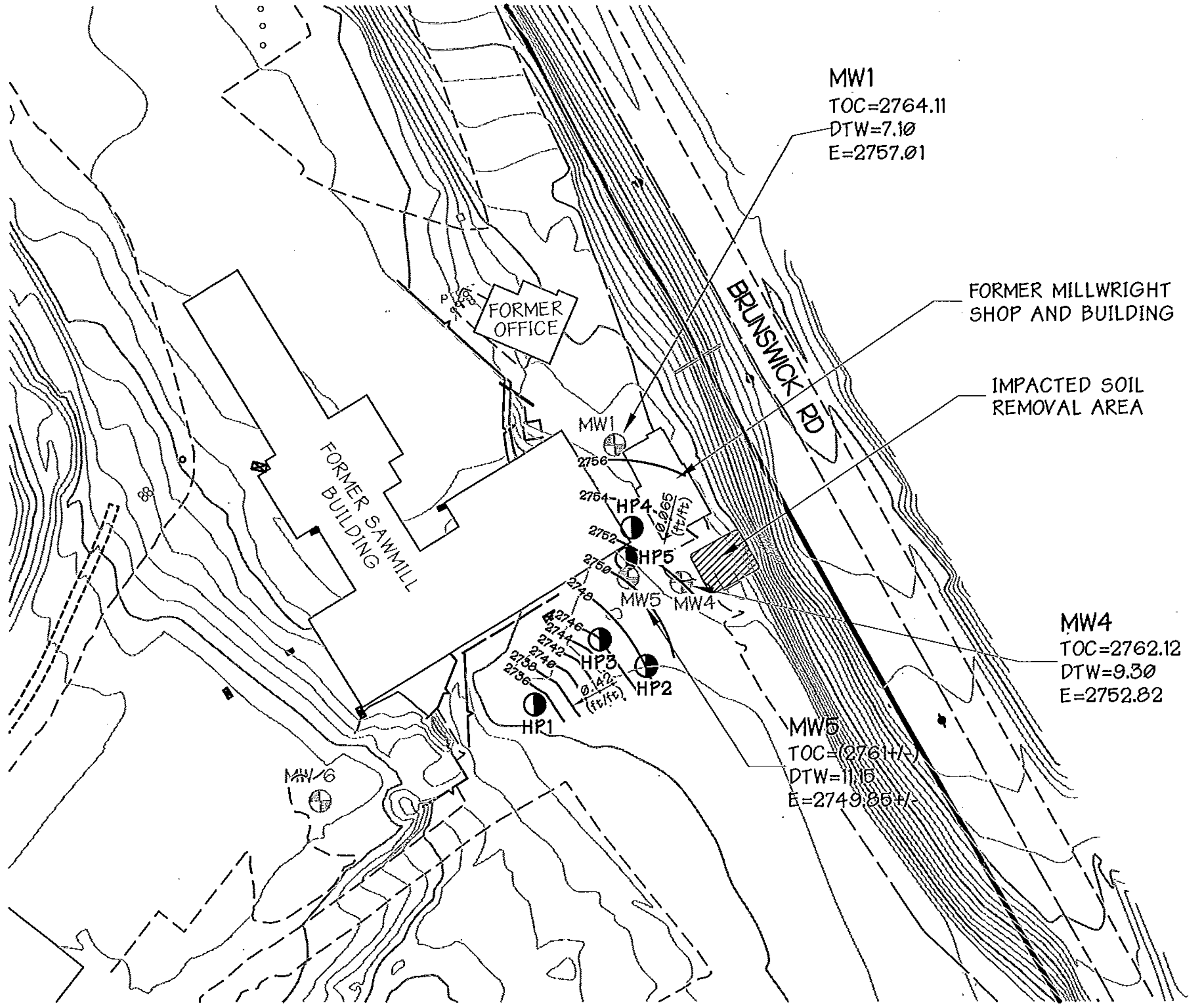
This report has been prepared by Carlton Engineering, Inc. under the professional supervision of the Senior Partners and Senior Staff whose seals and signatures appear herein. The findings, interpretations of data, recommendations, specifications or professional opinions are presented within the limits prescribed by available information at the time the report was prepared, in accordance with generally accepted professional engineering and geologic practice and within the requirements of the Client. There is no warranty, either expressed or implied.

The findings of this report are based on the readily available data and information obtained from public and private sources. As of the present date, the findings of this report are valid only for the project scope studied. With the passage of time, changes in the conditions of a property can occur whether they are due to natural processes or to the works of man on this or adjacent properties. This report should be updated in accordance with applicable standards or if any changes have affected the Site. Legislation or the broadening of knowledge may result in changes in applicable standards. We accept no liability on completeness or accuracy of the information presented and or provided to us, or any conclusions and decisions that may be made by the Client or others regarding the subject site/project.

This report was prepared solely for the benefit of Carlton's Client and submission to the regulating agencies. No other entity or person shall use or rely upon this report or any of Carlton's work products unless expressly authorized in writing by Carlton. Any use of or reliance upon Carlton's work product by any party, other than the Client, shall be solely at the risk of such party.

100 0 50 100 200

1 inch = 100 ft.



Vicinity Map

NTS

Legend

—— 2740 ——	- APPROXIMATE GROUNDWATER ELEVATION CONTOUR. *
(0.176) (ft/ft) →	- APPROXIMATE GROUNDWATER GRADIENT & FLOW DIRECTION. *
⊕ MW1	- EXISTING GROUNDWATER MONITORING WELL. (MW5 DAMAGED)
◐	- HYDROPUNCH SAMPLE
TOC	-TOP OF CASING.
DTW	- DEPTH TO WATER.
E	- GROUNDWATER ELEVATION.
⏍	- FORMER STRUCTURE LOCATION.

* DATA FROM 06-21 & 06-29-05
GROUNDWATER ELEVATIONS, CONTOURS AND GRADIENT SHOWN SOUTHWEST OF MONITORING WELLS 1, 4 & 5 ARE APPROXIMATED BASED ON DEPTHS TO WATER FOUND DURING HYDROPUNCH SAMPLING AND DO NOT NECESSARILY REPRESENT THE STABILIZED WATER TABLE IN THAT AREA.

TEAM DRIVEN SOLUTIONS FOR THE BUILT ENVIRONMENT

CARLTON
Engineering Inc.
3332 Ponderosa Road, Shingle Springs, CA 95682
Voice 530.677.5515 Fax 530.677.6645

SIERRA PACIFIC INDUSTRIES

SPI BRUNSWICK

GROUNDWATER SAMPLING LOCATIONS

Project Location:
Brunswick Road
Grass Valley
Nevada County, California

DESIGNED MV	DATE 07-25-05
DRAWN TW2	Horz. SCALE 1"=100'
PROJECT 4154-08-05	Vert. SCALE NA

FIGURE
1

Z:\SPI Brunswick\4154-08-05\Dwgset 415408_G2

SUMMARY OF HYDROPUNCH WATER SAMPLING AND ANALYSIS RESULTS
EPA METHOD 8260B, (ug/L), 6-29-05

	SAMPLE/BORING/WELL NO.					
ANALYTE	HP1	HP2	HP3	HP4	HP5	MW-5*
Acetone	20	<10	10	160	<10	<25
1,1-Dichloroethane	<0.50	<0.50	<0.50	10	7.8	24
1,1-Dichloroethene	<0.50	<0.50	<0.50	0.97	1.3	8.5
1,1,1-Trichloroethane	<0.50	<0.50	<0.50	1.1	0.65	6.5

All other target constituents analyzed by the EPA method used were reported as non-detectable and are not included in this table. Please refer to the analytical reports.

MW-5*, Analysis results from last sampling event, Sept 2003, shown for comparison

CARLTON
Engineering
3883 Ponderosa Road, Shingle Springs, CA 95682
Voice 530-677-5515 Fax 530-677-6645

LOG OF BORING HP1

Sheet 1 of 1

Project: SPI Brunswick Hydropunch Borings

Location: **12503 Brunswick Road, Grass Valley, CA 95945**

Project Number: **4154-08-05**

Start Date:	**6/29/05**	Finish Date:	**6/29/05**	Total Depth Drilled (ft bgs):	**21.0**
Drilling Method:	**4-inch Flight Auger**	Drilling Contractor:	**Cal Nev Geoexploration**	Ground Surface Elevation (ft MSL):	**2757**
Drill Rig:	**CME-45**	Hammer Type:	**CME Auto-trip**	Hammer Weight / Drop:	**140 lbs. / 30 inches**
Logged By:	**M. Vander Dussen**	Reviewed By:		Borehole Backfill:	**Cement slurry**
Coordinate Location:					

Remarks: **Hydropunch probe pushed approximately 4 feet beyond bottom of boring**

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	USCS Classification	Graphic Log	Sample Type	Sample/Run No.	Blows/6"	N Value (uncorrected)
	0	Scattered concrete rubble at surface Clayey silt, dark brown to brown, moist.		⊠				
2756								
	2							
2754								
	4							
2752								
	6							
2750								
	8							
2748								
	10		ML					
2746								
	12							
2744								
	14							
2742								
	16							
2740								
	18							
2738								
	20	Sandy silt, yellow brown, moist.						
2736		Terminate boring, push hydropunch probe.	ML					
	22							
2734	1:40 ▼							
	24						HP1		

CARLTON
Engineering
3883 Ponderosa Road, Shingle Springs, CA 95682
Voice 530-677-5515 Fax 530-677-6645

LOG OF BORING HP2

Sheet 1 of 1

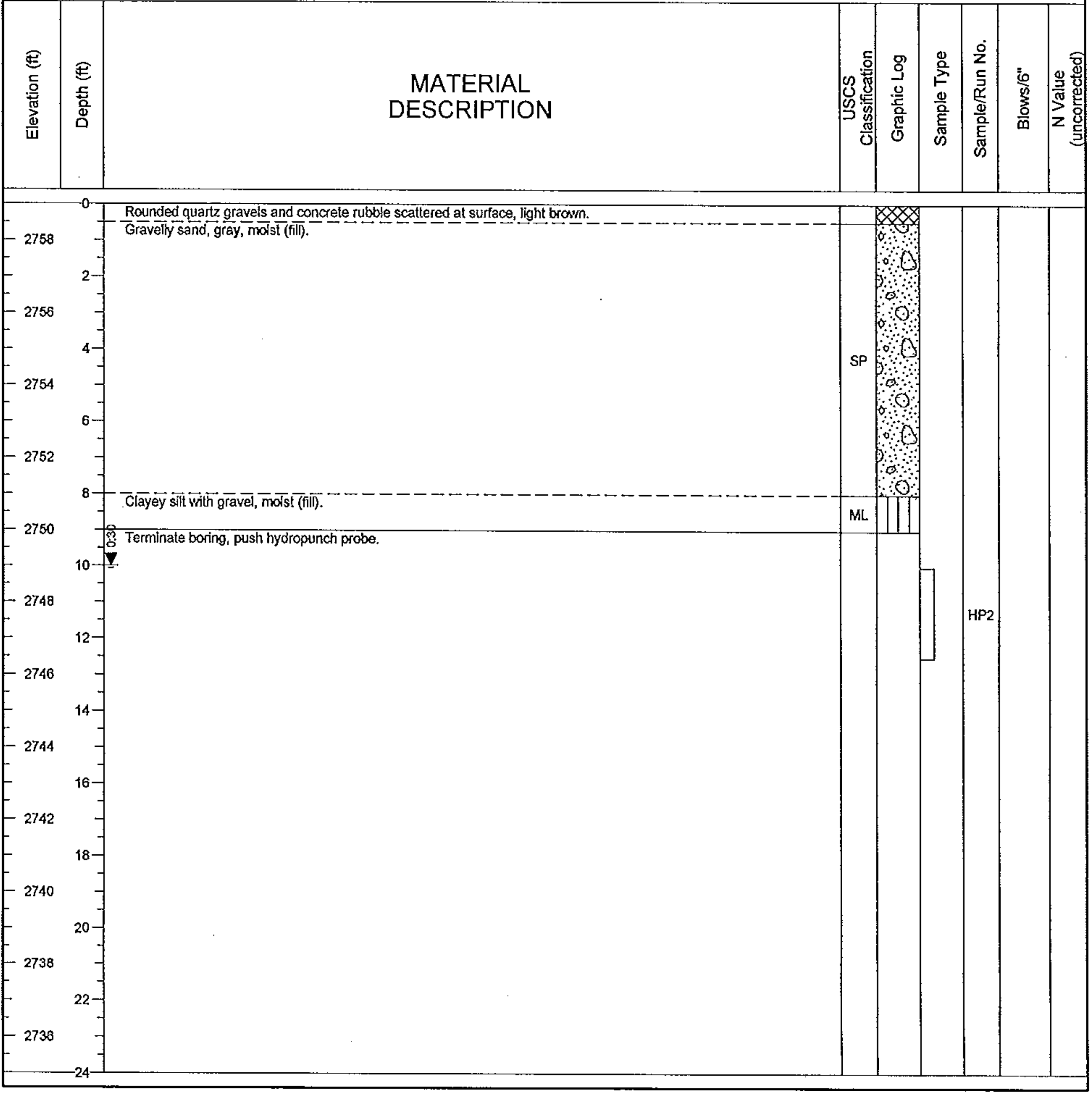
Project: SPI Brunswick Hydropunch Borings

Location: 12503 Brunswick Road, Grass Valley, CA 95945

Project Number: 4154-08-05

Start Date:	6/29/05	Finish Date:	6/29/05	Total Depth Drilled (ft bgs):	9.0
Drilling Method:	4-inch Flight Auger	Drilling Contractor:	Cal Nev Geoexploration	Ground Surface Elevation (ft MSL):	2759
Drill Rig:	CME-45	Hammer Type:	CME Auto-trip	Hammer Weight / Drop:	140 lbs. / 30 inches
Logged By: M. Vander Dussen	Reviewed By:	Borehole Backfill:	Cement slurry	Coordinate Location:	

Remarks: Hydropunch probe pushed approximately 4 feet beyond bottom of boring



Rounded quartz gravels and concrete rubble scattered at surface, light brown.

Gravelly sand, gray, moist (fill).

Clayey silt with gravel, moist (fill).

Terminate boring, push hydropunch probe.

CARLTON Engineering
3883 Ponderosa Road, Shingle Springs, CA 95682
Voice 530-677-5515 Fax 530-677-6645

LOG OF BORING HP3

Sheet 1 of 1

Project: SPI Brunswick Hydropunch Borings

Location: **12503 Brunswick Road, Grass Valley, CA 95945**

Project Number: **4154-08-05**

Start Date:	**6/29/05**	Finish Date:	**6/29/05**	Total Depth Drilled (ft bgs):	**9.0**
Drilling Method:	**4-inch Flight Auger**	Drilling Contractor:	**Cal Nev Geoexploration**	Ground Surface Elevation (ft MSL):	**2758**
Drill Rig:	**CME-45**	Hammer Type:	**CME Auto-trip**	Hammer Weight / Drop:	**140 lbs. / 30 inches**
Logged By:	**M. Vander Dussen** Reviewed By:	Borehole Backfill:	**Cement slurry**	Coordinate Location:	
Remarks:	**Hydropunch probe pushed approximately 4 feet beyond bottom of boring**				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	USCS Classification	Graphic Log	Sample Type	Sample/Run No.	Blows/6"	N Value (uncorrected)
2758	0	Clayey silt with blocky clasts of rock, brown, moist (fill).	ML					
2756	2	Gravelly sand, gray, moist (fill).	SP					
		Clayey silt with clasts of rock, dark brown, moist (fill).	ML					
2754	4							
2752	6							
2750	8							
		Terminate boring, push hydropunch probe.						
2748	10							
2746	12 ▼ 1:00				▯	HP3		
2744	14							
2742	16							
2740	18							
2738	20							
2736	22							
2734	24							

CARLTON
Engineering
3883 Ponderosa Road, Shingle Springs, CA 95682
Voice 530-677-5515 Fax 530-677-6645

LOG OF BORING HP4

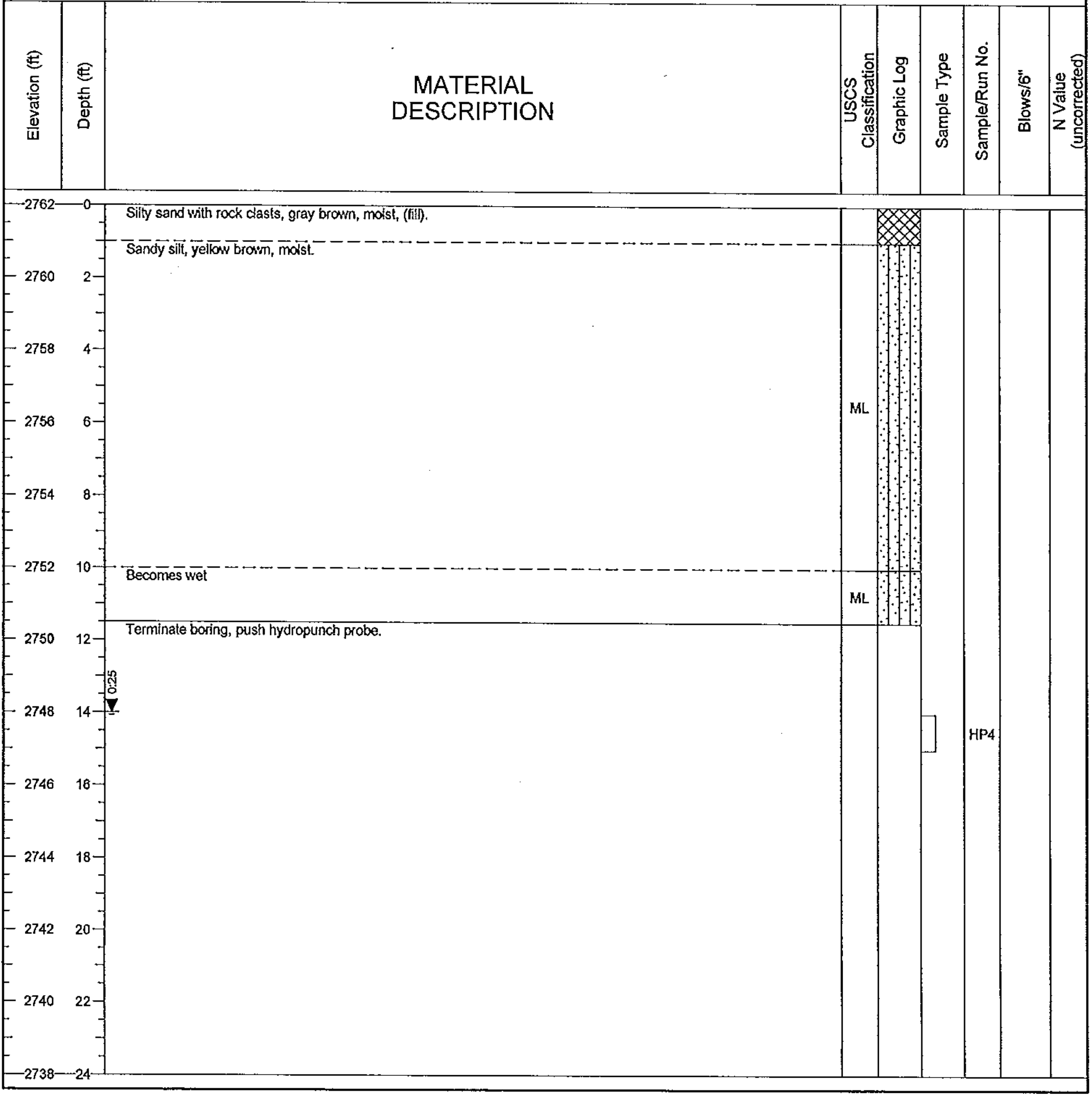
Sheet 1 of 1

Project: SPI Brunswick Hydropunch Borings

Location: **12503 Brunswick Road, Grass Valley, CA 95945**

Project Number: **4154-08-05**

Start Date:	**6/29/05**	Finish Date:	**6/29/05**	Total Depth Drilled (ft bgs):	**11.5**
Drilling Method:	**4-inch Flight Auger**	Drilling Contractor:	**Cal Nev Geoexploration**	Ground Surface Elevation (ft MSL):	**2762**
Drill Rig:	**CME-45**	Hammer Type:	**CME Auto-trip**	Hammer Weight / Drop:	**140 lbs. / 30 inches**
Logged By: **M. Vander Dussen**	Reviewed By:	Borehole Backfill:	**Cement slurry**	Coordinate Location:	
Remarks:	**Hydropunch probe pushed approximately 4 feet beyond bottom of boring**				



Silty sand with rock clasts, gray brown, moist, (fill).

Sandy silt, yellow brown, moist.

Becomes wet

Terminate boring, push hydropunch probe.

CARLTON
Engineering
3883 Ponderosa Road, Shingle Springs, CA 95682
Voice 530-677-5515 Fax 530-677-6645

LOG OF BORING HP5

Sheet 1 of 1

Project: SPI Brunswick Hydropunch Borings

Location: **12503 Brunswick Road, Grass Valley, CA 95945**

Project Number: **4154-08-05**

Start Date:	**6/29/05**	Finish Date:	**6/29/05**	Total Depth Drilled (ft bgs):	**11.5**
Drilling Method:	**4-inch Flight Auger**	Drilling Contractor:	**Cal Nev Geoexploration**	Ground Surface Elevation (ft MSL):	**2760**
Drill Rig:	**CME-45**	Hammer Type:	**CME Auto-trip**	Hammer Weight / Drop:	**140 lbs. / 30 inches**
Logged By: **M. Vander Dussen**	Reviewed By:	Borehole Backfill:	**Cement slurry**	Coordinate Location:	

Remarks: **Hydropunch probe pushed approximately 4 feet beyond bottom of boring**

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	USCS Classification	Graphic Log	Sample Type	Sample/Run No.	Blows/6"	N Value (uncorrected)
2760	0	Sandy silt, yellow brown, moist, becomes wet at 11.5 feet.						
2758	2							
2756	4							
2754	6		ML					
2752	8							
2750	10							
2748	12	Terminate boring, push hydropunch probe.						
2746	14	▼ 0:30			☐	HP5		
2744	16							
2742	18							
2740	20							
2738	22							
2736	24							

CALIFORNIA LABORATORY SERVICES
3249 Fitzgerald Road Rancho Cordova, CA 95742

July 13, 2005

CLS Work Order #: COF0976
COC #: 46640

Mike Vander Dussen
Carlton Engineering, Inc.

3883 Ponderosa Road
Shingle Springs, CA 95682

Project Name: SPI Brunswick

Enclosed are the results of analyses for samples received by the laboratory on 06/30/05 10:10. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

for James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

07/08/05 11:54

Carlton Engineering, Inc.
3883 Ponderosa Road
Shingle Springs, CA 95682

Project: SPI Brunswick
Project Number: 4154-08-05
Project Manager: Mike Vander Dussen

CLS Work Order #: COF0976
COC #: 46640

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
4154-08-05 HP1 (COF0976-01) Water	**Sampled: 06/29/05 15:30**	**Received: 06/30/05 10:10**							
Acetone	**20**	10	µg/L	1	CO04956	06/30/05	06/30/05	EPA 8260B	
Benzene	ND	0.50	"	"	"	"	"	"	
Bromobenzene	ND	0.50	"	"	"	"	"	"	
Bromochloromethane	ND	0.50	"	"	"	"	"	"	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
2-Butanone	ND	10	"	"	"	"	"	"	
n-Butylbenzene	ND	0.50	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.50	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.50	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
o-Chlorotoluene	ND	0.50	"	"	"	"	"	"	
p-Chlorotoluene	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
Dibromomethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.50	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.50	"	"	"	"	"	"	

07/08/05 11:54

Carlton Engineering, Inc.
3883 Ponderosa Road
Shingle Springs, CA 95682

Project: SPI Brunswick
Project Number: 4154-08-05
Project Manager: Mike Vander Dussen

CLS Work Order #: COF0976
COC #: 46640

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
4154-08-05 HP1 (COF0976-01) Water Sampled: 06/29/05 15:30 Received: 06/30/05 10:10									
cis-1,3-Dichloropropene	ND	0.50	µg/L	1	CO04956	06/30/05	06/30/05	EPA 8260B	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
1,1,2-Tricholoro-1,2,2-trifluoroethane (Freon 113)	ND	0.50	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.50	"	"	"	"	"	"	
2-Hexanone	ND	10	"	"	"	"	"	"	
Isopropylbenzene	ND	0.50	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	10	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.50	"	"	"	"	"	"	
Naphthalene	ND	0.50	"	"	"	"	"	"	
n-Propylbenzene	ND	0.50	"	"	"	"	"	"	
Styrene	ND	0.50	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	ND	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.50	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.50	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*81.3 %*	*66-135*		"	"	"	"	
Surrogate: Toluene-d8		*99.0 %*	*72-125*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*105 %*	*73-125*		"	"	"	"	

CA DOHS ELAP Accreditation/Registration Number 1233

CALIFORNIA LABORATORY SERVICES

07/08/05 11:54

Carlton Engineering, Inc.
3883 Ponderosa Road
Shingle Springs, CA 95682

Project: SPI Brunswick
Project Number: 4154-08-05
Project Manager: Mike Vander Dussen

CLS Work Order #: COF0976
COC #: 46640

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
4154-08-05 HP2 (COF0976-02) Water Sampled: 06/29/05 11:00 Received: 06/30/05 10:10									
Acetone	ND	10	µg/L	1	CO05019	07/01/05	07/01/05	EPA 8260B	
Benzene	ND	0.50	"	"	"	"	"	"	
Bromobenzene	ND	0.50	"	"	"	"	"	"	
Bromochloromethane	ND	0.50	"	"	"	"	"	"	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
2-Butanone	ND	10	"	"	"	"	"	"	
n-Butylbenzene	ND	0.50	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.50	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.50	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
o-Chlorotoluene	ND	0.50	"	"	"	"	"	"	
p-Chlorotoluene	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
Dibromomethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.50	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.50	"	"	"	"	"	"	

Carlton Engineering, Inc.
3883 Ponderosa Road
Shingle Springs, CA 95682

Project: SPI Brunswick
Project Number: 4154-08-05
Project Manager: Mike Vander Dussen

CLS Work Order #: COF0976
COC #: 46640

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
4154-08-05 HP2 (COF0976-02) Water	**Sampled: 06/29/05 11:00**		**Received: 06/30/05 10:10**						
cis-1,3-Dichloropropene	ND	0.50	µg/L	1	CO05019	07/01/05	07/01/05	EPA 8260B	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
1,1,2-Tricholoro-1,2,2-trifluoroethane (Freon 113)	ND	0.50	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.50	"	"	"	"	"	"	
2-Hexanone	ND	10	"	"	"	"	"	"	
Isopropylbenzene	ND	0.50	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	10	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.50	"	"	"	"	"	"	
Naphthalene	ND	0.50	"	"	"	"	"	"	
n-Propylbenzene	ND	0.50	"	"	"	"	"	"	
Styrene	ND	0.50	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	ND	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.50	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.50	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*87.5 %*	*66-135*		"	"	"	"	
Surrogate: Toluene-d8		*99.0 %*	*72-125*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*77.7 %*	*73-125*		"	"	"	"	

07/08/05 11:54

Carlton Engineering, Inc.
3883 Ponderosa Road
Shingle Springs, CA 95682

Project: SPI Brunswick
Project Number: 4154-08-05
Project Manager: Mike Vander Dussen

CLS Work Order #: COF0976
COC #: 46640

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
4154-08-05 HP3 (COF0976-03) Water	**Sampled: 06/29/05 12:20**		**Received: 06/30/05 10:10**						
Acetone	ND	10	µg/L	1	CO04956	06/30/05	06/30/05	EPA 8260B	
Benzene	ND	0.50	"	"	"	"	"	"	
Bromobenzene	ND	0.50	"	"	"	"	"	"	
Bromochloromethane	ND	0.50	"	"	"	"	"	"	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
2-Butanone	ND	10	"	"	"	"	"	"	
n-Butylbenzene	ND	0.50	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.50	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.50	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
o-Chlorotoluene	ND	0.50	"	"	"	"	"	"	
p-Chlorotoluene	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
Dibromomethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.50	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.50	"	"	"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
4154-08-05 HP3 (COF0976-03) Water	**Sampled: 06/29/05 12:20**		**Received: 06/30/05 10:10**						
cis-1,3-Dichloropropene	ND	0.50	µg/L	1	CO04956	06/30/05	06/30/05	EPA 8260B	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
1,1,2-Tricholoro-1,2,2-trifluoroethane (Freon 113)	ND	0.50	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.50	"	"	"	"	"	"	
2-Hexanone	ND	10	"	"	"	"	"	"	
Isopropylbenzene	ND	0.50	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	10	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.50	"	"	"	"	"	"	
Naphthalene	ND	0.50	"	"	"	"	"	"	
n-Propylbenzene	ND	0.50	"	"	"	"	"	"	
Styrene	ND	0.50	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	ND	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.50	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.50	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*85.7 %*	*66-135*		"	"	"	"	
Surrogate: Toluene-d8		*98.5 %*	*72-125*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*108 %*	*73-125*		"	"	"	"	

07/08/05 11:54

Carlton Engineering, Inc.
3883 Ponderosa Road
Shingle Springs, CA 95682

Project: SPI Brunswick
Project Number: 4154-08-05
Project Manager: Mike Vander Dussen

CLS Work Order #: COF0976
COC #: 46640

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
4154-08-05 HP4 (COF0976-04) Water Sampled: 06/29/05 13:10 Received: 06/30/05 10:10									
Acetone	**160**	10	µg/L	1	CO04956	06/30/05	06/30/05	EPA 8260B	
Benzene	ND	0.50	"	"	"	"	"	"	
Bromobenzene	ND	0.50	"	"	"	"	"	"	
Bromochloromethane	ND	0.50	"	"	"	"	"	"	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
2-Butanone	ND	10	"	"	"	"	"	"	
n-Butylbenzene	ND	0.50	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.50	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.50	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
o-Chlorotoluene	ND	0.50	"	"	"	"	"	"	
p-Chlorotoluene	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
Dibromomethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethane	**10**	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	**0.97**	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.50	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.50	"	"	"	"	"	"	

Carlton Engineering, Inc.
3883 Ponderosa Road
Shingle Springs, CA 95682

Project: SPI Brunswick
Project Number: 4154-08-05
Project Manager: Mike Vander Dussen

CLS Work Order #: COF0976
COC #: 46640

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
4154-08-05 HP4 (COF0976-04) Water Sampled: 06/29/05 13:10 Received: 06/30/05 10:10									
cis-1,3-Dichloropropene	ND	0.50	µg/L	1	CO04956	06/30/05	06/30/05	EPA 8260B	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
1,1,2-Tricholoro-1,2,2-trifluoroethane (Freon 113)	ND	0.50	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.50	"	"	"	"	"	"	
2-Hexanone	ND	10	"	"	"	"	"	"	
Isopropylbenzene	ND	0.50	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	10	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.50	"	"	"	"	"	"	
Naphthalene	ND	0.50	"	"	"	"	"	"	
n-Propylbenzene	ND	0.50	"	"	"	"	"	"	
Styrene	ND	0.50	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	**1.1**	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	ND	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.50	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.50	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*80.5 %*	*66-135*		"	"	"	"	
Surrogate: Toluene-d8		*98.6 %*	*72-125*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*	*73-125*		"	"	"	"	

Carlton Engineering, Inc.
3883 Ponderosa Road
Shingle Springs, CA 95682

Project: SPI Brunswick
Project Number: 4154-08-05
Project Manager: Mike Vander Dussen

CLS Work Order #: COF0976
COC #: 46640

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
4154-08-05 HP5 (COF0976-05) Water Sampled: 06/29/05 13:45 Received: 06/30/05 10:10									
Acetone	ND	10	µg/L	1	CO05019	07/01/05	07/01/05	EPA 8260B	
Benzene	ND	0.50	"	"	"	"	"	"	
Bromobenzene	ND	0.50	"	"	"	"	"	"	
Bromochloromethane	ND	0.50	"	"	"	"	"	"	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
2-Butanone	ND	10	"	"	"	"	"	"	
n-Butylbenzene	ND	0.50	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.50	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.50	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
o-Chlorotoluene	ND	0.50	"	"	"	"	"	"	
p-Chlorotoluene	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	1.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
Dibromomethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane (Freon 12)	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethane	**7.8**	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	**1.3**	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
1,3-Dichloropropane	ND	0.50	"	"	"	"	"	"	
2,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.50	"	"	"	"	"	"	

07/08/05 11:54

Carlton Engineering, Inc.
3883 Ponderosa Road
Shingle Springs, CA 95682

Project: SPI Brunswick
Project Number: 4154-08-05
Project Manager: Mike Vander Dussen

CLS Work Order #: COF0976
COC #: 46640

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
4154-08-05 HP5 (COF0976-05) Water Sampled: 06/29/05 13:45 Received: 06/30/05 10:10									
cis-1,3-Dichloropropene	ND	0.50	µg/L	1	CO05019	07/01/05	07/01/05	EPA 8260B	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
1,1,2-Tricholoro-1,2,2-trifluoroethane (Freon 113)	ND	0.50	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.50	"	"	"	"	"	"	
2-Hexanone	ND	10	"	"	"	"	"	"	
Isopropylbenzene	ND	0.50	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	10	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	0.50	"	"	"	"	"	"	
Naphthalene	ND	0.50	"	"	"	"	"	"	
n-Propylbenzene	ND	0.50	"	"	"	"	"	"	
Styrene	ND	0.50	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	**0.65**	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	ND	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.50	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.50	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*86.8 %*	*66-135*		"	"	"	"	
Surrogate: Toluene-d8		*100 %*	*72-125*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*76.9 %*	*73-125*		"	"	"	"	

07/08/05 11:54

Carlton Engineering, Inc.
3883 Ponderosa Road
Shingle Springs, CA 95682

Project: SPI Brunswick
Project Number: 4154-08-05
Project Manager: Mike Vander Dussen

CLS Work Order #: COF0976
COC #: 46640

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Batch CO04956 - EPA 5030 Water MS

Blank (CO04956-BLK1) Prepared & Analyzed: 06/30/05

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Acetone	ND	10	µg/L							
Benzene	ND	0.50	"							
Bromobenzene	ND	0.50	"							
Bromochloromethane	ND	0.50	"							
Bromodichloromethane	ND	0.50	"							
Bromoform	ND	0.50	"							
Bromomethane	ND	1.0	"							
2-Butanone	ND	10	"							
n-Butylbenzene	ND	0.50	"							
sec-Butylbenzene	ND	0.50	"							
tert-Butylbenzene	ND	0.50	"							
Carbon tetrachloride	ND	0.50	"							
Chlorobenzene	ND	0.50	"							
Chloroethane	ND	0.50	"							
Chloroform	ND	0.50	"							
Chloromethane	ND	1.0	"							
o-Chlorotoluene	ND	0.50	"							
p-Chlorotoluene	ND	0.50	"							
Dibromochloromethane	ND	0.50	"							
1,2-Dibromo-3-chloropropane	ND	1.0	"							
1,2-Dibromoethane (EDB)	ND	0.50	"							
Dibromomethane	ND	0.50	"							
1,2-Dichlorobenzene	ND	0.50	"							
1,3-Dichlorobenzene	ND	0.50	"							
1,4-Dichlorobenzene	ND	0.50	"							
Dichlorodifluoromethane (Freon 12)	ND	1.0	"							
1,1-Dichloroethane	ND	0.50	"							
1,2-Dichloroethane	ND	0.50	"							
1,1-Dichloroethene	ND	0.50	"							
cis-1,2-Dichloroethene	ND	0.50	"							
trans-1,2-Dichloroethene	ND	0.50	"							

07/08/05 11:54

Carlton Engineering, Inc. 3883 Ponderosa Road Shingle Springs, CA 95682	Project: SPI Brunswick Project Number: 4154-08-05 Project Manager: Mike Vander Dussen	**CLS Work Order #: COF0976** COC #: 46640

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CO04956 - EPA 5030 Water MS										
Blank (CO04956-BLK1)				Prepared & Analyzed: 06/30/05						
1,2-Dichloropropane	ND	0.50	µg/L							
1,3-Dichloropropane	ND	0.50	"							
2,2-Dichloropropane	ND	0.50	"							
1,1-Dichloropropene	ND	0.50	"							
cis-1,3-Dichloropropene	ND	0.50	"							
trans-1,3-Dichloropropene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
1,1,2-Tricholoro-1,2,2-trifluoroethane (Freon 113)	ND	0.50	"							
Hexachlorobutadiene	ND	0.50	"							
2-Hexanone	ND	10	"							
Isopropylbenzene	ND	0.50	"							
p-Isopropyltoluene	ND	0.50	"							
Methylene chloride	ND	0.50	"							
4-Methyl-2-pentanone	ND	10	"							
Methyl tert-butyl ether	ND	0.50	"							
Naphthalene	ND	0.50	"							
n-Propylbenzene	ND	0.50	"							
Styrene	ND	0.50	"							
1,1,1,2-Tetrachloroethane	ND	0.50	"							
1,1,2,2-Tetrachloroethane	ND	0.50	"							
Tetrachloroethene	ND	0.50	"							
Toluene	ND	0.50	"							
1,2,3-Trichlorobenzene	ND	0.50	"							
1,2,4-Trichlorobenzene	ND	0.50	"							
1,1,1-Trichloroethane	ND	0.50	"							
1,1,2-Trichloroethane	ND	0.50	"							
Trichloroethene	ND	0.50	"							
Trichlorofluoromethane	ND	0.50	"							
1,2,3-Trichloropropane	ND	0.50	"							
1,2,4-Trimethylbenzene	ND	0.50	"							

Carlton Engineering, Inc.
3883 Ponderosa Road
Shingle Springs, CA 95682

Project: SPI Brunswick
Project Number: 4154-08-05
Project Manager: Mike Vander Dussen

CLS Work Order #: COF0976
COC #: 46640

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CO04956 - EPA 5030 Water MS										
Blank (CO04956-BLK1)				Prepared & Analyzed: 06/30/05						
1,3,5-Trimethylbenzene	ND	0.50	µg/L							
Vinyl chloride	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	*8.28*		"	*10.0*		*82.8*	*66-135*			
Surrogate: Toluene-d8	*9.86*		"	*10.0*		*98.6*	*72-125*			
Surrogate: 4-Bromofluorobenzene	*9.31*		"	*10.0*		*93.1*	*73-125*			
LCS (CO04956-BS1)				Prepared & Analyzed: 06/30/05						
Benzene	20.2	0.50	µg/L	20.0		101	60-135			
Chlorobenzene	22.3	0.50	"	20.0		112	60-133			
1,1-Dichloroethene	18.1	0.50	"	20.0		90.5	42-150			
Toluene	19.8	0.50	"	20.0		99.0	60-137			
Trichloroethene	19.0	0.50	"	20.0		95.0	62-140			
Surrogate: 1,2-Dichloroethane-d4	*8.36*		"	*10.0*		*83.6*	*66-135*			
Surrogate: Toluene-d8	*9.81*		"	*10.0*		*98.1*	*72-125*			
Surrogate: 4-Bromofluorobenzene	*9.28*		"	*10.0*		*92.8*	*73-125*			
LCS Dup (CO04956-BSD1)				Prepared & Analyzed: 06/30/05						
Benzene	20.3	0.50	µg/L	20.0		102	60-135	0.494	25	
Chlorobenzene	22.2	0.50	"	20.0		111	60-133	0.449	25	
1,1-Dichloroethene	18.4	0.50	"	20.0		92.0	42-150	1.64	25	
Toluene	19.8	0.50	"	20.0		99.0	60-137	0.00	25	
Trichloroethene	19.4	0.50	"	20.0		97.0	62-140	2.08	25	
Surrogate: 1,2-Dichloroethane-d4	*8.51*		"	*10.0*		*85.1*	*66-135*			
Surrogate: Toluene-d8	*9.85*		"	*10.0*		*98.5*	*72-125*			
Surrogate: 4-Bromofluorobenzene	*9.25*		"	*10.0*		*92.5*	*73-125*			

Carlton Engineering, Inc.
3883 Ponderosa Road
Shingle Springs, CA 95682

Project: SPI Brunswick
Project Number: 4154-08-05
Project Manager: Mike Vander Dussen

CLS Work Order #: COF0976
COC #: 46640

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Batch CO05019 - EPA 5030 Water MS

Blank (CO05019-BLK1) Prepared & Analyzed: 07/01/05

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Acetone	ND	10	µg/L							
Benzene	ND	0.50	"							
Bromobenzene	ND	0.50	"							
Bromochloromethane	ND	0.50	"							
Bromodichloromethane	ND	0.50	"							
Bromoform	ND	0.50	"							
Bromomethane	ND	1.0	"							
2-Butanone	ND	10	"							
n-Butylbenzene	ND	0.50	"							
sec-Butylbenzene	ND	0.50	"							
tert-Butylbenzene	ND	0.50	"							
Carbon tetrachloride	ND	0.50	"							
Chlorobenzene	ND	0.50	"							
Chloroethane	ND	0.50	"							
Chloroform	ND	0.50	"							
Chloromethane	ND	1.0	"							
o-Chlorotoluene	ND	0.50	"							
p-Chlorotoluene	ND	0.50	"							
Dibromochloromethane	ND	0.50	"							
1,2-Dibromo-3-chloropropane	ND	1.0	"							
1,2-Dibromoethane (EDB)	ND	0.50	"							
Dibromomethane	ND	0.50	"							
1,2-Dichlorobenzene	ND	0.50	"							
1,3-Dichlorobenzene	ND	0.50	"							
1,4-Dichlorobenzene	ND	0.50	"							
Dichlorodifluoromethane (Freon 12)	ND	1.0	"							
1,1-Dichloroethane	ND	0.50	"							
1,2-Dichloroethane	ND	0.50	"							
1,1-Dichloroethene	ND	0.50	"							
cis-1,2-Dichloroethene	ND	0.50	"							
trans-1,2-Dichloroethene	ND	0.50	"							

07/08/05 11:54

Carlton Engineering, Inc.
3883 Ponderosa Road
Shingle Springs, CA 95682

Project: SPI Brunswick
Project Number: 4154-08-05
Project Manager: Mike Vander Dussen

CLS Work Order #: COF0976
COC #: 46640

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CO05019 - EPA 5030 Water MS										
Blank (CO05019-BLK1)				Prepared & Analyzed: 07/01/05						
1,2-Dichloropropane	ND	0.50	µg/L							
1,3-Dichloropropane	ND	0.50	"							
2,2-Dichloropropane	ND	0.50	"							
1,1-Dichloropropene	ND	0.50	"							
cis-1,3-Dichloropropene	ND	0.50	"							
trans-1,3-Dichloropropene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
1,1,2-Tricholoro-1,2,2-trifluoroethane (Freon 113)	ND	0.50	"							
Hexachlorobutadiene	ND	0.50	"							
2-Hexanone	ND	10	"							
Isopropylbenzene	ND	0.50	"							
p-Isopropyltoluene	ND	0.50	"							
Methylene chloride	ND	0.50	"							
4-Methyl-2-pentanone	ND	10	"							
Methyl tert-butyl ether	ND	0.50	"							
Naphthalene	ND	0.50	"							
n-Propylbenzene	ND	0.50	"							
Styrene	ND	0.50	"							
1,1,1,2-Tetrachloroethane	ND	0.50	"							
1,1,2,2-Tetrachloroethane	ND	0.50	"							
Tetrachloroethene	ND	0.50	"							
Toluene	ND	0.50	"							
1,2,3-Trichlorobenzene	ND	0.50	"							
1,2,4-Trichlorobenzene	ND	0.50	"							
1,1,1-Trichloroethane	ND	0.50	"							
1,1,2-Trichloroethane	ND	0.50	"							
Trichloroethene	ND	0.50	"							
Trichlorofluoromethane	ND	0.50	"							
1,2,3-Trichloropropane	ND	0.50	"							
1,2,4-Trimethylbenzene	ND	0.50	"							

07/08/05 11:54

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CO05019 - EPA 5030 Water MS										
Blank (CO05019-BLK1)				Prepared & Analyzed: 07/01/05						
1,3,5-Trimethylbenzene	ND	0.50	µg/L							
Vinyl chloride	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	*8.77*		"	*10.0*		*87.7*	*66-135*			
Surrogate: Toluene-d8	*9.99*		"	*10.0*		*99.9*	*72-125*			
Surrogate: 4-Bromofluorobenzene	*7.45*		"	*10.0*		*74.5*	*73-125*			
LCS (CO05019-BS1)				Prepared & Analyzed: 07/01/05						
Benzene	21.0	0.50	µg/L	20.0		105	60-135			
Chlorobenzene	23.3	0.50	"	20.0		116	60-133			
1,1-Dichloroethene	19.0	0.50	"	20.0		95.0	42-150			
Toluene	20.7	0.50	"	20.0		104	60-137			
Trichloroethene	20.2	0.50	"	20.0		101	62-140			
Surrogate: 1,2-Dichloroethane-d4	*8.85*		"	*10.0*		*88.5*	*66-135*			
Surrogate: Toluene-d8	*9.95*		"	*10.0*		*99.5*	*72-125*			
Surrogate: 4-Bromofluorobenzene	*7.70*		"	*10.0*		*77.0*	*73-125*			
LCS Dup (CO05019-BSD1)				Prepared & Analyzed: 07/01/05						
Benzene	20.5	0.50	µg/L	20.0		102	60-135	2.41	25	
Chlorobenzene	22.8	0.50	"	20.0		114	60-133	2.17	25	
1,1-Dichloroethene	18.8	0.50	"	20.0		94.0	42-150	1.06	25	
Toluene	20.2	0.50	"	20.0		101	60-137	2.44	25	
Trichloroethene	19.0	0.50	"	20.0		95.0	62-140	6.12	25	
Surrogate: 1,2-Dichloroethane-d4	*8.85*		"	*10.0*		*88.5*	*66-135*			
Surrogate: Toluene-d8	*9.83*		"	*10.0*		*98.3*	*72-125*			
Surrogate: 4-Bromofluorobenzene	*7.68*		"	*10.0*		*76.8*	*73-125*			

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CLS - Labs

CHAIN OF CUSTODY

CLS ID No.: Ccf 0976

LOG NO. 46640

REPORT TO:

NAME AND ADDRESS
CARLTON ENGINEERING, INC.
3883 PONDEROSA ROAD
SHINGLE SPRINGS CA 95682

PROJECT MANAGER: MICHAEL VANDER DUSSEN
PHONE#: 677-5515

PROJECT NAME: SPI BRUNSWICK

SAMPLED BY: MICHAEL VANDERDUSSEN

JOB DESCRIPTION: WATER QUALITY MONITORING

SITE LOCATION: GRASS VALLEY

CLIENT JOB NUMBER: 4154-08-05

DESTINATION LABORATORY

☒ CLS (916) 638-7301
3249 FITZGERALD RD.
RANCHO CORDOVA, CA
95742

☐ OTHER

FIELD CONDITIONS:
FORMATION SILT IN SAMPLES.
HP2 CONTAINS ORGANIC MATERIALS & PRODUCED A SULFUR ODOR UPON COLLECTION

COMPOSITE:

DATE	TIME	SAMPLE IDENTIFICATION	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: 8260B, VOCs	TURN AROUND TIME: 1 DAY	2 DAY	5 DAY	10 DAY	SPECIAL INSTRUCTIONS
6-29-05	1530	4154-08-05 HP1	WATER	3	GLASS	3/1	X			STAND.		
"	1100	" HP2	"	"	"	"	X					
"	1220	" HP3	"	2	"	"	X					
"	1310	" HP4	"	3	"	"	X					
"	1345	" HP5	"	3	"	"	X					
"	0645	" TRIP	"	"	"	"						HOLD FOR POSS. ANALYSIS
"	1435	" FIELD	"	"	"	"						" " "

INVOICE TO:

P.O. #

QUOTE #

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES: (1) HCL (2) HNO3 (3) – COLD (4)

RELINQUISHED BY (SIGN)	PRINT NAME / COMPANY	DATE / TIME	RECEIVED BY (SIGN)	PRINT NAME / COMPANY
	MICHAEL VANDER DUSSEN CARLTON ENG. INC.	6-3005/0800	Ray Oslowski Jr.	CLS.
Ray Oslowski Jr.	CLS	6/30/05 01010		

RECD AT LAB BY: M Morton

DATE / TIME: 6-30-5 1910

CONDITIONS / COMMENTS: 14°

SHIPPED BY: ☐ FED X ☐ UPS ☐ OTHER ______ AIR BILL #

LAB
PROJECT MGR./FIELD SAMPLER

CALIFORNIA LABORATORY SERVICES
3249 Fitzgerald Road Rancho Cordova, CA 95742

July 27, 2005

CLS Work Order #: COG0696
COC #: 46640

Mike Vander Dussen
Carlton Engineering, Inc.
3883 Ponderosa Road
Shingle Springs, CA 95682

Project Name: SPI Brunswick

Enclosed are the results of analyses for samples received by the laboratory on 07/19/05 13:24. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Barry H. Nicholson
FOR JAMES LIANG

James Liang, Ph.D.	Barry Nicholson
Laboratory Director	Quality Assurance Manager

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

Environmental
Chemistry

Work Order #COG696

The final report package for work order #COG0969 is an extension of the original work order # COF0976. The original chain of custody was returned with the original report package.

Per your request the following samples were analyzed for Organic Acids and Non Halogenated Organics by EPA Method 8018: 4154-08-05 HP1, 4154-08-05 HP2, 4154-08-0,5 HP3, 4153-08-05 HP4, 4154-08-05 HP5.

07/27/05 09:59

Carlton Engineering, Inc.
3883 Ponderosa Road
Shingle Springs, CA 95682

Project: SPI Brunswick
Project Number: 4154-08-05
Project Manager: Mike Vander Dussen

CLS Work Order #: COG0696
COC #: 46640

Non-halogenated Organic Compounds by EPA 8015

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
4154-08-05 HP1 (COG0696-01) Water	**Sampled: 06/29/05 15:30**		**Received: 07/19/05 13:24**						**HT-1**
Ethanol	ND	5.0	mg/L	1	CO05538	07/22/05	07/22/05	EPA 8015B	
Methanol	ND	5.0	"	"	"	"	"	"	
Isopropyl alcohol	ND	5.0	"	"	"	"	"	"	
4154-08-05 HP2 (COG0696-02) Water	**Sampled: 06/29/05 11:00**		**Received: 07/19/05 13:24**						**HT-1**
Ethanol	ND	5.0	mg/L	1	CO05538	07/22/05	07/22/05	EPA 8015B	
Methanol	ND	5.0	"	"	"	"	"	"	
Isopropyl alcohol	ND	5.0	"	"	"	"	"	"	
4154-08-05 HP3 (COG0696-03) Water	**Sampled: 06/29/05 12:20**		**Received: 07/19/05 13:24**						**HT-1**
Ethanol	ND	5.0	mg/L	1	CO05538	07/22/05	07/22/05	EPA 8015B	
Methanol	ND	5.0	"	"	"	"	"	"	
Isopropyl alcohol	ND	5.0	"	"	"	"	"	"	
4154-08-05 HP4 (COG0696-04) Water	**Sampled: 06/29/05 13:10**		**Received: 07/19/05 13:24**						**HT-1**
Ethanol	ND	5.0	mg/L	1	CO05538	07/22/05	07/22/05	EPA 8015B	
Methanol	ND	5.0	"	"	"	"	"	"	
Isopropyl alcohol	ND	5.0	"	"	"	"	"	"	
4154-08-05 HP5 (COG0696-05) Water	**Sampled: 06/29/05 13:45**		**Received: 07/19/05 13:24**						**HT-1**
Ethanol	ND	5.0	mg/L	1	CO05538	07/22/05	07/22/05	EPA 8015B	
Methanol	ND	5.0	"	"	"	"	"	"	
Isopropyl alcohol	ND	5.0	"	"	"	"	"	"	

Carlton Engineering, Inc.
3883 Ponderosa Road
Shingle Springs, CA 95682

Project: SPI Brunswick
Project Number: 4154-08-05
Project Manager: Mike Vander Dussen

CLS Work Order #: COG0696
COC #: 46640

Organic Acids by Direct Injection HPLC

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
4154-08-05 HP1 (COG0696-01) Water Sampled: 06/29/05 15:30 Received: 07/19/05 13:24									
Acetic Acid	ND	5.0	mg/L	1	CO05529	07/25/05	07/25/05	HPLC	
Butyric acid	ND	10	"	"	"	"	"	"	
Lactic acid	ND	1.0	"	"	"	"	"	"	
Pyruvic acid	ND	1.0	"	"	"	"	"	"	
4154-08-05 HP2 (COG0696-02) Water Sampled: 06/29/05 11:00 Received: 07/19/05 13:24									
Acetic Acid	ND	5.0	mg/L	1	CO05529	07/25/05	07/25/05	HPLC	
Butyric acid	ND	10	"	"	"	"	"	"	
Lactic acid	ND	1.0	"	"	"	"	"	"	
Pyruvic acid	ND	1.0	"	"	"	"	"	"	
4154-08-05 HP3 (COG0696-03) Water Sampled: 06/29/05 12:20 Received: 07/19/05 13:24									
Acetic Acid	ND	5.0	mg/L	1	CO05529	07/25/05	07/25/05	HPLC	
Butyric acid	ND	10	"	"	"	"	"	"	
Lactic acid	ND	1.0	"	"	"	"	"	"	
Pyruvic acid	ND	1.0	"	"	"	"	"	"	
4154-08-05 HP4 (COG0696-04) Water Sampled: 06/29/05 13:10 Received: 07/19/05 13:24									
Acetic Acid	ND	5.0	mg/L	1	CO05529	07/25/05	07/25/05	HPLC	
Butyric acid	ND	10	"	"	"	"	"	"	
Lactic acid	ND	1.0	"	"	"	"	"	"	
Pyruvic acid	ND	1.0	"	"	"	"	"	"	
4154-08-05 HP5 (COG0696-05) Water Sampled: 06/29/05 13:45 Received: 07/19/05 13:24									
Acetic Acid	ND	5.0	mg/L	1	CO05529	07/25/05	07/25/05	HPLC	
Butyric acid	ND	10	"	"	"	"	"	"	
Lactic acid	ND	1.0	"	"	"	"	"	"	
Pyruvic acid	ND	1.0	"	"	"	"	"	"	

Notes and Definitions

QM-08	The spike recovery was outside acceptance limits for the LCS or LCSD. The batch was accepted based on acceptable MS/MSD recoveries & RPD's.
HT-1	The sample was received outside of the EPA recommended holding time.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

NEVADA COUNTY DEPARTMENT OF
ENVIRONMENTAL HEALTH

950 Maidu Avenue
Nevada City, CA 95959
(530) 265-1222
Fax (530) 265-7056

10075 Levon Avenue Suite 105
Truckee, CA 96161
(530) 582-7884
Fax (530) 582-0712

JOB NUMBER: 21-00625
APN: 06 - 441 - 03
PERMIT NUMBER № 9207

Both Assessor's Parcel Number and Permit Number must show on Well Driller's Report.

APPLICATION/PERMIT TO CONSTRUCT, REPAIR OR DESTROY A WELL

Property Owner: SIERRA PACIFIC INDUSTRIES
Owner's Mailing Address: 496011 REDDING, CA 96049
Job Site Address: 12503 BRUNSWICK ROAD City: GRASS VALLEY Zip: 95945
Nearest Cross Street: E. BENNETT ROAD Parcel Acreage: 14±

PROPOSED WORK: ☐ New Well ☐ Deepening ☐ Destruction (Include Diagram of Proposal)
☐ Repair or Modification (Proposed Work) HYDROPUNCH WATER SAMPLING, BACKGROUT BORINGS
(Include Diagram of Proposal)

TYPE OF WELL: ☐ Class I ☐ Class II ☐ Monitoring **PROPOSED USE:**
Angular Seal Depth Proposed:
CASING TYPE: ☐ Plastic ☐ Steel Diameter Wall Thickness or Gauge
SEALING MATERIAL: ☐ Bentonite ☐ Concrete ☐ Other *(Please Specify)*
Sealing Application: ☐ Pumped/Tremie ☐ Dropped
PROPOSED SEAL DATE AND TIME: Date JUNE 23, 2005 Time PM
WELL CONTRACTOR: CAL NEV GEOEXPLORATION, INC. C-57 License No. 768342
Business Address: 1135B AMALGAM WAY, SUITE 12 Phone: 916-635-2214

I hereby certify that the work described in this application will be done in accordance with the provisions of the Nevada County Land Use and Development Code, Chapter X, pertaining to well construction, repair, modification, deepening, and destruction. Within 90 days of completion of work, I will furnish the Nevada County Department of Environmental Health a complete and accurate copy of the water well "Driller's Report"; DWR Form No. 188.

WELL CONTRACTOR X CARLTON ENGINEERING, INC. FOR CAL NEV GEOEXPLORATION **DATE** 6-16-05

PERMIT EXPIRES ONE YEAR FROM DATE OF ISSUE

DEPARTMENT USE ONLY—Do Not Write Below This Line

PERMIT REQUIREMENTS: Maintain All County Setback Requirements Including 25 Feet Minimum From Well To Waste Plumbing Within A Structure. On site 6/29/05 @ 9^{30} am

Permit Issued By **Date** 6/29/05

SEAL: Date Depth Inspector
COMPLETED WELL: Date Completed **Total Depth** **Yield***
Construction Final Approval By Date

*NOTE: This rate is provided by the well driller and is stated solely for the purpose of obtaining clearance for a building permit. For this purpose, this well yield is valid for one (1) year from date of well completion. Well yield can change over time.

White—Office Yellow—Contractor Pink—Owner F/kgh\Forms Rev 04-29-04

Recording Requested By:

[CURRENT OWNER]

When Recorded, Mail To:
Executive Officer
California Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive
Rancho Cordova, California 95670

COVENANT AND ENVIRONMENTAL RESTRICTION ON PROPERTY

Brunswick Grass Valley Mill site –12503 Brunswick Road, Grass Valley, CA

This Covenant and Environmental Restriction on Property ("Covenant") is made as of the 17th day of August 2006 by Sierra Pacific Industries ("Covenantor") who is the Owner of record of that certain property situated at 12503 Brunswick Road, in the City of Grass Valley, County of Nevada, State of California, which is more particularly described in Exhibit A attached hereto and incorporated herein by this reference (hereinafter referred to as the "Burdened Property"), for the benefit of the California Regional Water Quality Control Board, Central Valley Region ("Regional Water Board") (Covenantor and the Board may be referred to herein as the "parties"), with reference to the following facts:

A. The groundwater underlying the Burdened Property contains residual volatile organic compounds (VOCs) at levels exceeding the maximum contaminant level (MCL) for drinking water.

B. Contamination of the Burdened Property. The VOC, 1,1-dichloroethane has been detected in ground water at levels exceeding the MCL for drinking water. Sierra Pacific Industries evaluated the inhalation risk to human health of residual VOCs in groundwater to indoor air for residential use. The evaluation concluded that the residual VOCs in groundwater present no threat to human health from vapor migration to indoor air.

C. Exposure Pathways. The waste constituent addressed in this Covenant is present in groundwater underlying the Burdened Property. Without this Covenant, exposure to this waste constituent could take place via ingestion.

D. Adjacent Land Uses and Population Potentially Affected. The Burdened Property has been and will be used for industrial and commercial uses and is adjacent to industrial land uses.

E. Full and voluntary disclosure to the Regional Water Board of the presence of the ground water pollution on the Burdened Property has been made and required sampling of the Burdened Property has been conducted.

F. Covenantor desires and intends that in order to benefit the Regional Water Board, and to protect the present and future public health and safety, the Burdened Property shall be used in such a manner as to avoid potential harm to persons or property that may result from the waste constituent underlying the Burdened Property.

ARTICLE I
GENERAL PROVISIONS

1.1 Provisions to Run with the Land. This Covenant sets forth protective provisions, covenants, conditions and restrictions (collectively referred to as "Restrictions") upon and subject to which the Burdened Property and every portion thereof shall be improved, held, used, occupied, leased, sold, hypothecated, encumbered, and/or conveyed. The restrictions set forth in Article III are reasonably necessary to protect present and future human health and safety or the environment as a result of the presence of VOCs in the ground water underlying the land. Each and all of the Restrictions shall run with the land, and pass with each and every portion of the Burdened Property, and shall apply to, inure to the benefit of, and bind the respective successors in interest thereof, for the benefit of the Regional Water Board and all Owners and Occupants. Each and all of the Restrictions are imposed upon the entire Burdened Property unless expressly stated as applicable to a specific portion of the Burdened Property. Each and all of the Restrictions run with the land pursuant to section 1471 of the Civil Code. Each and all of the Restrictions are enforceable by the Regional Water Board.

1.2 Concurrence of Owners and Lessees Presumed. All purchasers, lessees, or possessors of any portion of the Burdened Property shall be deemed by their purchase, leasing, or possession of such Burdened Property, to be in accord with the foregoing and to agree for and among themselves, their heirs, successors, and assignees, and the agents, employees, and lessees of such owners, heirs, successors, and assignees, that the Restrictions as herein established must be adhered to for the benefit of the Regional Water Board and the Owners and Occupants of the Burdened Property and that the interest of the Owners and Occupants of the Burdened Property shall be subject to the Restrictions contained herein.

1.3 Incorporation into Deeds and Leases. Covenantor desires and covenants that the Restrictions set out herein shall be incorporated in and attached to each and all deeds and leases of any portion of the Burdened Property. Recordation of this Covenant shall be deemed binding on all successors, assigns, and lessees, regardless of whether a copy of this Covenant and Agreement has been attached to or incorporated into any given deed or lease.

1.4 Purpose. It is the purpose of this instrument to convey to the Regional Water Board real property rights, which will run with the land, to facilitate the remediation of past environmental contamination and to protect human health and the environment by reducing the risk of exposure to residual hazardous materials.

ARTICLE II
DEFINITIONS

2.1 Regional Water Board. "Regional Water Board" shall mean the California Regional Water Quality Control Board, Central Valley Region and shall include its successor agencies, if any.

2.2 Improvements. "Improvements" shall mean all buildings, roads, driveways, regradings, and paved parking areas, constructed or placed upon any portion of the Burdened Property.

2.3 Occupants. "Occupants" shall mean Owners and those persons entitled by ownership, leasehold, or other legal relationship to the right to use and/or occupy all or any portion of the Burdened Property.

2.4 Owner or Owners. "Owner" or "Owners" shall mean the Covenantor and Covenantor's successors in interest, who hold title to all or any portion of the Burdened Property.

ARTICLE III
DEVELOPMENT, USE AND CONVEYANCE OF THE BURDENED PROPERTY

3.1 Restrictions on Development and Use. Covenantor promises to restrict the use of the Burdened Property as follows:

a. No groundwater from the Burdened Property shall ever be used for any domestic purpose, including but not limited to use as drinking water.

b. No Owners or Occupants of the Property or any portion thereof shall drill, bore, otherwise construct, or use a well for the purpose of extracting water for any use, including but not limited to, domestic, potable, or industrial uses, unless expressly permitted in writing by the Regional Water Board.

c. The Covenantor agrees that the Regional Water Board, and any persons acting pursuant to Regional Water Board orders, shall have reasonable access to the Burdened Property for the purposes of inspection, surveillance, maintenance, or monitoring, as provided for in Division 7 of the Water Code.

d. No Owner or Occupant of the Burdened Property shall act in any manner that will aggravate or contribute to the existing environmental conditions of the Burdened Property.

3.2 Enforcement. Failure of an Owner or Occupant to comply with any of the restrictions, as set forth in paragraph 3.1, shall be grounds for the Regional Water Board, by reason of this Covenant, to have the authority to require that the Owner modify or remove any Improvements constructed in violation of that paragraph. Violation of the Covenant shall be grounds for the Regional Water Board to file civil actions against the Owner as provided by law.

3.3 Notice in Agreements. After the date of recordation hereof, all Owners and Occupants shall execute a written instrument, which shall accompany all purchase agreements or leases relating to the property. Any such instrument shall contain the following statement:

> Owner, Sierra Pacific Industries, covenants and agrees, for itself and its successors and assigns and for the benefit of Owner, its successors and assigns, and as a covenant running with the land pursuant to California Civil Code section 1471, which Owner acknowledges to be reasonably necessary to protect present and/or future human health and safety, and/or the environment, as a result of the presence of VOCs in ground water underlying the above-described property (the "Property"), that no groundwater from the Property shall ever used for any domestic purpose, including but not limited to use as drinking water.

ARTICLE IV
VARIANCE AND TERMINATION

4.1 Variance. Any Owner or, with the Owner's consent, any Occupant of the Burdened Property or any portion thereof may apply to the Regional Water Board for a written variance from the provisions of this Covenant.

4.2 Termination. If after any four (4) consecutive quarters of any year within the term of this Convenant, test data from samples taken from the Burdened Property demonstrate that the VOC levels are below the MCL, then after review and written concurrence by the Regional Water Board this Covenant shall terminate, and upon such termination, the parties shall have no further obligation to one another.

4.3 Term. Unless terminated in accordance with paragraph 4.2 above, by law or otherwise, this Covenant shall continue in effect in perpetuity.

ARTICLE V
MISCELLANEOUS

5.1 No Dedication Intended. Nothing set forth herein shall be construed to be a gift or dedication, or offer of a gift or dedication, of the Burdened Property or any portion thereof to the general public.

5.2 Notices. Whenever any person gives or serves any notice, demand, or other communication with respect to this Covenant, each such notice, demand, or other communication shall be in writing and shall be deemed effective (1) when delivered, if personally delivered to the person being served or official of a government agency being served, or (2) three (3) business days after deposit in the mail if mailed by United States mail, postage paid certified, return receipt requested:

If To: "Covenantor"
Sierra Pacific Industries
19794 Riverside Ave.
Anderson, CA 96007
Attention: Gary Blanc

If To: "Regional Water Board"
Regional Water Quality Control Board
Central Valley Region
Attention: Executive Officer
11020 Sun Center Drive
Rancho Cordova, California 95670

5.3 Partial Invalidity. If any portion of the Restrictions or terms set forth herein is determined to be invalid for any reason, the remaining portion shall remain in full force and effect as if such portion had not been included herein.

5.4 Article Headings. Headings at the beginning of each numbered article of this Covenant are solely for the convenience of the parties and are not a part of the Covenant.

5.5 Recordation. This instrument shall be executed by the Covenantor and by the Executive Officer of the Regional Water Board. This instrument shall be recorded by the Covenantor in the County of Nevada within ten (10) days of the date of execution.

5.6 References. All references to Code sections include successor provisions.

5.7 Construction. Any general rule of construction to the contrary notwithstanding, this instrument shall be liberally construed in favor of the Covenant to effect the purpose of this instrument and the policy and purpose of the Water Code. If any provision of this instrument is found to be ambiguous, an interpretation consistent with the purpose of this instrument that would render the provision valid shall be favored over any interpretation that would render it invalid.

IN WITNESS WHEREOF, the parties execute this Covenant as of the date set forth above.
Covenantor: Sierra Pacific Industries, a California corporation

By: aa Emmerson
Title: President
Date: 8-17-06

California Regional Water Quality Control Board,
Central Valley Region

By: Pamela C Creedon

Title: Executive Officer
Date: 9-22-06

STATE OF CALIFORNIA)
)
COUNTY OF Shasta)

Acknowledgment as to Covenantor

On August 17, 2006 before me, Jack G. Frost, Notary Public.
[insert date] [insert name and title of officer]
the undersigned personally appeared A. A. Emmerson,
[insert Covenantor's or Covenantor's agent's name]
personally known to me or proved to me on the basis of satisfactory evidence to be the person~~(s)~~ whose name~~(s)~~ is~~/are~~ subscribed to the within instrument and acknowledged to me that he~~/she/they~~ executed the same in his~~/her/their~~ authorized capacity~~(ies)~~, and that by his~~/her/their~~ signature~~(s)~~ on the instrument the person~~(s)~~, or the entity upon behalf of which the person~~(s)~~ acted, executed the instrument.

WITNESS my hand and official seal.

Jack G. Frost
Notary Public in and for said
County and State

JACK G. FROST
COMM. NO. 1644916
NOTARY PUBLIC - CALIFORNIA
SHASTA COUNTY
MY COMMISSION EXPIRES
FEBRUARY 12, 2010

STATE OF CALIFORNIA)
)
COUNTY OF Sacramento)

Acknowledgment as to California Regional Water Quality Control Board, Central Valley Region

On September 22, 2006 before me, ~~Pamela Creedon, Executive Officer~~ Wendy J. DeSarno, Notary Public WD
[insert date] [insert name and title of officer]
the undersigned personally appeared Pamela Creedon, personally known to me or proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity as Executive Officer, and that by his signature on the instrument the California Regional Water Quality Control Board, Central Valley Region executed the instrument.

WITNESS my hand and official seal.

Wendy J. DeSarno
Notary Public in and for said
County and State

WENDY J. DE SARNO
COMM. #1641658
NOTARY PUBLIC - CALIFORNIA
SACRAMENTO COUNTY
COMM. EXPIRES JAN. 29, 2010

EXHIBIT A

LEGAL DESCRIPTION OF PROPERTY

Exhibit "A"

Order No. 57731 DK

DESCRIPTION

Those parcels of land in the unincorporated area, County of Nevada, State of California, described as follows:

PARCEL ONE: (APN: 6-441-03)

The surface and sub-surface to a depth of 75 feet below the surface of a portion of the Northwest 1/4 of Section 31, Township 16 North, Range 9 East, M.D.M., being more particularly described as follows, to-wit:

Beginning at a point on a Southwesterly line of that certain County Road known as the Brunswick Road from which the Northwest corner of Section 31, Township and Range aforesaid, bears North 38° 50' 44" West 1125.89 feet distant; thence from said point of commencement with true bearings South 46° 19' West 469.54 feet to a steel drill; thence South 55° 18' East 140.65 feet to a steel drill; thence South 62° 53' East 118.76 feet to a steel drill; thence South 36° 38' West 495.05 feet to a steel drill; thence South 34° 37' East 612.51 feet to a steel drill; thence North 55° 33' East 725.10 feet to a steel drill situate on the said Southwesterly line of the Brunswick Road; thence along said line North 29° 16' 14" West 1088.66 feet to a steel drill, the place of beginning.

PARCEL TWO (APN: 6-441-04)

All that certain portion of the Northwest one-quarter (NW 1/4) of Section Thirty One (31), Township Sixteen (16) North, Range Nine (9) East, M.D.M., being more particularly described as follows:

Beginning at the Southeast corner of that certain 14.044 acre tract of land as described in deed dated December 3, 1956, recorded December 10, 1956, in Book "227" of Official Records, Page 292, Filed No. 4997, Nevada County Records, executed by Idaho Maryland Mines Corporation to Milton Balmain and Ina V. Balmain at a point on the Southwesterly line of the "New Brunswick" County Road as described in Parcel 2 of deed dated October 24, 1955, recorded November 4, 1955, in Book "214" of Official Records, Page 431, File No. 4722, Nevada County Records, executed by Idaho Maryland Mines Corporation to County of Nevada; thence from said point of beginning, South 55° 33' West along the Southeasterly line of said 14.044 acre tract to its intersection with the Southwesterly line of the former Nevada County Narrow Gauge Railroad right of way; thence Southeasterly along the Southwesterly line of said Railroad right of way to its intersection with the Southwesterly line of said County Road; thence North 29° 16' 14" West along the Southwesterly line of said County Road to the point of beginning.

Continued--

PARCEL THREE: (APN: 6-441-05)

All that portion of the West one half of Section 31, Township 16 North, Range 9 East, M.D.M., described as follows:

Beginning at the West one quarter section corner of said Section 31; thence North 1° 21' West 834.65 feet along the West line of the Northwest one quarter of said Section 31 to a point in the Southerly line of the Wm. Ghidotti (formerly Idaho Maryland) property; thence along said Southerly line the following three courses: South 62° 46' East 33.07 feet; thence North 81° 56' East 176.00 feet; thence North 33° 38' East 90.00 feet to a corner of Pendola (formerly Yuba River Lumber Company); thence along two courses of Pendola as follows: South 34° 37' East 612.51 feet, and North 55° 33' East 568.30 feet to a point in the Southwesterly right of way line of abandoned Nevada County Narrow Gauge Railroad; thence along said Southwesterly right of way line the following two courses: South 47° 23' East 340.52 feet; thence along a curve to the left with radius of 490.74 feet, through an angle of 13° 16' 41" for a distance of 113.73 feet, the long chord of which bears South 54° 01' 26" East 113.47 feet; thence along the Westerly line of Brunswick Road, County Road Number 31 the following two courses: South 29° 16' 14" East 825.46 feet; thence along a curve to the right with radius of 750 feet, through an angle of 31° 29' 41" for a distance of 412.27 feet, the long chord of which bears South 13° 31' 26" East 407.09 feet; thence West 1886.14 feet to a point in the West line of the Southwest one quarter of said Section 31; thence North 0° 28' West 676.80 feet to the point of beginning.

EXCEPTING THEREFROM all minerals, gas, oil and mineral deposits below a depth of 200 feet beneath such surface; together with all necessary and convenient rights to explore for, develop, produce, extract and take the same subject to the express limitations that the foregoing shall not include any right of entry upon the surface of said land without the consent of the owner of such surface of said land as excepted in the Deed recorded August 12, 1959, in Book 266 of Official Records, at Page 185, by Idaho Maryland Mines Corporation, a Nevada Corporation.

PARCEL FOUR: (APN: 6-441-29 and 30)

Lot 8 as shown upon the Subdivision Map of Bet Acres, No. 85-7, filed in the Office of the recorder, County of Nevada, State of California, on February 24, 1987, in Book 7 of Subdivisions, Page 75.

EXCEPTING THEREFROM the following described portion:

Continued--

BEGINNING at a point on the Southeasterly right-of-way line of Brunswick Road as described in that certain deed recorded November 4, 1955 in Book 214 Official Records, at Page 431, Nevada County Records, and being the most Northerly corner of said Lot 8 from which the Northwest corner of Section 31, Township 16, North, Range 9 East, M.D.M., bears North 64° 01' 34" West, 235.16 feet; thence from SAID POINT OF BEGINNING, along the Southwesterly right-of-way line of said Brunswick Road, in a Southeasterly direction along a curve concave to the Southwest with a radius of 1,350 feet, to which a radial line bears North 44° 43' 16" East; thence Southeasterly 53.62 feet along said curve through a central angle of 2° 16' 34", to a radial line of said curve which bears North 44° 43' 16" East; thence leaving said West right-of-way line, South 88° 55' 01" West, 60.76 feet; thence South 51° 52' 43" West, 120.52 feet to the Northwesterly line of said Lot 8 of Bet Acres; thence North 46° 01' 53" East, 164.25 feet, along said Northwesterly line of said Lot 8 of Bet Acres to the POINT OF BEGINNING; as conveyed to the County of Nevada by Deed recorded June 8, 1990, Document No. 90-17706.

ALSO EXCEPTING THEREFROM all the mineral, metal matter and rock lying below 200 feet of the surface, with the right to extract and remove said mineral, metal matter and rock from any depth up to 200 feet of the surface of said premises, without disturbing the surface thereof; as excepted and reserved by Mary Bouma, Erica Erickson and William Toms in Grant Deed recorded April 1, 1988, Document No. 88-07737.

5773191.pau

Preliminary Environmental Evaluation Brunswick Lumber Mill Development

Grass Valley, California

Prepared for:

Sierra Pacific Industries, Inc.
P.O. Box 496028
Redding CA 96049-6028

March 2006

Project No.: 11096.000

Geomatrix

TOPO! map printed on 02/09/06 from "Untitled.tpo"

Geomatrix

March 3, 2006

Mr. Gary Blanc
Manager, Land Investment & Development
Sierra Pacific Industries, Inc.
P.O. Box 496028
Redding, CA 96049-6028

Subject: Preliminary Environmental Evaluation
Brunswick Lumber Mill Development
Brunswick Road and N. Bennett Road
Grass Valley, CA

Dear Mr. Blanc:

Consistent with our January 31, 2006 proposal, Geomatrix has completed our preliminary environmental evaluation of the Sierra Pacific Industries Inc. (SPI) Brunswick Lumber Mill site in Nevada County California (site). The environmental evaluation was conducted in order to assess the environmental conditions and the regulatory status of the site with respect to potential soil and groundwater contamination, and to formulate an approach to interacting with either the Department of Toxic Substances Control (DTSC) or the Regional Water Quality Control Board (RWQCB), if necessary. The scope of work consisted of a site visit and file review, evaluation of existing data and available background information and preparation of this technical memorandum with recommendations for moving the project forward through the regulatory process and additional data collection, if necessary.

Site Visit

The site visit was conducted on February 11, 2006. The site is located on the west side of Brunswick Road just north of the intersection of Brunswick Road with State Route 174 in Nevada County (Tab 1). The site is surrounded by relatively steep slopes on all sides. The site is part of a small basin which forms the head of the South Fork of Wolf Creek and water on the site drains from east to west/northwest.

Photos were taken during the site visit. As shown on the photos, the central portion of the site where the former saw mill was located has been leveled with mine tailings and is relatively flat (Tab 2, Photo #1 looking south). The northern part of the site is more disturbed and contains an approximately 20-foot high one-acre gravel pile (Tab 2, Photo #2 looking north and Photo #5). The remnants from a fire suppression system exist throughout the site. At the time of the site visit, there was a significant amount of water draining across the property from east to west (Tab

2, Photos #3, #4 and #5). The runoff has eroded the eastern access road (Tab 2, Photo #6) and likely contributes to the high water table in the tailings.

There is a relatively large (5 acres plus) pond located on the northwestern portion of the site (Tab 2, Photo #7). The pond collects surface water runoff and was likely constructed for site mining and/or sawmills activities. The pond also likely contributes to the high water table in the tailings. There is a culvert near the pond that diverts some portion of the South Fork of Wolf Creek under the site.

There is a large (>100 feet high) concrete mine head frame on the northern portion of the site next to a mine shaft covered with a steel plate (Tab 2, Photos #8 and #9). Based on the concrete construction, the head frame looks to be built in the 1930s or 1940s. The steel plate and lock look relatively new suggesting the underground workings have been accessed recently. We are not sure if the head frame is on SPI property, but the presence of this feature does potentially impact future site development.

There are currently four active monitoring wells on the site: MW-1, MW-4, MW-6 and MW-7 (Tab 3). Geomatrix has seen no information for wells MW-2 and MW-3, and Carlton indicated that they could not find well MW-5 in the second groundwater sample collection round conducted in 2004 (there is data from MW-5 in the first sample collection in 2004). Based on the boring logs for wells MW-6 and MW-7, these wells are completed in natural materials (bedrock) below the mine tailings. The screened intervals of wells MW-6 and MW-7 are from 38 to 48 below ground surface (bgs) and 25 to 40 feet bgs, respectively.

File Review at CDMG

Based on the location of the site and the presence of the mine shaft head frame, we performed a file review at the California Division of Mines and Geology (CDMG) (also known as the California Geological Survey) library in Sacramento. Based on this review, the site is located in an area with a very active mining history. To the west of the site is the Empire Mine and to the north of the site is the Idaho-Maryland Mine. These were two of the largest gold producing mines in California. Emperor Gold Mining Company (Emgold) has been planning to reopen the Idaho-Maryland Mine for approximately 10 years. According to the Emgold web page, the company is still pursuing investment to reopen the mine.

Based on a review of the CDMG Nevada County Mineral Resources publication, the mine shaft on the site is part of the New Brunswick Mine. The New Brunswick mine was developed in the early 1900s as part of the Idaho-Maryland Mine which is located over 7000 feet to the north. The area where the New Brunswick, the Idaho Maryland and the Empire mines are located is known as the Grass Valley Northern Area and contains lode gold deposits formed by hydrothermal processes. These deposits typically consist of complex systems of cavity filled quartz veins occupying a network of faults and fissures situated between the Grass Valley and Weimer Fault zones. Veins in this system can go to a significant depth. The geology of the area is designated in the reports as "Jurassic hypobyssal rocks; diabase."

The Reports of the State Mineralogist contain several sections on mineral production in Nevada County. The 1888 report describes ore from an Old Brunswick Mine located north of the site and close to the Idaho-Maryland Mine as "common quartz veins with free gold, and a small percentage of pyrites, galena and blende." The 1930 report describes gold ore from the New Brunswick Mine as having "chiefly pyrite with some galena, zincblende, arsenopyrite and chalcopyrite." The 1935 report mentions a mill at the New Brunswick Mine which crushes ore for the Idaho-Maryland Mine.

The 1941 Report of the State Mineralogist describes the New Brunswick Mine shaft as being extended in 1940 from the 1400 foot level to the 3300 foot level and describes the 2300 foot level of the mine as connecting to the 2000 foot level of the Idaho-Maryland Mine. By the end of 1940, the report describes "steel on the ground for installation of the 135 foot head frame at New Brunswick" with a "1000 horse power motor to move 6-ton skips." The report also indicates that the New Brunswick opened 40 veins in an amphibolite schist, which varied in size from a few inches to 30-feet in thickness. The veins strike N50W and dip 40 to 70 SW. The 1941 report indicates that ore from the New Brunswick Mine was brought to the Idaho-Maryland mill for processing. There were no more specific maps of the New Brunswick Mine underground workings or surface activities contained in the reports.

Carlton Contact and File Review

We contacted Rob Kull at Carlton Engineering (Carlton) to confirm the completeness of our data set and to assess what communication they have had with the RWQCB. Rob confirmed that we have all of the data regarding evaluation of the mine tailings. Rob also indicated that, except for review of the MW-6 and MW-7 well installation work plan, they had not had any conversations regarding the mine tailings area at the site with the RWQCB.

Rob did indicate that they are under a 1994 Monitoring and Reporting Program (MRP) with the RWQCB for the volatile organic compound (VOC) issue at the site. However, Rob could not find a copy of the MRP nor could we find it on a State Water Resource Control Board (SWRCB) web-page search. More recent VOC data from monitoring wells MW-1, MW-4 and MW-5 have been low or non-detect and Carlton is currently pursuing a No Further Action (NFA) for the VOC issue at the site. Carlton does not have the well logs for wells MW-1 through MW-5, but they believe the wells were installed by Kennedy Jenks in the mid-1990s. Rob Kull indicated they never knew where MW-2 and MW-3 were located.

Based on the information we received from Carlton, we did a web-page search on SWRCB.com. Based on that review, we found an NPDES Order 96-098, CA0083933 dated April 1996 issued to Emperor Gold for the New Brunswick and Idaho-Maryland Mines. The NPDES permit apparently allowed discharge to the South Fork of Wolf Creek for dewatering. The item on the web page also indicated that the project stopped because the surface lease from SPI expired in 2001. As noted above, we did not find the MRP on the SWRCB web site.

Data Evaluation

The site data provided by Carlton was reviewed. The data provided consists of the following:

1) Results from testing of mine tailings soil samples collected in June of 2003 and analyzed for total and leachable metals including arsenic and mercury, pH and neutralizing potential/acid generation potential (AP/NGP);
2) Results from physical testing of mine tailings soil samples collected from backhoe excavations conducted in June 2003;
3) Results from testing of water samples collected from wells MW-1, MW-4, CMP In, CMP Out and the pond in January 2004 for metals and general chemistry parameters; and
4) Results from testing of water samples collected from wells MW-1, MW-4, CMP In, CMP Out and the pond in November 2004 for arsenic; results from the testing of groundwater samples collected on the same date from wells MW-1, MW-4 and MW-6 analyzed for VOCs; and results from testing of samples collected from wells MW-6 and MW-7 for metals.

The available boring and trench logs at the site show differing thicknesses of organic material from the mill operations overlying varying thicknesses of mine tailings rock. The mine tailings rock is underlain by weathered bedrock at depths ranging from five to 25 feet. Water is present in the tailings at shallow (<15 feet bgs) and varying depths.

Results reported from mine tailings sample collection and analysis show that total arsenic in two of seven tailings samples (S3 and S4) exceed the Total Threshold Limit Concentration (TTLC) of 500 mg/kg and one sample (S5) exceeds the ten times Soluble Threshold Limit Concentration of 50 mg/kg (STLC, the concentration threshold where soluble analysis is suggested). The soluble analysis results reported for sample S3 was <.25 milligrams per liter (mg/L) and samples S4 and S5 were both reported at 0.35 mg/L. The STLC for arsenic is 5 mg/L. All tailings samples collected exceed the U.S Environmental Protection Agency (EPA) Region 9 Preliminary Remediation Goal (PRG) for arsenic of 1.6 mg/kg (Tab 4). Chromium concentrations reported in soil are all below the TTLC but all samples exceed the ten times STLC criteria. Samples analyzed for soluble chromium were all reported as non-detect.

Laboratory pH for soil samples were within the neutral range (7.5 to 7.8). Neutralization potential (NP) and acid generation potential (AP) were measured for samples TP1 and S1 through S6 (Tab 4). The net neutralization potential (NNP) of the samples can be calculated by subtracting the NP from the AP. Net potential ratios can also be developed by dividing the NP by the AP. Based on either criteria, sample results from TP1, S1 and S2 suggest acid generating potential and the results from the S3 through S6 indicate long-term alkaline or neutral behavior.

Two rounds of groundwater and surface water data were reviewed as described above (Tab 5). In samples collected in November 2004, arsenic was reported in wells MW-1, MW-4, MW-6 and MW-7 at 1.2, 2.4, 1.7 and 1.6 micrograms per liter (µg/L), respectively. Arsenic was reported at slightly lower concentrations in the January 2004 sample collection from wells MW-1 and MW-4. Surface water samples CMP In, CMP out and the pond have similar concentrations reported at 1.7 µg/L, 1.4 µg/L and 2.0 µg/L, respectively. The California Maximum Contaminant Level (MCL) for arsenic is 10 µg/L and the US EPA Region 9 tap water PRG is 0.045 µg/L.

There is one detection of cadmium in well MW-4, though the results were flagged as below the laboratory reporting limit. The MCL for cadmium is 0.07 µg/l and the tap water PRG is 18 µg/L. Barium and zinc were reported in samples collected from wells MW-1, MW-4 and MW-7 in November 2004 at concentrations well below published criteria (i.e. MCLs and PRGs).

General chemistry parameter data shows total dissolved solids (TDS) range between 50 and 130 mg/L in groundwater and surface water, well below the MCL of 500 mg/L (Tab 5). Other salts contributing to the TDS including sulfate are correspondingly low in both groundwater and surface water compared to published water quality criteria. The pH measured in the wells is neutral to slightly acidic with a low in MW-1 of 5.66. The pH in surface water is slightly higher ranging from 6.92 to 7.37.

Water levels were measured during the installation of the newer site monitoring wells MW-6 and MW-7. Water levels in the mine tailings are less than 15 feet bgs and variable depending on location. According to the backhoe trench logs, water was encountered in one of the backhoe trenches (TP1) at less than 4 feet bgs. Depending on the location at the site, gradients in the shallow groundwater are west to northwest following the original topography. Deeper groundwater presence and flow is expected to be dependent on bedrock fracture frequency and orientation.

Discussion
Water management at the site is a key issue. As described above, the property is located at the head of the South Fork of Wolf Creek. Because the site is surrounded by mostly higher ground there is considerable storm water runoff through the site. The runoff causes heavy erosion on certain portions of the site and is likely the primary source of the water in the mine tailings. Water in the tailings would migrate along the interface with the bedrock and either discharge to the pond, directly to the creek or infiltrate to groundwater. It is unclear what type of storm water collection system there is at the site, or what the collection area or the effectiveness is of the culvert in place to divert the South Fork of Wolf Creek.

The New Brunswick Mine shaft is proposed for dewatering and redevelopment by Emgold. Based on Emgold's 2004 Technical Report (emgold.com), 37 acres around the shaft will be leased for the development and an NPDES permit similar to the one obtained in 1996 will be used in order to dewater the shaft and discharge water to the South Fork of Wolf Creek. Emgold also plans on rehabilitating the head frame and mining ore from the shaft, which will be processed at a new Idaho-Maryland mill site. Geomatrix is unclear as to the ownership status of this portion of the property; however, if the mine activity goes forward, it will impact development of the site. It would also be worthwhile to assess whether Emgold assumed environmental liability for the Idaho-Maryland mines including the New Brunswick Mine.

The mine tailings came from the removal of overburden and crushing of ore removed from the New Brunswick Mine shaft located on the north end of the site (Tab 6). The mined material consists of altered metavolcanic and metasedimentary host rocks and overburden with gold quartz veins containing pyrites and some arsenopyrite, galena and chalcopyrite. Because there is variability in the mine tailings materials (overburden v. ore), there is variability in some of the tailings sample results. Most of the samples and the tailings are inert, which makes sense considering the objective of the mining was to recover the mineralized materials that contain the gold. The mineralogy and oxidation state of a particular sample highly influences the results of the chemical analysis. For example, a sample containing small amounts of oxidized arsenopyrite, an arsenic bearing mineral, would result in relatively high concentrations of available arsenic in a total or soluble analysis.

Total arsenic concentrations in two tailings samples (S3 and S4) exceed the TTLC of 500 mg/kg though neither sample exceeds the STLC for arsenic, which would suggest that though these sample results are above the hazardous waste criteria, the material sampled is not characteristic of a hazardous waste. The soluble arsenic analysis results for S4 and S5 are problematic however (both at .35 mg/L (350 µg/L)) if compared to the MCL of 10 µg/L. The sample descriptions do not provide enough detail to determine if the samples with the elevated soluble arsenic contain visible arsenopyrite, but based on the New Brunswick Mine ore description, it is expected they do. All samples collected from the tailings pile exceed the US EPA Region 9 PRG of 1.6 mg/kg.

Both the net neutralization potential and the net potential ratio results from samples TP1, S1 and S2, collected relatively close together on the southern portion of the site, suggest acid generating potential while other samples were neutral. None of these three samples had high total metal concentrations nor did any of these samples have elevated soluble metals analysis results. In comparison, some of the groundwater samples collected in the bedrock monitoring wells below the tailings are slightly acidic also (pH <6).

Groundwater monitoring wells MW-6 and MW-7 are installed in bedrock not in the mine tailings; therefore, we do not know the potential impact from the presence of the mine tailings on water quality. We assume the other remaining site monitoring wells are constructed similarly though this could not be confirmed with Carlton because they do not have the logs for these wells. Arsenic was reported at similar concentrations in all wells and surface water samples collected (i.e. the pond) suggesting a natural condition with arsenic concentrations as high as 2 µg/L. Concentrations of arsenic and all other metals and minerals in groundwater and surface water are below the MCL and the Basin Plan thresholds.

Recommendations

Based on the existing data, there does not appear to be any major environmental issue that would prevent future development of the site though some of the initial results need to be further investigated and more site specific analyses need to occur. For context, the DTSC Abandoned Mine Land Preliminary Assessment handbook indicates that a no further action conclusion is possible for a mine site if: no physical hazards are present; the site is acceptable for unrestricted land use; hazardous wastes were not disposed of at the site; no potential exists for acidic or metal-rich mine drainage; no potential exists for impacts to water quality; and no environmental degradation has occurred.

Our biggest concern with the DTSC definition of no further action is the unrestricted land use criteria. There does not appear to be significant impacts to the bedrock groundwater system or to surface water from the mine tailings at the site. The total and soluble arsenic and net neutralization potential results for some of the samples collected from the tailings could present a threat to human health or the environment; however, we believe this issue is manageable within the site development plan. To minimize or eliminate this potential it would be highly beneficial to route storm water around the site reducing or eliminating the water in the tailings. Future use of the property would be dependent on further assessment results combined with existing data and a risk assessment.

In order to evaluate these issues and to support site development, Geomatrix recommends doing additional data collection and assessment. Based on our evaluation of the existing data and experience, we have divided recommended additional data collection and analysis into five tasks:

1) Background Assessment;
2) Additional Data Collection;
3) Waste Classification/Characterization;
4) Water Balance; and
5) Risk Assessment.

We present our recommendations and a planning level cost range for additional work for each of these tasks below.

Background Assessment - $5,000 to $8,000
A more thorough background assessment needs to be completed for the site. The background assessment would include, but would not be limited to:

1) Development of a more complete site history;
2) Review of the land status;
3) Review of the site mining liability (note there is a possibility that the New Brunswick Mine operator (past or present) may have liability for any potential environmental impacts from the mine tailings);
4) Aerial photograph review;
5) Further evaluation of past and future plans for mining activities;
6) Research of applicable precedent for compliance on similar sites;
7) Collection of all additional data for the site including the logs for the existing monitoring wells;
8) A search of County records for more site information; and
9) Review of the saw mill operational history and compliance records.

Additional Data Collection - $30,000 to $40,000

The additional data collection needs would be refined based on the background assessment, the preliminary water balance tasks and the risk assessment needs identified below. Based on our review thus far, we anticipate the additional data would include the items presented below.

Groundwater Sample Collection and Analysis

Additional groundwater samples collected from:

1) The mine tailings in order to assess the potential impacts and discharge from the mine tailings to surface water and or groundwater. Samples collected within the tailings should be analyzed for metals and general chemistry parameters;
2) The existing groundwater monitoring wells; and
3) Background groundwater wells (data might be available or sample collection from regional wells may need to occur).

We do not see the need for additional monitoring wells at this time however based on the results of the additional analysis, more wells may be necessary.

Tailings Sample Collection and Analysis

To support the waste characterization and the risk assessment, we propose collecting:

1) Shallow soil data from the tailings area to evaluate the potential exposure from wind blown dust from surface soils;
2) Additional samples from the tailings pile for pH, acid generation potential/neutralization potential;
3) Additional samples from the tailings pile for total and soluble arsenic analysis (samples would be hand characterized sufficiently to evaluate the presence of arsenopyrite). An appropriate sampling strategy will be devised to provide a statistically valid representation of the entire tailings pile; and
4) Naturally occurring asbestos (if necessary).

Surface Water and Storm Water Sample Collection

As part of the water balance, storm water runoff samples would be collected.

Background Soil Sample Collection and Analysis

Soil and or rock samples should be collected from undisturbed but mineralized areas at the site or near the site in order to evaluate background conditions.

Waste Classification - $5,000 to $10,000

Based on the additional data collection above, Geomatrix would evaluate the classification of the waste according to the criteria in Title 22 and Title 27 of the California Code of Regulations (CCR). Title 22 criteria would be evaluated to determine if the mine tailings material would characterize as a hazardous waste. This determination includes use of the total concentration analysis, soluble concentration analysis and corrosivity and ignitability analyses.

Title 27 criteria for mining waste include:

1) Group A – mining wastes of Group A are wastes that must be managed as hazardous waste pursuant to Chapter 11 of Division 4.5 of Title 22 f the CCR, provided the RWQCB finds that such mining wastes pose a significant threat to water quality;
2) Group B – Mining waste of Group B either consists of or contains hazardous wastes that qualify for a variance under Chapter 11 of Division 4.5 of Title 22 of the CCR, provided the RWQCB finds that such mining waste pose a low risk to water quality; or
3) Mining wastes that consist of or contain nonhazardous soluble pollutants at concentrations which exceed water quality objectives for or could cause degradation of waters of the state; or
4) Group C – mining waste from Group C are wastes from which any discharge would be in compliance with the applicable water quality control plan (Basin Plan for the Sacramento Valley), including water quality objectives other than turbidity.

When determining the classification of mine wastes, the regulatory agency can consider whether the waste contains hazardous constituents only at low concentrations, whether the waste has low acid producing potential and whether because of intrinsic properties the waste can be contained by less stringent measures.

Water Balance - $20,000 to $25,000

Water management is a key issue at the site and affects both the environmental and, we suspect, the geotechnical status of the mine tailings. Eliminating the water in the tailings would eliminate concerns regarding potential discharge of dissolved metals and acidic solutions. In order to better develop a plan for water management, a water balance is proposed. The results of the water balance would be incorporated into a conceptual site model for the site.

A water balance and basin analysis should be conducted to assess water movement in the site drainage basin. This evaluation should include development of a conceptual model, which would be built from information collected from literature, previous studies, maps, empirical groundwater measurements, and other data including precipitation, surface runoff and flow patterns, groundwater recharge information and groundwater quality analyses. The analysis would use:

- Topographic information from United States Geological Survey and other sources.
- Rainfall and evaporation data obtained from nearby meteorological station(s).
- Total stream flow determined at relevant USGS gauging stations if available and/or other gauging stations.
- Stream bed, vadose zone, and aquifer parameters compiled from previous studies in the area. Important streambed and vadose zone parameters include streambed permeability, organic carbon content, and moisture contents. Important aquifer parameters include transmissivity, storativity, and effective porosity.
- Geologic conditions obtained from geologic/structural geologic maps and cross-sections.
- Available groundwater level data, groundwater contour maps, and hydrographs compiled from existing data.
- Groundwater recharge and discharge areas and volumes estimated for the conceptual model development.
- Groundwater storage calculations.
- Surface water/groundwater recharge and/or discharge evaluated on a seasonal basis.

The results of the water balance would be incorporated into a Storm Water Management Plan that could be used as a basis for developing the design of storm water control facilities at the site in the future.

Risk Assessment - $15,000 to $25,000
In order to evaluate potential human health risk from development of the site, we recommend conducting a human health and ecological risk assessment according to the methods either in the DTSC's Preliminary Endangerment Assessment Guidance Manual or similar approach. Data to conduct the risk assessment would be collected as part of Task 2 above. The general steps to conduct the risk assessment include:

1) The Conceptual Site Model would be refined as part of the risk assessment activity. As part of the model chemicals of concern, exposure pathways and potential receptors are identified;
2) Identifying constituents of concern and potential exposure pathways;
3) Developing exposure point concentrations;
4) Conduct a toxicity assessment; and
5) Conducting a risk characterization.

We would be happy to prepare a more specific proposal and cost estimate for the recommendation presented above if desirable. If SPI has any questions regarding this evaluation or the recommendations proposed we would be happy to discuss them at your convenience.

Sincerely yours,
GEOMATRIX CONSULTANTS, INC.

Edward P Conti

Joseph J. Niland, PG
Principal Hydrogeologist

Edward P. Conti, CEG, CHG
Principal Geologist

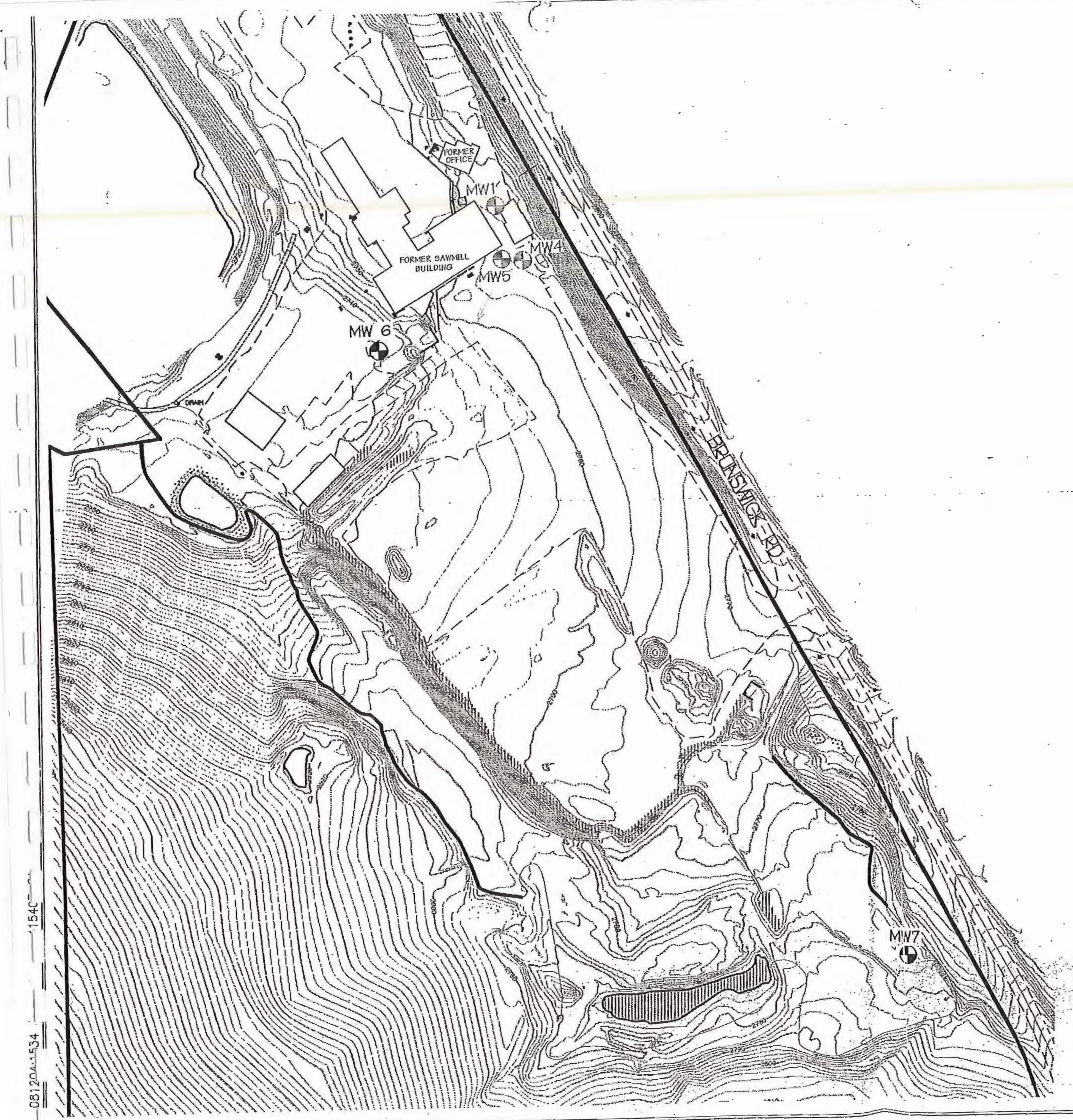
Syed Rehan (di)

Syed Rehan, PE
Senior Engineer

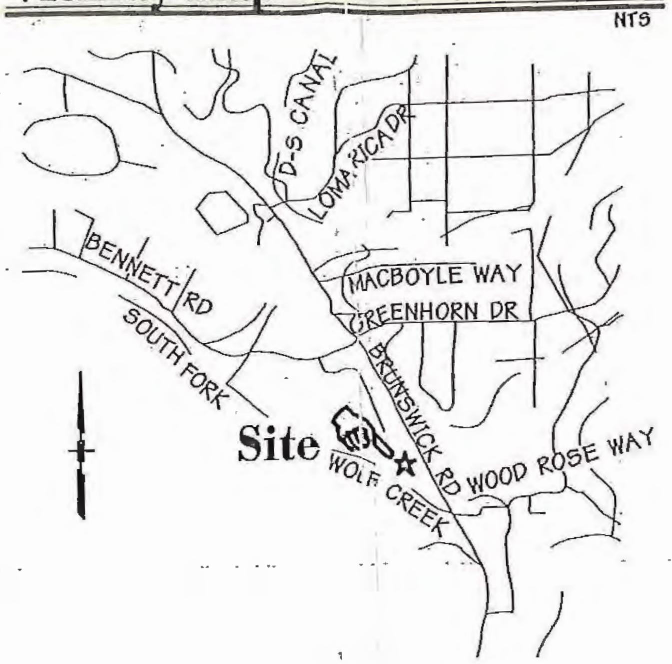
cc: Bob Ellery

Attachments:

Tab 1 – Site Location and Topographic Map
Tab 2 – Site Photographs
Tab 3 – Monitoring Well Location map
Tab 4 – Tailings Sample Locations and Results
Tab 5 – Groundwater and Surface Sample Results
Tab 6 – Historical Photo of New Brunswick Mine



Vicinity Map



Legend

- ⌐ - FORMER STRUCTURE LOCATION
- ⊕ MW1 - APPROXIMATE LOCATION OF EXISTING GROUNDWATER MONITORING WELL
- ◐ MW6 - PROPOSED MONITORING WELL LOCATION

TEAM DRIVEN SOLUTIONS FOR THE BUILT ENVIRONMENT

CARLTON
Engineering Inc.

3932 Ponderosa Road, Shingle Springs, CA 95682
Voice 530.677.5515 Fax 530.677.6845

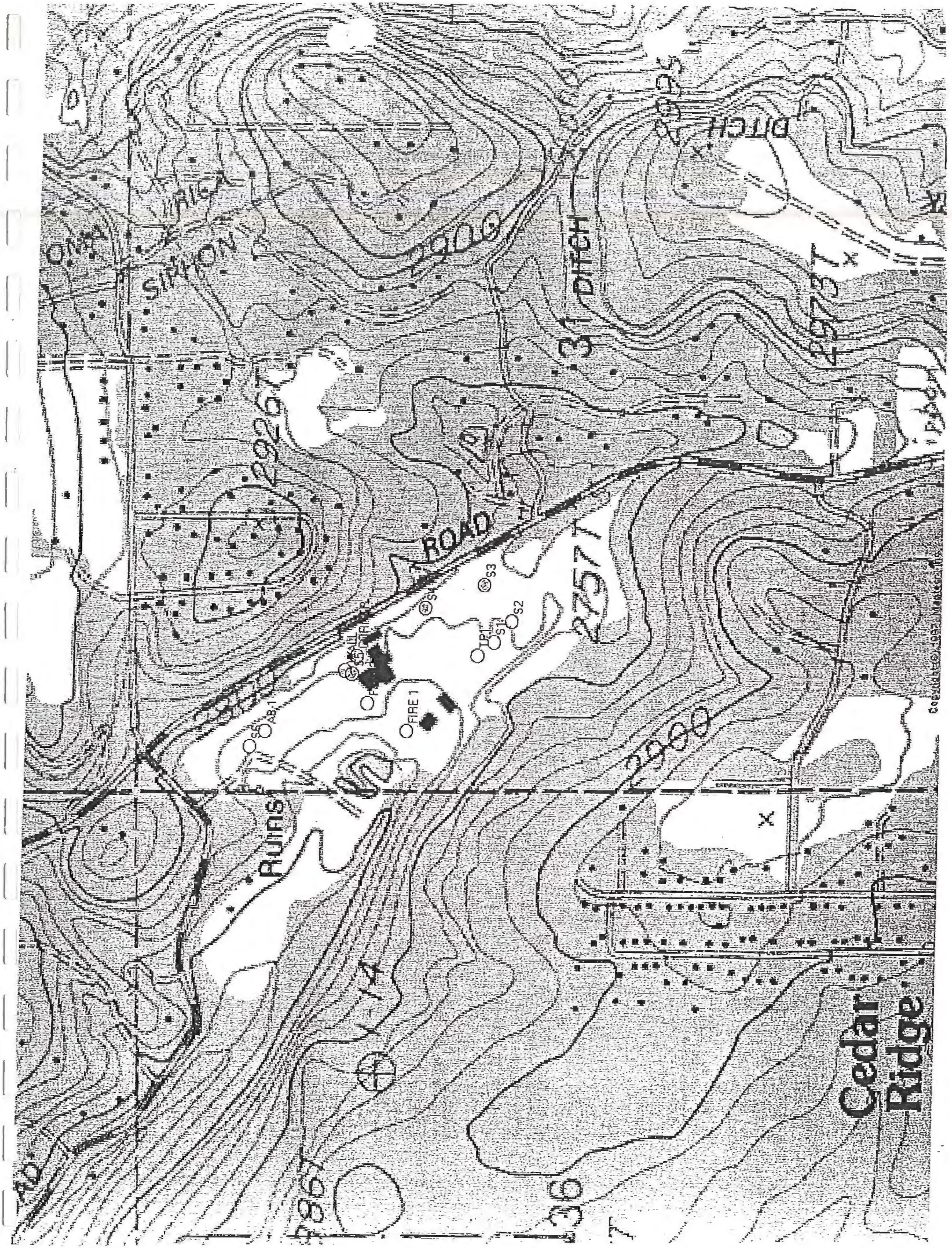
SIERRA PACIFIC INDUSTRIES

SPI - BRUNSWICK MILL
MONITORING WELL PLAN

Project Location:
Brunswick Mill
Nevada County, California

DESIGNED JP	DATE 8-11-04
DRAWN BA	Horz. SCALE 1"=200'
PROJECT 4154-07-04	Vert. SCALE NA

FIGURE
1


SIPHON
DITCH
DITCH
ROAD
RUINS
2900
2900
2900
2757
2757
2873
31
36
14
FIRE 1
AB-1
S1
S2
S3
S4
S5
TP1
Cedar Ridge

	CAM 17 Metals - Total (mg/kg)								
	TP1	S1	S2	S3	S4	S5	S6	PRG [2]	TTLC [3]
Antimony	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	410 ✓	500
Arsenic [5]	18	20	21.5	765	800	84	5.1	1.6 ~~260~~	500
Barium	39	52	25	25	28	8.6	11	67,000	10,000
Beryllium	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1,900	75
Cadmium	<2.0	<2.0	<2.0	<2.0	2.0	<2.0	<2.0	450 ~~7.4~~	100
Chromium	72	150	91	82	130	340	150	450	500
Cobalt	16	30	20	19	24	37	19	1,900	8,000
Copper	72	60	120	42	77	48	300	41,000	2,500
Lead	5.9	9.3	<3.0	<3.0	5.9	4.6	<3.0	800 ~~750~~	1,000
Mercury	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0	20
Molybdenum	2.2	2.5	2.5	3.0	3.1	2.6	3.0	5,100	3,500
Nickel	16	24	16	14	40	430	63	20000 ~~11,000~~	2,000
Selenium	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	29	5,100	100
Silver	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	5,100	500
Thallium	13	21	32	20	36	19	19	67	700
Vanadium	58	140	64	72	72	42	57	1000 ~~7,200~~	2,400
Zinc	53	54	44	48	46	37	47	100,000	5,000
pH [6]	7.7	7.8	7.5	7.5	7.6	7.7	7.7		
pH [7]	7.78	5.79	6.65	7.42	7.80	9.42	8.83		
AGP	8.00	20.8	22.4	16.1	18.1	4.95	12.0		
NP	4.65	3.66	15.5	55.8	77.6	45.2	80.6		
NP/AGP	0.58	0.18	0.69	3.47	4.29	9.13	6.72		

	CAM 17 Metals - Soluble (mg/L)							
	TP1	S1	S2	S3	S4	S5	S6	STLC [4]
Antimony	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	15
Arsenic [5]	<0.25	<0.25	<0.25	<0.25	0.35	0.35	<0.25	5.0
Barium	<0.050	<0.050	0.094	<0.050	<0.050	<0.050	<0.050	100
Beryllium	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.75
Cadmium	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	1.0
Chromium	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	5
Cobalt	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	80
Copper	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	25
Lead	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	5.0
Mercury	No Data	No Data	No Data	No Data	No Data	No Data	No Data	0.2
Molybdenum	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	350
Nickel	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	20
Selenium	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	1.0
Silver	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	5
Thallium	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	7.0
Vanadium	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	24
Zinc	<0.050	<0.050	0.082	<0.050	<0.050	<0.050	<0.050	250

[1] Ratio of Neutralization Potential to Acid Generation Potential

[2] EPA Region 9 Preliminary Remediation Goal for Industrial Soil

[3] Title 22 Total Threshold Limit Concentrations used to determine Toxicity

[4] Title 22 Soluble Threshold Limit Concentrations used to determine Toxicity

[5] Average of two laboratory arsenic analyses performed for each sample

[6] EPA Method 9045B

[7] Saturated Paste (< #60 Mesh) referenced in USDA Handbook 60

Table 1. Brunswick Mill Site Water Quality Results for Metals January 2004

Metal	Reporting Limit (ug/l)	MW1 (ug/l)	MW4 (ug/l)	CMP-in (ug/l)	CMP-out (ug/l)	Pond (ug/l)	Water Quality Objective (ug/l) (CVRWQCB)
Antimony	6	ND	ND	ND	ND	ND	6
Arsenic	0.27 (1)	0.52 (2)	0.59 (2)	ND	ND	1 (2)	0.023
Barium	20	33	79	29	38	26	490
Beryllium	4	ND	ND	ND	ND	ND	4
Cadmium	0.17 (1)	ND	0.17(2)	ND	ND	ND	0.07
Chromium (Total)	20	ND	ND	ND	ND	ND	50
Cobalt	20	ND	ND	ND	ND	ND	50
Copper	20	ND	ND	ND	ND	ND	170
Lead	2	ND	ND	ND	ND	ND	2
Mercury	0.2	ND	ND	ND	ND	ND	1.2
Molybdenum	10	ND	ND	ND	ND	ND	10
Nickel	10	ND	ND	ND	ND	ND	12
Selenium	5	ND	ND	ND	ND	ND	20
Silver	10	ND	ND	ND	ND	ND	35
Thallium	0.11 (1)	ND	ND	ND	ND	ND	0.1
Vanadium	20	ND	ND	ND	ND	ND	50
Zinc	20	59	44	ND	ND	ND	2,000

(1) Method Detection Limit
(2) Estimated value

TABLE 2. SPI-Brunswick General Minerals Results January 26, 2004

Parameter/constituent	Units	Lab Reporting Limits	MW1	MW4	CMP-in	CMP-out	Pond	MCL SMCL*
Alkalinity	mg/l	5	21	90	26	27	81	
Bicarbonate	mg/l	5	21	90	26	27	81	
Carbonate	mg/l	5	ND	ND	ND	ND	ND	
Chlorides	mg/l	0.5	2.9	3.2	2.7	2.6	1.4	
Hardness (as CaCO3)	mg/l	1	27	99	23	26	110	
Nitrate (as N)	mg/l	2	ND	ND	ND	ND	ND	
Fluoride	mg/l	0.1	0.14	0.13	0.11	0.11	0.11	
Calcium	mg/l	1	3	15	5.2	5.7	28	
Magnesium	mg/l	1	4.8	15	2.3	2.8	8.8	
Potassium	mg/l	1	ND	1.2	1.7	1.7	3.6	
Sodium	mg/l	1	2.6	13	3.9	3.4	2.1	
pH	pH units		5.66	6.08	6.94	6.92	7.37	
Specific Conductance	umhos/cm	1	73	220	75	66	220	900*
Sulfate	mg/l	0.5	3	25	1.7	2.1	31	
Total Dissolved Solids	mg/l	10	51	130	50	56	130	500*
Turbidity	NTU	0.1	96	76	4.3	4.5	4.4	5
Color	Color Unit	20	200	5000	20	20	40	15
MBAS	mg/l	0.1	ND	ND	ND	ND	ND	0.5
Odor	TON	1	ND	2	2	4	2	3

ND: Not Detected within Detection Limits
NT: Not tested
NA: Not Applicable

Geomatrix

Memorandum

TO:	Mr. Gary Blanc and Bob Ellery Sierra Pacific Industries, Inc.	**DATE:**	9/7/06
FROM:	Joe Niland Mandy Lauenroth	**PROJ. NO.:**	11096.000
CC:		**PROJ. NAME:**	Brunswick Lumber Mill Site

SUBJECT: **Summary – Phase II Investigation: Data Collection and Analysis**
Brunswick Lumber Mill Site
Nevada County, California

Mr. Blanc and Mr. Ellery:

Geomatrix Consultants Inc. (Geomatrix) has prepared this summary and analysis of the results from Phase II investigation and assessment work performed to address mine waste rock present at the Sierra Pacific Industries Inc. (SPI) Brunswick Lumber Mill Site in Nevada County, California (Site). Phase II investigation of the mine waste rock was conducted consistent with "Task Two (2): Additional Data Collection" as proposed in *Work Authorization No. 2, Brunswick Lumber Mill Development, Brunswick Road and N. Bennett Road, Grass Valley, CA* (Work Authorization No. 2) dated April 21, 2006. The additional work was conducted in order to assist SPI in evaluating potential property development options at the Site.

This summary is divided into six sections. Section 1.0 presents an overview of the work conducted during the Phase II investigation of the mine waste rock. Section 2.0 presents a summary of results from the Phase II investigation. Section 3.0 presents a screening risk assessment based on the Phase II investigation results and previous investigation of the mine waste rock. Section 4.0 presents an overview of the Site history and a summary of findings from all investigative work conducted at the Site pursuant to the mine waste rock and other Site environmental issues. Section 5.0 presents recommendations for environmental compliance at the Site if SPI chooses to proceed with the development. Section 6.0 presents a planning level cost estimate for environmental compliance tasks recommended for the Site.

Memorandum

1.0 SCOPE OF WORK

Consistent with the Work Authorization No. 2, Phase II data collection activities were conducted at the Site during June 2006. The Phase II scope of work was developed based on Site background information presented in the *Preliminary Environmental Evaluation, Brunswick Road and N. Bennett Road, Grass Valley, CA,* dated March 3, 2006, and rationale presented in the Work Authorization. The sampling and analytical tasks are listed below and summarized in the subsequent sections.

1.1 Mine Waste Investigation and Sample Collection;
1.2 Storm Water and Surface Water Sample Collection;
1.3 Groundwater Monitoring Well Sample Collection;
1.4 Former Green Chain Area Soil Sampling; and
1.5 Background Sample Collection.

See Figure 1 for the locations of samples collected from the Site. Laboratory analytical results from this work are provided in Attachment A.

1.1 Mine Waste Investigation and Sample Collection

- The mine waste rock investigation included excavation of trenches to characterize subsurface lithology and the distribution of fill material and to collect soil, rock and perched water (where available) for laboratory analysis.
- Using the assumption that the future lot development at the Site will be on average 2-acre parcels, two investigation trenches were excavated at each 2-acre parcel. The Site is approximately 22-acres in size, therefore, 22 trenches were excavated during the Phase II investigation.
- Each trench was given an alphanumeric identification such as TP-1A where "TP-1" represents the 2-acre area where the trench was excavated, and the suffix "A" denotes one of the two trenches excavated in the 2-acre area. The second trench excavated at this same 2-acre parcel was named "TP-1B".
- The trench locations are shown on Figure 1.
- Trenches were excavated to depths ranging from six to twelve feet (ft) below ground surface (bgs) depending on the thickness of fill material and the competency of the trench sidewalls.
- During excavation, a log was prepared by the field geologist to document lithology and/or fill material encountered.

- A summary of the depth, occurrence of fill and/or rock material and a description of the material types encountered in each trench is summarized in Table 1.

1.1.1 Trench Mine Waste Rock Sample Collection and Analysis

- Mine waste rock samples collected from trenches excavated at each 2-acre parcel were made into composites for laboratory analysis.
- A total of eleven composite samples (TP-1AB through TP-11AB) were submitted to SVL Analytical, Inc. in Kellogg, Idaho (SVL Analytical) for analysis of arsenic by EPA 7060 and acid/base accounting by the CaCO3 Equivalent/LECO method. This lab was selected based on its ability to do the acid/base accounting analysis.
- Analytical results are presented in Table 2.
- Composite and supporting discrete samples with reported arsenic concentrations in excess of 10-times the Soluble Threshold Limit Concentration (STLC) of 5 milligrams per liter (mg/l) (Table 2) were analyzed for soluble arsenic using a deionized water extract (also method EPA 7060) (Table 2).
- 5 samples were analyzed for asbestos (bulk method) and gold (by fire assay) (Table 2).
- Results from the Phase II laboratory analysis are presented in Table 2 along with the results from a previous mine waste rock investigation.

1.1.2 Trench Soil Sample Collection and Analysis

- Shallow composite soil samples (0 to 18 inches bgs) were collected from 9 of the 2-acre parcels for use in the screening risk evaluation.
- 9 composite soil samples (each comprised of soil recovered from the upper 18-inches of the 2 trenches excavated at each 2-acre area) were submitted to SVL Analytical for analysis of total arsenic by EPA Method 7060.
- Soil samples are identified with the suffix "S" (*i.e.* TP-3AB-S).
- A summary of the soil samples collected and the laboratory analytical results is presented in Table 3.

1.1.3 Trench Water Sample Collection

- A total of four water samples were collected from seeps observed during trenching.
- Two of the water samples (TP-6B and TP-8B) were collected from seeps observed in the mine waste rock, and the remaining two water samples (TP-7A and TP-11B) were collected from water seeping into the bottom of the trenches.

- Trench seep samples were submitted to SVL Analytical for analysis of CAM 17 metals by EPA Methods 6010 and 7060.
- A summary of the trench water samples collected and analytical results is presented in Table 4.
- A summary of field parameters measured during groundwater sampling (where sufficient water was available) is provided in Table 5.

1.2 Storm Water and Surface Water Sample Collection

- Two surface water samples and one water sample from a surface seep present at the Site were collected during the Phase II investigation. Storm water was not present at the Site at the time of the Phase II investigation therefore storm water samples were not collected.
- Two surface water samples were collected from Wolf Creek. One sample (Wolf Creek-UG) was collected upstream of the Site just prior to where Wolf Creek enters the 48-inch diversion pipe that passes beneath the Site (referred to as the "CMP"). The second sample (Wolf Creek-DG) was collected in Wolf Creek downstream of the Site after the terminus of the CMP.
- One water sample (Seep-1) was collected from a seep flowing from a hillside northeast of the Site, approximately 20-feet east of the paved driveway leading to the northeastern Site entrance (Figure 1).
- Surface and storm water samples were submitted to SVL Analytical for analysis of CAM 17 metals by EPA Methods 6010 and 7060.
- A summary of the analytical results from these samples is provided in Table 4.

1.3 Groundwater Monitoring Well Sample Collection

- A total of five groundwater samples were collected from existing Site monitoring wells MW-1, MW-3, MW-4, MW-6 and MW-7.
- Groundwater samples were submitted to SVL Analytical for analysis of CAM 17 metals by EPA Methods 6010 and 7060.
- A summary groundwater samples collected from Site monitoring wells and the analytical results are presented in Table 6.
- A summary of field parameters measured during groundwater sampling is provided in Table 5.

1.4 Former Green Chain Area Soil Sampling

- Nine samples were collected from the upper two-feet of soil in the area beneath the former sorter building.
- This area was highly disturbed (*i.e.* comprised of piles of gravel and dirt and low spots) likely from demolition activities; therefore, soil samples were collected from the least disturbed areas between the piles.
- Soil samples were submitted to SVL Analytical for analysis of pentachlorophenol (PCP) and tetrachlorophenol (PCP) by EPA Method 8270.
- Table 3 presents a summary of the soil samples collected and the analytical results.

1.5 Background Sample Collection

- Soil and rock samples were collected from areas near the Site and areas within a two-mile radius in order to assess background conditions.
- Regional groundwater quality data was reviewed at the County of Nevada Community Development Agency, Environmental Health Division, for use in the screening risk evaluation.
- Three background soil and rock samples were collected.
- The soil and rock sample locations were co-located in the field.
- The first background sample location (sample IDs BKGRND-RK1 and BKGRND-SS1) was located on the western hillside (topographically upslope from the waste rock) at an outcrop of aphanitic volcanic rock.
- The second background location (BKGRND-RK2 and BKGRND-SS2) was from a serpentine rock outcrop located adjacent to commercial businesses at 937 Golden Gate Terrace in Grass Valley, approximately two miles northwest of the Site.
- The third background sample location (BKGRND-RK3 and BKGRND-SS3) was from a diabase outcrop at the intersection of Lava Rock Road and Bennett Road in Grass Valley.
- Background samples were submitted to SVL analytical for analysis of CAM 17 metals by EPA Methods 6010 and 6020.
- The analytical results for these samples is provided in Table 7.

2.0 SUMMARY OF PHASE II INVESTIGATION RESULTS

Results from the Phase II investigation are summarized below:

2.1 Waste Rock

2.1.1 Physical Characteristics:

- Subsurface materials encountered during trenching included mine waste rock and organic fill (*i.e.* wood debris) and sandy silts and clays interpreted to be native soil.
- Areas of unconsolidated and unstable mine waste rock fill were encountered in the central and northern areas of the Site at trench locations TP-8A, TP-9A and TP-10B. The total depth of waste rock fill at these trench locations could not be determined due to sloughing trench walls during excavation. A waste rock isopach map illustrating the thickness of mine waste rock encountered in the trenches is presented in Figure 3.
- Layers (ranging from 8 to 12 feet) of organic fill were encountered in the southern portion of the Site at trench locations TP-2B and TP-4A (Table 1). The organic fill was predominately comprised of wood and bark debris.

2.1.2 Analytical Results:

- Total arsenic was reported in excess of the California Human Health Screening Level (CHHSL)[1] of 0.24 mg/kg in all mine waste rock composite samples collected during the Phase II investigation (Table 2). Of these samples, arsenic was reported at concentrations greater then 10 X the STLC of 5.0 mg/l in three of the mine waste rock composite samples collected (Table 2).
- Composite mine waste rock samples with reported arsenic concentrations exceeding 10 X the STLC were further tested for soluble arsenic by the DI WET method. The discrete mine waste rock samples used to create the composite samples were also analyzed for soluble arsenic.
- Results from soluble arsenic testing showed arsenic concentrations exceeding the Maximum Contaminant Level (MCL) for arsenic of 0.010 mg/l in all samples analyzed, and above the STLC for arsenic in five samples (Table 2).
- Elevated arsenic concentrations were localized at the southern to southeastern portions of the Site (Figure 1).

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[1] Office of Environmental Health Hazard Assessment, 2005, Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for contaminated Soil, January (Revision).

- Results of acid/neutralization testing indicate that the waste rock samples generally have a net neutralization potential, though one sample collected from the northwestern portion of the Site was reported to have a net acid generation potential (Table 2).
- Gold was reported in waste rock samples at concentrations ranging from 0.001 oz/ton to 0.016 oz/ton (Table 2).
- Asbestos fibrous minerals including theromolite, actinolite and chrysotile were reported in certain waste rock samples though at concentrations of <1% (Table 2).
- Arsenic concentrations in background rock samples collected ranged from <2.5 mg/kg to 6 mg/kg. (Table 7).

2.2 Soil:

- Total arsenic was reported in excess of the California Human Health Screening Level (CHHSL)[2] of 0.24 mg/kg in all soil samples collected from the Site (Table 3).
- The maximum arsenic concentration in soil samples were reported in the southern portion of the Site (Figure 1).
- PCP and TCP were not reported above the laboratory reporting limit in soil collected from beneath the former sorter building (Table 3).
- Arsenic concentrations in background soil samples ranged from 3.98 to 644 mg/kg (Table 7).

2.3 Groundwater

- Barium was the only metal reported above the laboratory reporting limit in groundwater samples collected from Site monitoring wells (Table 6). Reported barium concentrations are below the MCL of 1,000 µg/l.

2.4 Seeps

- Metals reported in shallow seeps encountered in the western portion of the Site include barium, cadmium and arsenic (Table 4). Only arsenic was reported above the respective MCL of 10 µg/l, in a sample collected from a seep sample in trench TP-6B.

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[2] Office of Environmental Health Hazard Assessment, 2005, Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for contaminated Soil, January (Revision).

3.0 SCREENING RISK EVALUATION

Geomatrix performed a screening risk evaluation in order to evaluate the potential health risks to potential future users of the Site from the mine waste rock. Concentrations of constituents in environmental media were compared with the appropriate regulatory screening criteria to assess the potential for adverse health risks. A Site Conceptual Model (SCM) that describes the potential future exposure pathways at the Site, risk-based screening levels and evaluation results are described in this section.

3.1 Site Conceptual Model

- This screening risk evaluation was conducted within the context of a SCM developed for the mine waste rock at the Site (Figure 2).
- As described in U.S. EPA's "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (U.S. EPA, 1988), the purpose of the SCM is to describe what is known about chemical sources, migration pathways, exposure routes, and receptors.
- The SCM depicts the exposure pathways, which are the mechanisms by which a receptor may come into contact with chemicals of potential concern (COPCs) in the environment.
- As described in Section 2.1, metals have been reported in soil, groundwater and seeps at the Site.
- The primary release mechanism for metals at the Site is potential leaching from mine waste rock to underlying soils.
- Non-volatile compounds, such as metals, can be resuspended with soil particulates and be present in ambient air.
- Metals in soil have the potential to leach through the soil column and discharge to surface water.
- Metals in soil have the potential to leach through the soil column and migrate to groundwater (Site groundwater depth ranges from four to twenty-six feet bgs depending on location).
- Metals in soil may be picked up in storm water runoff and transported to surface water.
- Lastly, metals leached to groundwater may migrate and potentially impact surface water bodies.
- These potential sources result in metals potentially being present in the following exposure media: surface and subsurface soil, ambient air, groundwater, and surface water.
- Proposed future use of the Site includes primarily commercial/industrial uses with some associated residential development adjacent to the mine waste rock area.
- A construction worker is included as a potential receptor during Site redevelopment and for subsurface utility work once the Site is developed. After Site redevelopment, the Site will be

paved and future commercial/industrial workers will not have access to soil (dermal contact, incidental ingestion, or inhalation of dust). Therefore, only a construction worker has been quantitatively evaluated for exposure to chemicals in soil.

- Future use of groundwater as a drinking water source is possible and is not excluded by the current designation for beneficial use for groundwater in the area. Thus, ingestion of groundwater is considered a potentially complete exposure route.
- Wolf Creek is currently diverted under the Site through a diversion pipe (the "CMP"), preventing direct contact with the waste rock. Barium was detected at similar concentrations in surface water samples collected from Wolf Creek at locations upstream (48.3 µg/L) and downstream (45.8 µg/L) from the Site (Table 4). Cadmium was detected in the downstream sample at a concentration near the laboratory reporting limit (Table 4). Arsenic was not detected above the laboratory reporting limit in surface water samples collected from Wolf Creek (Table 4).
- Results from surface water samples collected from Wolf Creek indicate that surface water in the creek has not been impacted by Site soil, though the exposure pathway for Site-related impacts to surface water is considered potentially complete (Table 4).

3.2 Risk-Based Screening Levels

- Risk-based screening levels are concentrations in environmental media below which health effects are not expected to occur. Risk-based screening levels are based on specific exposure assumptions (e.g., residential or commercial/industrial) for the Site conditions, which are incorporated into the screening level.
- As described in the summary of results, concentrations of arsenic exceed CHHSLs for commercial/industrial receptors. Though exposure by commercial and industrial receptors is not anticipated in the Site development plan, further evaluation is required if future Site conditions do not eliminate this pathway.
- Environmental Screening Levels (ESLs) for soil developed by the San Francisco Bay Regional Water Quality Control Board (RWQCB) for Construction/Trench Workers were selected to evaluate future soil exposure at the Site (Table 3)[3] because CHHSLs are not available for this receptor. The Central Valley RWQCB is in the process of developing similar screening levels. ESLs for direct contact with soil consider the following exposure

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[3] Regional Water Quality Control Board, 2005, Screening For Environmental Concerns At Sites With Contaminated Soil and Groundwater, Volume 1: Summary Tier 1 Lookup Tables, Interim Final, February.

pathways: incidental ingestion, dermal contact and inhalation of soil particulates in ambient air.

- California's Maximum Contaminant Levels (MCLs)[4] were used as a comparison threshold to compare to concentrations in groundwater in the event that a water supply well is installed on-site in the future (Table 6). MCLs are not strictly risk-based, but they do represent enforceable standards for drinking water.

3.3 Screening Risk Evaluation Results

Metal concentrations in mine waste rock, soil and groundwater were compared to appropriate screening levels as discussed below.

3.3.1 Mine Waste Rock

- Although potential exposure to metals in the mine waste rock is not consistent with the exposure assumptions used in developing soil screening levels, interstitial fine particles found in the mine waste rock are believed to be derived from the mine waste rock, and for comparative purposes were therefore considered in this evaluation to be potentially representative of soil conditions.
- Arsenic results from the 11 composite trench rock samples collected during the Phase II investigation, in conjunction with results from the 7 historical rock samples collected by Carlton Engineering were compared with the ESLs for direct contact with soil (Table 2).
- The only metal reported to exceed the ESL in these samples was arsenic.
- Arsenic was reported at concentrations above the 2.9 mf/g/kg ESL for construction workers in 17 of the 18 trench rock samples analyzed (Table 2). Concentrations of arsenic in trench rock samples ranged from 2.8 to 3,170 mg/kg (Table 2).

3.3.2 Soil Concentrations Compared to Screening Levels

- Soil samples results for arsenic, PCP and TCP were compared with their respective ESLs (Table 3).
- PCP and TCP were not reported above the laboratory reporting limit in soils collected from the former sorter building (Table 3). The PCP and TCP laboratory limits are well below the respective ESLs (Table 3).

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[4] California Code of Regulations, Title 22, Division 4, Chapter 15, Article 4, Section 64431, Table 64431-A and Section 64449, Table 64449-A.

- Arsenic was reported at concentrations above the 2.9 mg/kg ESL for construction workers in all soil samples collected during trenching (Table 3). Arsenic concentrations in trench soil samples ranged from 11.8 to 4,700 mg/kg (Table 3).
- If a target risk level of 1x10^{-5} is used for arsenic, arsenic would exceed the ESL in 7 of 16 samples collected from the investigation trenches. Trench locations with arsenic concentrations exceeding the 10^{-5} target risk level are primarily located in the southern portion of the Site (Figure 8).

3.3.3 Soil Concentrations Compared to Background Soil Concentrations

- Background arsenic data was collected from multiple sources for comparison to Site data.
- Concentrations of arsenic in the three off-site soil samples collected by Geomatrix in June and July 2006 ranged from 3.98 to 644 mg/kg (Table 7). Concentrations of arsenic in rock samples collected nearby ranged from <2.5 to 6 mg/kg.
- Nearby school sites evaluated under the California Department of Toxic Substances Control (DTSC) School Sites Program have had to document local background arsenic concentrations. Concentrations of arsenic in background samples collected for the Empire Meadows school site, located approximately two miles northwest of the Site, ranged in concentration from 4.1 to 49.2 mg/kg. Mike Vivas, the DTSC project manager for the Empire Meadows school site, suggested 15 mg/kg as a preliminary estimate for the representative background concentration.[5] The Bear River High School site, located 12 miles south of the Site, has reported levels of arsenic in soil up to 520 mg/kg that are considered to be naturally occurring.
- Based on these background data sources, concentrations of arsenic in soil may be naturally-occurring at concentrations up to 500 to 600 mg/kg. Assuming this background condition, concentrations in three of the test pit samples (TP-3-AB-S, TP-4-AB-S, and TP-5-AB-S) and two previous soil samples (S-3 and S-4) exceed background concentrations.
- Considering the comparison to the ESL and background, future construction/trench workers may be required to wear appropriate personnel protective equipment to mitigate potential exposure to arsenic in soil in at least some parts of the Site.

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[5] Personal communication with Mike Vivas by Eileen McFadden on July 28, 2006.

[6] DTSC Public Involvement Fact Sheet, November 2004, Cleanup Plan Proposed for the existing Bear River High School.

3.3.4 Groundwater

- No water supply well or drinking water well is currently known to exist on the Site.
- Arsenic, barium, cadmium, and zinc concentrations were below their respective MCLs (Table 6).
- Concentrations in groundwater do not exceed California drinking water standards.

4.0 SUMMARY AND CONCLUSIONS

The following summary and conclusions incorporates information received regarding the Site history, previous investigation results and the results from the Phase II investigation including the screening risk evaluation by Geomatrix.

4.1 Site History

- The Site is located in an area with a very active mining history. To the west of the Site is the Empire Mine, and to the north of the Site is the Idaho-Maryland Mine; historically two of the largest gold producing mines in California.
- The New Brunswick Mine crushed ore onsite (including on the SPI property) for processing at the Idaho-Maryland Mine.
- We understand that rock from the Empire Mine was also crushed at the New Brunswick Site (the Empire Mine material is know to be relatively high in arsenic, whereas the Idaho-Maryland material is relatively low in arsenic).
- The waste rock from the New Brunswick mining operation was deposited on the Site and used to create the relatively flat working surface for the former lumber milling operations.
- The lumber mill operation at the Site was started in the 1930s in order to support the New Brunswick shaft mining operation.
- After mining and crushing on the Site ended, commercial wood milling operations were initiated in the late 1950s by the Brunswick Timber Products Company (Brunswick), a subsidiary of Yuba River Lumber Company. Bohemia, Inc. (Bohemia) purchased the Site from Brunswick in 1976 and operated it as a saw mill until 1991, when the Site was purchased by SPI. SPI did not operate the Site as a saw mill.
- Past facilities at the Site included a saw mill, sorter, stacker, a kiln, a millwright shop, a green chain area where lumber was treated, a vehicle maintenance shop and fuel house, a lumber storage area, a tepee burner and a log yard with an irrigation system and recycle pond.
- All saw mill equipment was removed by SPI in 2003.

- Emperor Gold Mining Company (Emgold) has been planning to reopen the Idaho-Maryland Mine, including the New Brunswick shaft located just north of the SPI property, for over 10 years.

4.2 Past Environmental Work

Past lumber milling operations at the Site included green chain lumber treatment using a solution containing PCP and TCP. Solvents (VOCs) were used onsite and hydrocarbons were used in vehicle maintenance and operation.

- PCP and TCP impacts to soil were found at and adjacent to the green chain area during a Site investigation conducted in 1986.
- During these past characterization efforts of this area, performed under the direction of the RWQCB, PCP concentrations were found in excess of the site specific clean-up goal of 3 mg/kg. PCP impacts to groundwater were not reported above regulatory levels.
- Source removal of PCP impacted soils at the green chain area was completed in 1988, and a no further action letter (NFA) for the area was issued by the RWQCB.
- Prior to removal of PCP impacted soils found in the sorter building area adjacent to the green chain area, the sorter building was constructed with plans to further characterize and remediate impacted soils in the area after mill site demolition.
- The sorter building soils were disturbed when the mill was demolished in 2003.
- In order to characterize soil remaining in place for PCP/TCP impacts, soil samples were collected from the former sorter building area in 2006.
- PCP and TCP were not reported in soil samples collected in the area of the former sorter building at concentrations above the laboratory reporting limit.

In 1991, an investigation of VOCs in soil and groundwater near the millwright shop was initiated.

- In late 1992, SPI removed VOC impacted soil from the millwright shop area under oversight of the RWQCB.
- In 1994, the RWQCB issued Monitoring and Reporting Program (MRP) 94-823 for evaluation of VOC impacts to groundwater in the millwright shop area (MW-1, MW-4 and MW-5).
- After 10 years of monitoring, the concentrations of 1,1-DCA and 1,1-DCE declined to below the MCLs in monitoring wells MW-1, MW-4 and MW-6 (the replacement well for MW-5 was damaged during construction work).

- In 2005, an insitu groundwater investigation conducted in the vicinity of well MW-5 showed localized concentrations of 1,1-DCE, 1,1-DCA, and 1,1,1-TCA above the MCLs:
- Carlton Engineering requested a NFA for the VOC issue from the RWQCB in 2006.
- The RWQCB issued a letter on July 18, 2006 stating that they will issue a NFA letter for the VOC issue at the Site once SPI prepares a draft covenant for land use restriction for the residual VOC concentrations in the vicinity of well MW-5 and Site monitoring wells are properly abandoned.
- SPI submitted a draft Covenant and Environmental Restriction (Covenant) for the land use restrictions in 2006 and uploaded the Covenant into the Geotracker database.
- There were also some "housekeeping" issues regarding hydrocarbon waste, batteries, some sludge and other materials identified in the 2002 Phase I. Based on the records provided by SPI, hydrocarbon wastes were removed from the Site in 2003, which is assumed to be the material referenced in the 2002 Phase I.

4.3 Summary from Mine Waste Rock Studies

Physical Characterization

- The mine waste rock is comprised of cobble to boulder size clasts with gravel and subordinate amounts of interstitial sand and fine grained soil. The thicker areas of mine waste rock fill appear to follow the original Site topography. The mine waste rock came primarily from the New Brunswick Mine shaft part of the Idaho-Maryland Mine and reportedly also from the Empire Mine. The Empire Mine material is known to contain arsenic where the Idaho-Maryland material is known to be arsenic "low."
- The deeper areas of the mine waste rock fill investigated at trench locations TP-8A, TP-9A, TP-9B, and TP-10B were unstable and contained numerous voids due to a lack of interstitial material (Figure 3). This "unstable area" is likely caused by erosion from water runoff across the Site. This area will need to be further delineated and made stable for construction prior to development of the Site.
- A relatively thick organic layer (decomposed wood waste) was encountered in the most southern trenches excavated during the Phase II investigation work (Table 1; Figure 1). This area will need to be further delineated and made stable for construction prior to development of the Site.

Storm Water and Perched Water Characterization

- The surface water and storm water collection system at the Site is in disrepair. Surface water and storm water runs freely across the Site and causes erosion at the ground surface and in the mine waste rock pile.
- Perched water is encountered in the mine waste rock fill. The source of the perched water is likely from springs, precipitation, and runoff from Brunswick Road located topographically upgradient from the Site. A surface water and storm water collection system will need to be constructed before the Site is developed.
- Elevated arsenic concentrations reported in perched water samples collected are localized in the southern to central portions of the Site (Figure 8).

Chemical and Mineralogical (gold and asbestos) Characterization

- Based on results of acid/base neutralization testing, the mine waste rock in total demonstrates a net neutralization potential. The net neutralization potential of the mine waste rock reduces the ability of the material to dissolve and discharge metals. A few samples within the mine waste rock have acid generating potential but these sample areas do not correlate to area(s) at the Site where elevated arsenic concentrations were reported.
- Based on the results received from both the Phase II and previous investigation, elevated arsenic concentrations are localized to the southern portion of the Site (Figure 8).
- Based on background sample and data collection, arsenic in soil may be naturally-occurring at concentrations up to 500 to 600 mg/kg. Concentrations in three of the test pit samples (TP-3-AB-S, TP-4-AB-S, and TP-5-AB-S) and two previous soil samples (S-3 and S-4) exceed background concentrations of arsenic.
- Reported gold concentrations in mine waste rock samples may have economic value if a local gold extraction operation (i.e. Idaho-Maryland Mine) is developed (Table 2).
- Low levels of asbestos (<1% of asbestos and other fibrous minerals) were reported in the mine waste rock samples (Table 2). The DTSC has classified friable, finely powdered wastes containing more then one percent (1%) asbestos as a hazardous waste. Groundwater samples collected and analyzed from Site monitoring wells do not contain metals (including arsenic) above MCLs indicating that arsenic reported in the mine waste rock has not impacted groundwater.

- Results received from surface water sampling in Wolf Creek upgradient and downgradient of the Site indicate that the mine waste rock is not discharging elevated metals to the local watershed.

Risk Screening Evaluation

- Based on an ESL at an acceptable risk level of $1x10^{-5}$, concentrations of arsenic in 7 of 16 samples exceed this concentration. The samples that exceed these criteria are primarily located in the southern portion of the Site. Arsenic was detected at concentrations above the 2.9 mg/kg ESL ($1x10^{-6}$) for construction workers in 10 of the 11 mine waste rock samples and in all soil samples analyzed.
- Background samples from a variety of sources suggest that naturally-occurring arsenic concentrations may be up to 600 mg/kg.
- Considering the comparison to the ESL and background, future construction/trench workers may be required to wear appropriate protective equipment to mitigate potential exposure to arsenic in soil in at least some parts of the Site during development.

5.0 RECOMMENDATIONS

Based on the Site history, Site investigation and data analysis conducted to date, Geomatrix has the following recommendations regarding the environmental compliance related to development and the mine waste rock at the Site:

- If required as part of the permitting process for development, we recommend SPI approach the DTSC (not the RWQCB) to develop a Voluntary Cleanup Agreement (VCA) that would include preparing a Removal Action Work Plan (RAW) to support leaving the mine waste rock in place with capping and land use restrictions as the remedial alternative to mitigate the potential risk to the construction worker represented by the mine waste rock.
- The RAW will need to include presentation of all Site data collected to date, a risk assessment, and an evaluation of other remedial action alternative(s).
- We recommend that Geomatrix approach the Voluntary Cleanup Program manager in Sacramento (Steve Becker) with the proposal prior to submitting the application in order to pre-screen potential flaws.
- Perimeter surface water and storm water controls will need to be installed as part of the Site development in order to prevent water from coming in contact with the mine waste rock.

- Onsite controls will need to be installed such as grading, drains and pipelines to prevent storm water, surface water and precipitation from coming in contact with the mine waste rock in the future.
- Site development plans should not include septic or waste water discharge systems in the mine waste rock.
- Monitoring wells no longer in use at the Site should be properly abandoned for protection of groundwater quality. New monitoring wells will likely be required as part of the post-closure monitoring program.
- As part of the Site remedy, a land use (deed) restriction will need to be filed with the County for the Site.
- A Site Management Plan will need to be prepared that provides guidance for material handling and health and safety for the construction worker, both during initial Site preparation and for post development utility work.
- Additional investigation should be conducted in order to evaluate the extent of the wood debris layer and the eroded mine waste rock area. The cost implications of fortifying, removing or repairing these areas in order to allow Site development should be evaluated.
- Past information should be compiled in order to confirm closure of the PCP/TCP, VOC and hydrocarbon cleanup work.
- SPI may consider assessing the liability associated with the mine waste rock, or other past impacts at the Site, and determining if it is worthwhile pursuing compensation from other parties for Site cleanup.

Even though based on existing data there are no groundwater impacts as a result of the mine waste rock, we consider approaching the DTSC instead of the RWQCB for Site environmental compliance preferable. The DTSC uses health risk as a guide for cleanup compared to the RWQCB which generally uses resource protection. The health risk exposure estimated for the mine waste rock can be managed with measures that are consistent with Site development. Also, definitions for mine waste rock classification in Title 27 of the California Code of Regulations (CCR) may be problematic based on the Site data. However, we do anticipate that the DTSC will consult with the RWQCB on the Site cleanup approach. Success of the proposed recommendations are dependant on the RWQCB concurring that the mine waste rock pile in-total has a net neutralizing potential and will not produce acidic or high metal discharge, not degraded nor will it degrade groundwater in the future and that the mine waste rock would be classified as C Mining Waste according to the definitions in Title 27 of the CCR. The DTSC (and the RWQCB) have rendered similar decisions on mine waste rock sites before.

The real advantage to the proposed remedy is that, the mine waste rock will be left in place and the proposed cap would otherwise be part of paving in the Site development process. The paving thickness may have to be increased slightly from what might be necessary for development (i.e. three inches to four inches) in order to obtain a higher level of protection for direct contact and minimize infiltration. If some of the mine waste rock is considered B mining waste according to Title 27 CCR, the paving could be further enhanced (i.e. lining and additional soil cover) in selected areas of the Site. If green strips and planters are planned as part of the development, a soil cover would need to be placed above the waste rock to prevent direct contact in these areas.

6.0 PLANNING LEVEL COST ESTIMATE FOR ENVIRONMENTAL COMPLIANCE

Presented below is conservative planning level cost estimate to implement the recommendations presented above. This planning level cost estimate pertains to environmental compliance tasks for the mine waste rock only, and does not apply to any remaining environmental work that may exist for the PCP, VOCs or hydrocarbon impacts formerly investigated at the Site. The cost estimate includes preparing a package of information to be used to approach the DTSC regarding the approach for environmental compliance for mine waste rock related issues and does not include costs for additional compliance work and the proposed VCA. The estimate also includes oversight fees from the DTSC under the VCA, negotiation and management of the project by Geomatrix and the cost to prepare and negotiate the content of a RAW and a Remedial Design Implementation Plan (RDIP). We assume that California Environmental Quality Act (CEQA) compliance can be met with a Notice of Exemption (NOE) and that a deed restriction for contact with the mine waste rock will be filed with Nevada County. A Site Management Plan will provide guidance on mine waste rock management and health and safety during Site grading and construction and post-construction utility work. We assume groundwater monitoring will be conducted quarterly for two years and annually for three years after the Site is developed/closed. Twenty years of post-closure maintenance and reporting is assumed related to the remedy and the deed restriction. The cost estimate includes a 20 percent contingency.

CATEGORY	ESTIMATED COSTS
Environmental Compliance	
Compile additional information and approach DTSC	$5,000
DTSC VCA and oversight fees	$60,000
Project management and regulatory negotiation	$35,000
RAW	$45,000
RDIP	$50,000
CEQA, NOE	$15,000
Deed restriction	$20,000
Additional data collection, monitoring wells (if required)	$75,000
Well location and abandonment	$15,000
Site Management Plan	$15,000
Five years groundwater monitoring/reporting	$50,000
Subtotal:	***$385,000***
Post closure maintenance (20 years)	
Subtotal:	***$60,000***
Contingency (20%)	
Subtotal:	***$90,000***
TOTAL PROJECT COST:	**$535,000**

If you have any questions regarding this memo, please do not hesitate to call us at (916) 636-3200.

TABLES

FIGURES

ATTACHMENTS

TABLE 1

TRENCHING SUMMARY

Brunswick Lumber Mill Development
Brunswick Road and N. Bennett Road
Grass Valley, CA

Trench ID	Total Depth (ft bgs)	Soil Types/Fill Encountered		
		*Soil/ Fill Type	Depth (ft bgs)	Description
TP-1A	6	ASPHALT	0 - 1	Asphalt
		ROCK FILL	1-3	ROCK FILL; dark yellowish brown (10YR4/4), dry, gravel is 1/4-inch to 5-inch in diameter, subangular to angular, poorly sorted with approximately 15% interstitial fine to medium sand. Rocks encountered include serpentine with visible arsenopyrite crystals and metasedimentary rocks with sugary texture and visible arsenopyrite crystals. * Geotextile fabric encountered at 3-feet (ft) below ground surface (bgs).
		ML	3-6	SANDY SILT (ML (native)); strong brown (7.5YR5/6), moist, sand is predominately fine grained, some medium sand, angular quartz grains, mafic lithics, blocky; 15% medium sand, 35% fine sand and 50% silt/clay.
TP-1B	8	ROCK FILL	0 - 2	ROCK FILL; yellowish brown (10YR5/6), dry to moist, moderate to deep weathering, some organic woody debris, gravel is 1/2-inch to 3/4-inch in diameter, poorly sorted with approximately 30% interstitial fine to medium sand. Rocks encountered include metasediments with aphanitic texture; diabase with quartz, feldspar, and pyrite.
		ROCK AND ORGANIC FILL	2 - 8	ROCK FILL; greenish black (gley 1 10Y2.5/1), moist, abundant woody debris, poorly sorted with approximately 30% interstitial fine to medium sand. Rocks encountered include metasediments with aphanitic texture; and diabase with quartz, feldspar, and pyrite.
TP-2A	8	ML	0 - 2	SANDY SILT (ML); reddish brown (5YR4/4), dry to moist, low plasticity, predominantly fine sand, some sub-angular medium sand. 15% medium sand, 20% fine sand and 65% silt.
		ML	2 - 6.5	SANDY SILT (ML); red (2.5YR5/6), moist, some weathered igneous lithics, rootlets, very fine to fine sand. 15% medium sand, 20% fine sand and 65% silt.
		CL	6.5 - 8	SILTY CLAY (CL); yellowish red (5YR5/6), moist, plastic, blocky structure, some weathered mafic grains, rootlets, some green to brown mottling, friable. Rocks encountered include metasediments with aphanitic texture, very hard, quartz rich, and greenish discoloration; decomposed granatoid with abundant feldspar, weathered and friable.
TP-2B	12	ROCK FILL	0 - 2	ROCK FILL (GM); yellowish brown (10YR5/6), dry to moist, slight cementation, moderate weathering, gravel is 1/2-inch to 5-inch in diameter, poorly sorted, with approximately 30% interstitial fine to medium sand. Rocks encountered include a granitoid with potassium feldspar, quartz; diabase; and phyllite with visible pyrite.
		ORGANIC FILL	2 - 12	ORGANIC FILL; black (gley 1 N 2.5/1), moist, several inches long to 3 feet long bark and wood pieces, some fine sand. Seep noted at 4-ft bgs.
TP-3A	10	ROCK FILL	0 - 2	ROCK FILL; dusky red (10YR3/2), moist, plastic, blocky structure, rootlets, poorly sorted with approximately 35% interstitial fine to medium sand. Rocks encountered include metasedimentary rocks with an aphanitic texture, hard, and quartz rich; diabase with porphyritic texture. *Geotextile fabric encountered at 2-ft bgs.
		CL	2 - 10	SILTY CLAY (CL); yellowish red (5YR5/6), moist, plastic, blocky structure, some green to brown mottling. Rocks encountered include metasedimentary rocks with an aphanitic texture, hard, and quartz rich; diabase with porphyritic texture. Seep noted at 2-ft bgs.
TP-3B	7	ROCK FILL	0 - 3	ROCK FILL; dark red (2.5YR3/6), dry to moist, low plasticity, weathered igneous mafics, gravels are sub-rounded to sub-angular and are 1/4-inch to 1-inch in diameter. Rocks types encountered include metasedimentary with sugary texture, hard, visible arsenopyrite crystals; mafic rocks with aphanitic texture.
		SILTY CLAY	3 - 7	SILTY CLAY (CL); yellowish red (5YR5/6), moist, plastic, blocky structure, weathered igneous lithics, some brown-grey mottling. *Geotextile fabric encountered at 3-ft bgs.
TP-4A	10	ASPHALT	0 - 1	Asphalt
		ROCK FILL	1 - 3	ROCK FILL; reddish brown (2.5YR4/3), moist, gravel is sub-angular, poorly sorted with approximately 20% interstitial fine to medium sand. Rocks encountered include granitoids with porphyritic texture, feldspar, hornblende, and possibly apatite(?); metasedimentary rocks with a sugary texture, hard, visible arsenopyrite; and metasedimentary rocks with an aphanitic texture, dark color, high silica content (conchoidal fracture), and visible arsenopyrite crystals. *Geotextile encountered at 3-ft bgs.
		ORGANIC FILL	3 - 10	ORGANIC FILL; black (gley 1 N 2.5/1), predominantly woody debris 1/8-inch to 6-inches long, poorly sorted with approximately 35% interstitial medium sand to gravel, medium sand to gravel is sub-angular. Rocks encountered include a granitoid with porphyritic texture, feldspar, hornblende, and apatite; metasedimentary rocks with sugary texture, hard, visible arsenopyrite crystals; and metasedimentary with aphanitic texture, dark color, high silica content (conchoidal fracture), and visible arsenopyrite crystals.
TP-4B	7	ASPHALT	0 - 1	Asphalt
		ROCK FILL	1 - 4	ROCK FILL; dark yellowish brown (10YR4/4), moist, non-plastic, gravel is 1/4-inch to 3-inches in diameter, poorly sorted with approximately 25% interstitial fine to medium sand, medium sand comprised of sub-angular quartz and lithics. Rock encountered was a metasedimentary with aphanitic texture and visible arsenopyrite. *Geotextile fabric encountered at 4-ft bgs.
		ML	4 - 7	SANDY SILT (ML); yellowish red (5YR5/6), moist, plastic, blocky structure, predominantly fine sand, trace medium sand comprised of sub-angular quartz, lithics, and weathered mafics. 60% silt, 35% fine sand, <5% medium sand.
TP-5A	10	ASPHALT	0 - 1	Asphalt
		ROCK FILL	1 - 3	ROCK FILL; reddish brown (2.5YR4/4), moist, non-plastic, gravel is sub-angular to sub-rounded, lithic fragments 1/4-inch to 4-inches in diameter, poorly sorted with 35% interstitial fine to coarse sand, medium sand is sub-angular to sub-rounded quartz and lithic fragments. Rock encountered included metasedunentary with sugary texture and visible arsenopyrite crystals. *Geotextile fabric encountered at 3-ft bgs.
		ML	3 - 6	SANDY SILT (ML); strong brown (7.5YR5/6), dry to moist, blocky structure, predominantly fine sand with medium sub-angular quartz, weathered mafics, some brown to tan colored mottling. 60% silt, 30% fine sand, 10% medium sand.
		CL	6 - 10	SANDY CLAY (CL); greenish gray (gley1 6/1), moist, medium plasticity, some fine sand, some brown and white mottling around weathered grains. 90% clay, 10% fine sand.
TP-5B	6	ASPHALT	0 - 1	Asphalt
		ROCK FILL	1 - 3	ROCK FILL; dark greenish gray (gley1 3/1), moist, low plasticity, sub-angular gravel comprised of metasedimentary lithic fragments, poorly sorted with approximately 25% interstitial fine to medium sand, medium sand is sub-angular and comprised of quartz and lithics. Rocks types encountered include metasedimentary, greenish-blue color with sugary texture, hard, apatite and/or epidote inclusions. *Geotextile fabric encountered at 3-ft bgs.
		GC	3 - 6	CLAYEY GRAVEL WITH SAND (GC); greenish gray (gley1 5/2), moist, fine to coarse grained sub-angular to sub-rounded quartz and lithics, abundant gravels 1/2-inch to 4-inches in diameter comprised of weathered serpentine. 15% silt, 25% fine sand, 15% medium sand, 45% gravels.

TABLE 1

TRENCHING SUMMARY

Brunswick Lumber Mill Development
Brunswick Road and N. Bennett Road
Grass Valley, CA

Trench ID	Total Depth (ft bgs)	Soil Types/Fill Encountered		
		***Soil/ Fill Type**	**Depth (ft bgs)**	**Description**
TP-6A	8	ROCK FILL	0 - 3	ROCK FILL; reddish brown (2.5YR4/3), dry, non-plastic, rootlets, abundant organic matter, poorly sorted with with approximately 50% interstitial fine to medium sand. Rocks types encountered include metasedimentary with sugary texture, hard, visible pyrite and arsenopyrite crystals (crystals too small to classify); diabase with porphyritic texture and plagioclase, hornblende, and chloritic alteration.
		ML	3 - 4.5	SANDY SILT WITH GRAVEL (ML); black (gley 1 n 2.5/),moist, medium plasticity, medium toughness, heterogeneous structure. 55% silt, 20% fine sand, 15% medium sand, 10% gravel. Faint hydrocarbon odor.
		CL	4.5 - 8	SILTY CLAY (CL); yellowish red (5YR5/6), moist, plastic, blocky structure, some weathered mafics, some brown-rust mottling.
TP-6B	9	ROCK FILL	0 - 2	ROCK FILL; dusky red (10YR3/4), dry to moist, non-plastic, rootlets, abundant sub-angular rocks, poorly sorted with approximately 30% fine to medium sand, some sub-angular medium sand. Rocks encountered were metasedimentary with sugary texture and visible arsenopyrite crystals; serpentine with visible arsenopyrite crystals.
		ROCK FILL	2 - 5	ROCK FILL; very dark grayish brown (2.5Y3/2), moist, non-plastic, abundant sub-angular rocks 1/4-inch to 3-inches in diameter, poorly sorted with approximately 30% fine to medium sand. Rocks types encountered include metasedimentary with sugary texture and visible arsenopyrite crystals; serpentine with visible arsenopyrite crystals. Seep noted at 2.5-ft bgs.
		CL	5 - 9	SANDY LEAN CLAY (CL); weak red (10R4/3), moist, plastic, blocky structure, some fine to medium sand, medium sand is sub-angular to sub-rounded. 10% medium sand, 15% fine sand and 75% clay.
TP-7A	10	ROCK FILL	0 - 2	ROCK FILL; red (2.5YR4/6), dry, non-plastic, rock is 1/4-inch to 1-inch in diameter, abundant quartz and mafics, poorly sorted with approximately 25% fine to medium sand. Rocks encountered include diorite with porphyritic texture; diabase with aphanitic texture and visible arsenopyrite crystals.
		CL	2 - 10	SILTY CLAY (CL); dark olive brown (2.5Y3/3), moist, medium plasticity, medium toughness, green-brown mottling, weathered igneous lithics.
TP-7B	9	ROCK FILL	0 - 3	ROCK FILL; reddish brown (5YR4/4), dry to moist, moderate cementation, blocky structure, rock is sub-angular 1/2-inch to 1-inch diameter, some brown-tan mottling. Rocks encountered include serpentine with aphanitic texture and visible arsenopyrite crystals; metasedimentary with aphanitic texture, very hard, visible pyrite and arsenopyrite crystals. Slight odor of hydrocarbons encountered at 2.5-ft bgs in a sandy silt lens containing small cobbles of serpentine.
		CL	3 - 9	SILTY CLAY (CL); dark red (2.5YR3/6), moist, plastic, blocky structure, weathered igneous grains, friable, some brown-tan mottling.
TP-8A	8	ROCK FILL	0 - 1.5	ROCK FILL; reddish brown (2.5YR4/3), dry, poorly sorted with fine sand and some sub-angular coarse sand, trace fines, **rock is unconsolidated and caves easily**. Rocks encountered include phyllite with quartz veins and aphanitic texture, metasedimentary with quartz veins, and visible pyrite and arsenopyrite crystals.
		ROCK FILL	1.5 - 6	ROCK FILL; angular to sub-rounded cobbles ranging in diameters of 6-inch to 12-inches, trace fines, **rock is unconsolidated and caves easily**. Rocks encountered include phyllite with quartz veins and aphanitic texture, metasedimentary with quartz veins, and visible pyrite and arsenopyrite crystals.
		ROCK FILL	6 - 8	ROCK FILL; dusky red (10YR3/2), sub-angular gravel diameters range from 1/4-inch to 1-inch, trace fines, **rock is unconsolidated and caves easily**. Rocks encountered include phyllite with quartz veins and aphanitic texture, metasedimentary with quartz veins, and visible pyrite and arsenopyrite crystals.
TP-8B	8	ASPHALT	0 - 1	Asphalt
		ROCK FILL	1 - 4	ROCK FILL; dark brown (7.5YR3/2), moist, abundant sub-angular gravels, poorly sorted with approximately 25% interstitial fine to coarse sand. Rocks encountered include serpentine with visible arsenopyrite crystals; metasedimentary; highly mineralized with light green and purple colored inclusions, sugary texture. Seep noted at 2.5-ft bgs.
		CL	4 - 8	SANDY CLAY (CL); yellowish brown (10YR5/6), moist, trace fine sand, low plasticity, blocky structure, no cementation, some weathered mafics, some brown to gray mottling. 90% clay, 10% fine sand.
TP-9A	8	ASPHALT	0 - 0.5	Asphalt
		ROCK FILL	0.5 - 8	ROCK FILL; olive gray (5Y5/2), moist, non-plastic, sub-angular rock with diameters ranging from 1/2-inch to 7-inches, poorly sorted with approximately 20% interstitial fine to medium sand, **rock is unconsolidated and caves easily**. Rocks encountered include schist; phyllite; metasedimentary/metavolcanic with dark color, sugary texture, green inclusions (apatite?), and visible pyrite crystals; massive quartz with visible aresnopyrite crystals.
TP-9B	12	ROCK FILL	0 - 2	ROCK FILL; reddish brown (2.5YR4/4), dry to moist, gravel is 1/2-inch to 1-inch in diameter sub-angular fragments, poorly sorted with approximately 30% interstitial fine sand to coarse sand, **rock is unconsolidated and caves easily**. Rocks encountered include tuff breccia with gray sugary matrix, 1/8-inch to 1/4-inch angular inclusions; serpentine with visible arsenopyrite crystals; phyllite with dark color, phyllitic texture, possible pyrite/arsenopyrite crystals (too small to identify); metasedimentary, hard, visible pyrite and arsenopyrite crystals; metasedimentary, glassy luster, dark color.
		SOIL FILL	2 - 5	SOIL FILL; red (10R4/6), moist, plastic, blocky structure, weathered mafic grains, some tan mottling. Similar characteristics to native soil.
		ORGANIC FILL	5 - 7	ORGANIC FILL; strong brown (7.5YR5/6), moist, abundant organic woody debris in 6-inch to 12-inch long pieces, some tan to reddish mottling.
		ROCK FILL	7 - 12	ROCK FILL; dark olive brown (2.5YR3/3), poorly sorted with approximately 25% interstitial fine to medium sand. Rocks encountered include tuff breccia with gray sugary matrix, 1/8-inch to 1/4-inch angular inclusions; serpentine with visible arsenopyrite crystals; phyllite with dark color, phyllitic texture, possible pyrite/arsenopyrite crystals (too small to identify); metasedimentary, hard, visible pyrite and arsenopyrite; metasedimentary, glassy luster, dark color.
TP-10A	9	ASPHALT	0 - 1	Asphalt
		ROCK FILL	1 - 6.5	ROCK FILL; reddish brown (5YR5/3), moist, non-plastic, blocky structure, poorly sorted with 25% interstitial fine to coarse sand, medium to coarse sand is sub-angular quartz and lithic fragments, maroon mottling around mafic grains. Rocks encountered include metasedimentary/metavolcanic with sugary texture, hard, greenish-blue color; schist (amphibolite/gypsum) with schistocity, soft(fingernail scratches sample); unknown mineralized rock with greenish sugary matrix, purplish-blue inclusions, breaks easily with hammer.
		ML	6.5 - 9	SILTY SAND (SM); strong brown (7.5YR5/8), moist, non-plastic, blocky structure, predominantly silt with fine sand, some tan-red mottling. 85% silt, 15% fine sand.

TABLE 1

TRENCHING SUMMARY
Brunswick Lumber Mill Development
Brunswick Road and N. Bennett Road
Grass Valley, CA

Trench ID	Total Depth (ft bgs)	Soil Types/Fill Encountered		
		*Soil/ Fill Type	Depth (ft bgs)	Description
TP-10B	9	GRAVEL SURFACE	0 - 0.5	Gravel surface cover; 3/4-inch to 1-inch diameter gravels
		ROCK FILL	0.5 - 9	ROCK FILL; olive gray (5Y5/2), rock is sub-angular with diameter ranging 1/2-inch to 12-inch, poorly sorted with approximately 30% fine to coarse sand, **rock is unconsolidated and caves easily.** Rocks encountered include phyllite with quartz and apatite inclusions, visible arsenopyrite crystals; metasedimentary/metavolcanic with sugary texture, hard, greenish-blue color, visible arsenopyrite crystals; metamorphic rocks with greenish sugary matrix, purplish-blue inclusions, breaks easily with hammer.
TP-11A	9	GRAVEL SURFACE	0 - 0.5	Gravel surface cover; 3/4-inch to 1-inch diameter gravels
		ROCK FILL	0.5 - 4	ROCK FILL; light yellowish brown (10YR6/4), dry to moist, non-plastic, poorly sorted with approximately 35% fine to coarse sand, predominantly medium grained sand. Rocks encountered include serpentine with glassy luster, greenish-black color; metasedimentary with sugary texture, greenish color, hard; phyllite (low grade?), slight phyllitic texture, black color, quartz veins, visible arsenopyrite crystals.
		ML	4 - 9	SILTY SAND (ML); olive yellow (2.5Y6/6), moist, low plasticity, blocky structure, predominantly silt with fine sand, some gray to brown mottling. 85% silt, 15% fine sand.
TP-11B	10	ROCK FILL	0 - 5	ROCK FILL; dusky red (10R3/2), dry, gravels are sub-angular 1/4-inch to 2-inch diameter lithic fragments, poorly sorted with approximately 25% interstitial fine to coarse sand, medium sand is comprised of sub-angular lithics. Rocks encountered include serpentine with glassy luster, greenish color, and visible arsenopyrite crystals; metavolcanic with sugary texture, hard, and high silica content.
		CL	5 - 10	SANDY LEAN CLAY (CL); dark red (2.5YR3/6), moist, medium plasticity, blocky structure, predominantly silt/clay and fine sand, some olive to brown mottling. 80% clay, 20% fine sand. Seep noted at 8-ft bgs.

Notes:
* = Soil classification was conducted using visual-manual procedures of ASTM Standard D 2488 for guidance, which is based on the Unified Soil Classification System.
ft bgs = Feet below ground surface.

TABLE 2

MINE WASTE ROCK ANALYTICAL RESULTS

Brunswick Lumber Mill Development
Brunswick Road and N. Bennett Road
Grass Valley, CA

Trench/ Sample No.	Sample ID	Date Sampled	Sample Depth/ interval (ft bgs)	Acid Base Account			Asbestos			Other fiberous materials	Total Metals																
				ABP	AGP	ANP	Thermolite	Actinolite	Chrysotile	Cellulose	As	Au	Sb	Ba	Be	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Si	Th	V	Zn	Hg
				(Tn/1,000Tn)			(%)				mg/kg	oz/ton	mg/kg															EPA 7471
				(CaCO3/LECO)			(bulk method/NIOSH 9002)				EPA 7060	fire assay	EPA 6010															mg/kg
Trench Mine Waste Rock Composite Samples																											
TP-1A & TP-1B	TP-1AB	6/8/2006	1-8 ft	43.1	20.6	63.8	–	–	–	–	3170*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-2A & TP-2B	TP-2AB	6/7/2006	1-12 ft	51.7	0.3	52.1	–	–	–	–	12.9	0.001	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-3A & TP-3B	TP-3AB	6/7/2006	1-10 ft	39.1	18.1	57.3	–	–	–	–	21.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-4A & TP-4B	TP-4AB	6/8/2006	1-10 ft	47.7	5.6	53.4	–	–	–	–	1910*	0.010	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-5A & TP-5B	TP-5AB	6/9/2006	1-10 ft	76.9	11.6	88.5	–	–	–	–	547*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-6A & TP-6B	TP-6AB	6/8/2006	1-9 ft	96.2	5.3	102	–	–	–	–	15.1	0.008	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-7A & TP-7B	TP-7AB	6/8/2006	1-10 ft	-9.4	9.4	<0.3	–	–	–	–	16.3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-8A & TP-8B	TP-8AB	6/9/2006	1-8 ft	116	19.4	135	–	–	–	–	5.7	0.006	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-9A & TP-9B	TP-9AB	6/9/2006	1-12 ft	131	2.2	133	–	–	–	–	9.9	0.016	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-10A & TP-10B	TP-10AB	6/9/2006	1-9 ft	192	0.9	193	–	–	–	–	13.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-11A & TP-11B	TP-11AB	6/12/2006	1-9 ft	177	10	187	–	–	–	–	2.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Trench Mine Waste Rock Discrete Samples													–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-1B	TP-1B	6/7/2006	1-8 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-1A	TP-1A	6/7/2006	1-6 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-4A	TP-4A	6/8/2006	1-10 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-4B	TP-4B	6/8/2006	1-7 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-5A	TP-5A	6/9/2006	1-10 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-5B	TP-5B	6/8/2006	1-6 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Trench Mine Waste Rock Asbestos Samples																											
TP-9B	TP-9B-ASB	6/8/2006	1-5 ft	–	–	–	<1%	ND	ND	<1%	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-10A	TP-10A-ASB	6/9/2006	1-5 ft	–	–	–	ND	<1%	<1%	<1%	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-8B	TP-8B-ASB	6/9/2006	1-5 ft	–	–	–	ND	ND	ND	<1%	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-5A	TP-5A-ASB	6/9/2006	1-5 ft	–	–	–	ND	ND	ND	<1%	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-7B	TP-7B-ASB	6/8/2006	1-5 ft	–	–	–	ND	ND	ND	<1%	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Historical Trench Mine Waste Rock Data (Carlton Engineering)				(EPA 600/2-78-054)															(EPA 6010)									
S-1	S-1	4/14/2003	unknown	-17.1	20.8	3.66	–	–	–	–	17	–	<3.0	52	<1.0	<2.0	150	30	160	9.3	2.5	24	<5.0	<2.0	21	140	54	<0.10
S-2	S-2	4/14/2003	unknown	-6.89	22.4	15.5	–	–	–	–	19	–	<3.0	25	<1.0	<2.0	91	21	120	<3.0	2.5	16	<5.0	<2.0	32	64	44	<0.10
S-3	S-3	4/14/2003	unknown	39.7	16.1	55.8	–	–	–	–	860	–	<3.0	25	<1.0	<2.0	82	19	42	<3.0	3.0	14	<5.0	<2.0	20	72	48	<0.10
S-4	S-4	4/14/2003	unknown	59.5	18.1	77.6	–	–	–	–	940	–	<3.0	28	<1.0	2.0	130	24	77	5.9	3.1	40	<5.0	<2.0	36	72	46	<0.10
S-5	S-5	4/14/2003	unknown	40.3	4.95	45.2	–	–	–	–	110	–	<3.0	8.6	<1.0	<2.0	340	37	48	4.6	2.6	430	<5.0	<2.0	19	42	37	<0.10
S-6	S-6	4/14/2003	unknown	68.6	12	80.6	–	–	–	–	5.2	–	<3.0	11	<1.0	<2.0	150	19	300	<3.0	3	63	29	<2.0	19	57	47	<0.10
TP-1	TP-1	4/14/2003	unknown	-3.35	8.0	4.65	–	–	–	–	16	–	<3.0	39	<1.0	<2.0	72	16	72	5.9	2.2	16	<5.0	<2.0	18	58	53	<0.10
Screening Levels [1]				–	–	–	–	–	–	–	*2.9*	–	*1400*	*12000*	*180*	*38*	*530,000*	*52*	*140,000*	*750*	*18,000*	*1000*	*17,000*	*18,000*	*230*	*25,000*	*1,100,000*	*490*

TABLE 2

MINE WASTE ROCK ANALYTICAL RESULTS
Brunswick Lumber Mill Development
Brunswick Road and N. Bennett Road
Grass Valley, CA

Trench/ Sample No.	Sample ID	Date Sampled	Sample Depth/ interval (ft bgs)	Soluble Metals (DI WET)																	
				As	Sb	Ba	Be	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Si	Th	V	Zn	pH	pH*
				EPA 7060	EPA 6010															(APHA/EPA)	
				mg/l	mg/L															pH units	
Trench Mine Waste Rock Composite Samples																					
TP-1A & TP-1B	TP-1AB	6/8/2006	1-8 ft	31	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-2A & TP-2B	TP-2AB	6/7/2006	1-12 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-3A & TP-3B	TP-3AB	6/7/2006	1-10 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-4A & TP-4B	TP-4AB	6/8/2006	1-10 ft	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-5A & TP-5B	TP-5AB	6/9/2006	1-10 ft	1.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-6A & TP-6B	TP-6AB	6/8/2006	1-9 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-7A & TP-7B	TP-7AB	6/8/2006	1-10 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-8A & TP-8B	TP-8AB	6/9/2006	1-8 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-9A & TP-9B	TP-9AB	6/9/2006	1-12 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-10A & TP-10B	TP-10AB	6/9/2006	1-9 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-11A & TP-11B	TP-11AB	6/12/2006	1-9 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Trench Mine Waste Rock Discrete Samples																					
TP-1B	TP-1B	6/7/2006	1-8 ft	0.24	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-1A	TP-1A	6/7/2006	1-6 ft	8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-4A	TP-4A	6/8/2006	1-10 ft	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-4B	TP-4B	6/8/2006	1-7 ft	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-5A	TP-5A	6/9/2006	1-10 ft	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-5B	TP-5B	6/8/2006	1-6 ft	0.16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Trench Mine Waste Rock Asbestos Samples																					
TP-9B	TP-9B-ASB	6/8/2006	1-5 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-10A	TP-10A-ASB	6/9/2006	1-5 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-8B	TP-8B-ASB	6/9/2006	1-5 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-5A	TP-5A-ASB	6/9/2006	1-5 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TP-7B	TP-7B-ASB	6/8/2006	1-5 ft	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Historical Trench Mine Waste Rock Data (Carlton Engineering)											(EPA 6010)									(APHA/EPA)	
S-1	S-1	4/14/2003	unknown	<0.25	<0.10	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<10	<10	<10	<0.050	7.8	5.79
S-2	S-2	4/14/2003	unknown	<0.25	<0.10	0.094	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<10	<10	<10	0.082	7.5	6.65
S-3	S-3	4/14/2003	unknown	<0.25	<0.10	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<10	<10	<10	<0.050	7.5	7.42
S-4	S-4	4/14/2003	unknown	0.35	<0.10	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<10	<10	<10	<0.050	7.6	7.80
S-5	S-5	4/14/2003	unknown	0.35	<0.10	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<10	<10	<10	<0.050	7.7	9.42
S-6	S-6	4/14/2003	unknown	<0.25	<0.10	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<10	<10	<10	<0.050	7.7	8.83
TP-1	TP-1	4/14/2003	unknown	<0.25	<0.10	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<10	<10	<10	<0.050	7.7	7.78
Screening Levels[1]				–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

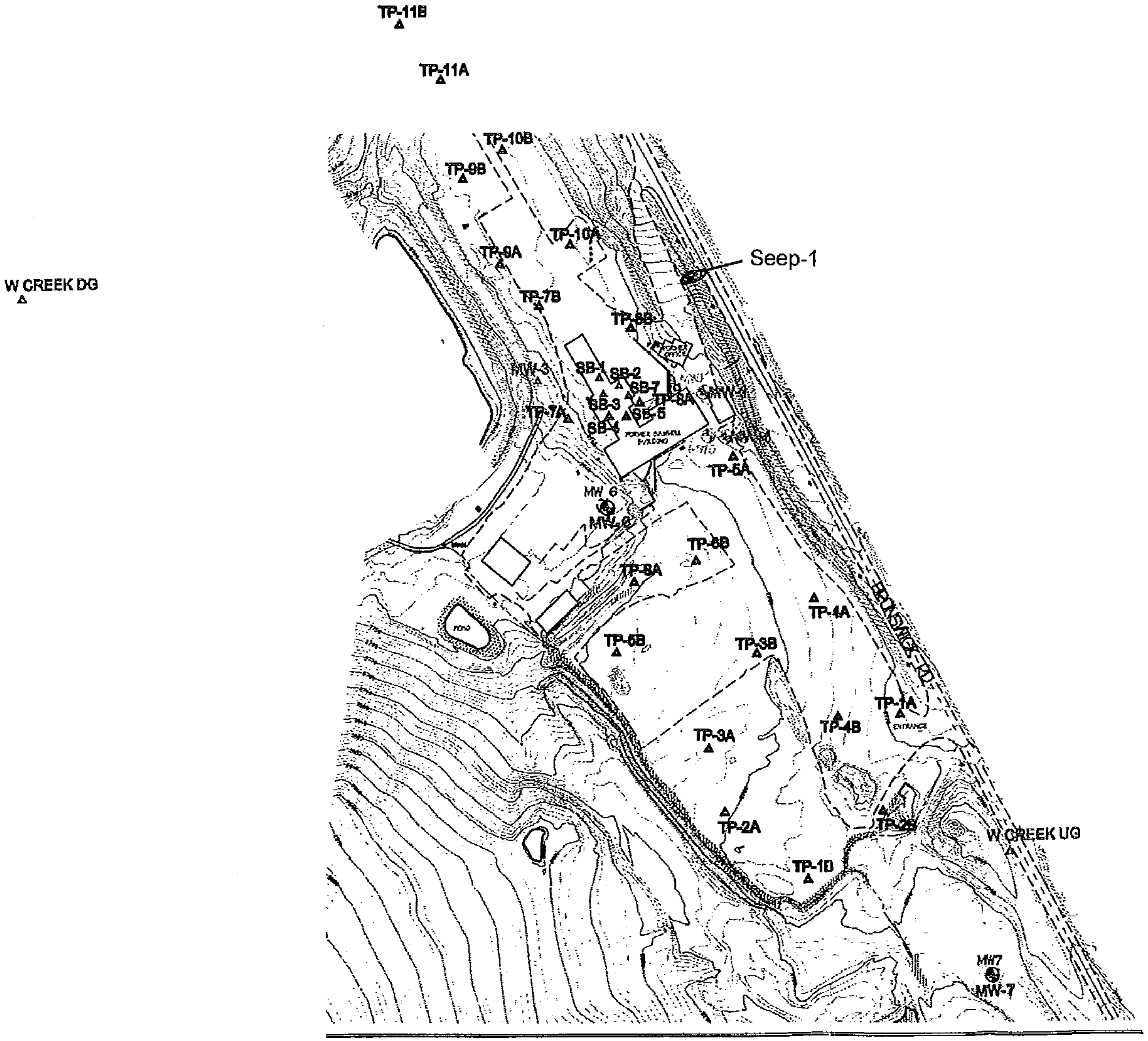
Notes:

Historical data from Carlton Engineering

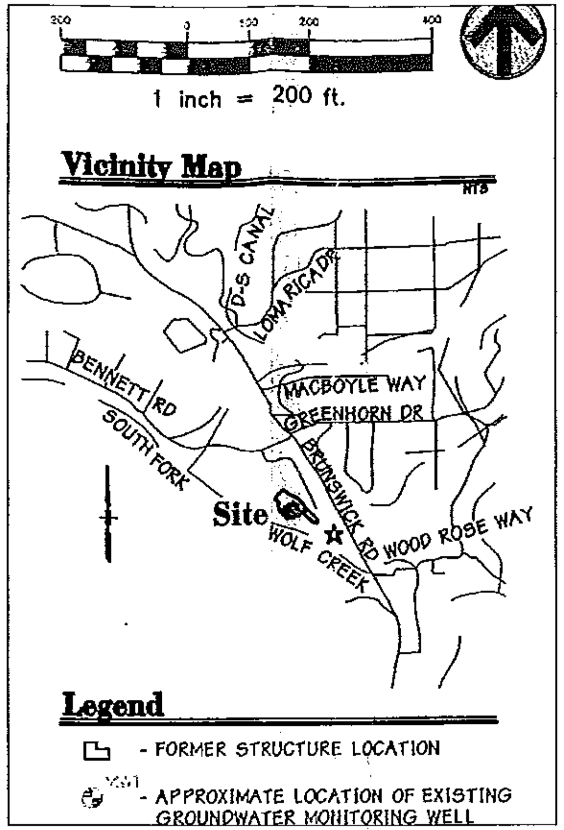
[1] Direct Exposure Screening Levels, Table K-3. Construction/Trench Worker Exposure Scenario, SFRWQCB, 2005.

pH*	= pH re-analyzed by another lab prior to Acid Base Account testing
mg/kg	= Milligrams per kilogram
µg/kg	= Micrograms per kilogram
mg/l	= Milligrams per liter
ABP, ANP and AGP	= Acid base potential. ABP is the difference between the acid neutralization potential (ANP) and acid generating potential (AGP). A negative ABP indicates acid generating waste, a positive ABP indicates the waste has a net neutralization potential.
ft bgs	= Feet below ground surface
--	= Not analyzed/not applicable
*	= Arsenic concentration exceeds 10-times the STLC of 5.0 mg/L.

Ar	= Arsenic	Si	= Silver
Sb	= Antimony	Th	= Thallium
Ba	= Barium	V	= Vanadium
Be	= Beryllium	Zn	= Zinc
Cd	= Cadmium	Hg	= Mercury
Cr	= Chromium		
Cu	= Copper		
Pb	= Lead		
Ni	= Nickel		
Mo	= Molybdenum		
Se	= Selenium		



Map Source: Carlton Engineering



NOTES:

▲ TP-3A = Trench locations

▲ W Creek UG = Wolf Creek Sample Locations

▲ SB-1 = Former sorter area soil sample locations

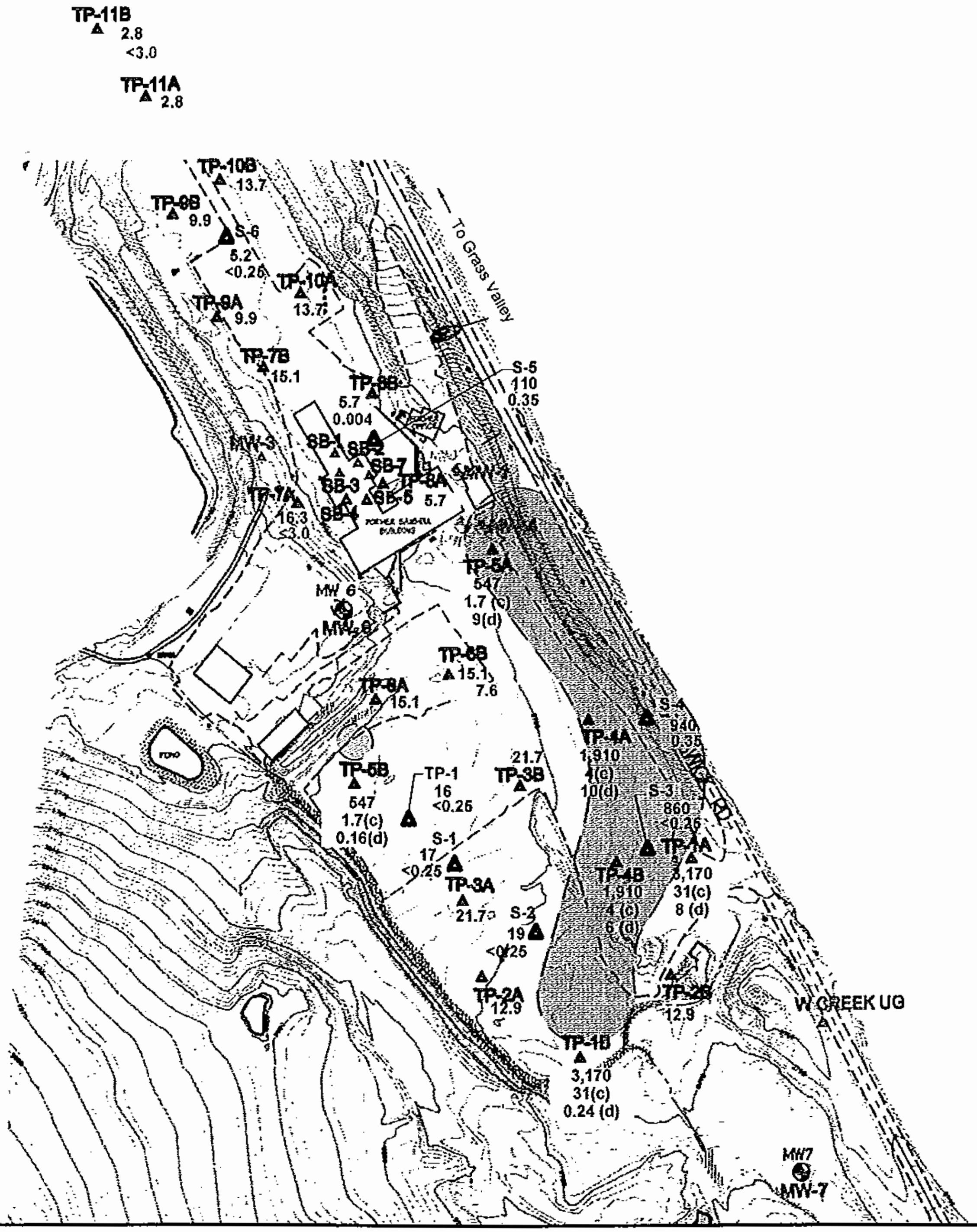
▲ MW-1 = Monitoring well locations

Geomatrix

SAMPLE LOCATION MAP

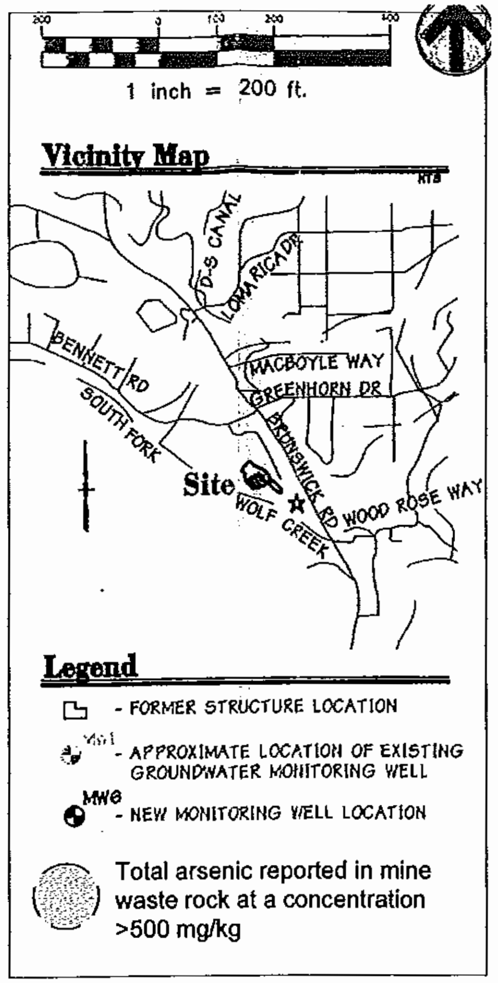
Brunswick Lumber Mill Site
Nevada County, California

Figure By ML	Project No. 011096.000
Map No.	Figure 1
Date	



Map source: Carlton Engineering

NOTES:



▲ TP-3A = Trench locations

▲ W Creek UG = Wolf Creek Sample Locations

▲ SB-1 = Former sorter area soil sample locations

▲ MW-1 = Monitoring well locations

▲ S-2 = Waste Rock Sample Location (Carlton Engineering)

12.9 Total arsenic reported in waste rock in mg/kg (>STLC of 500 mg/kg)

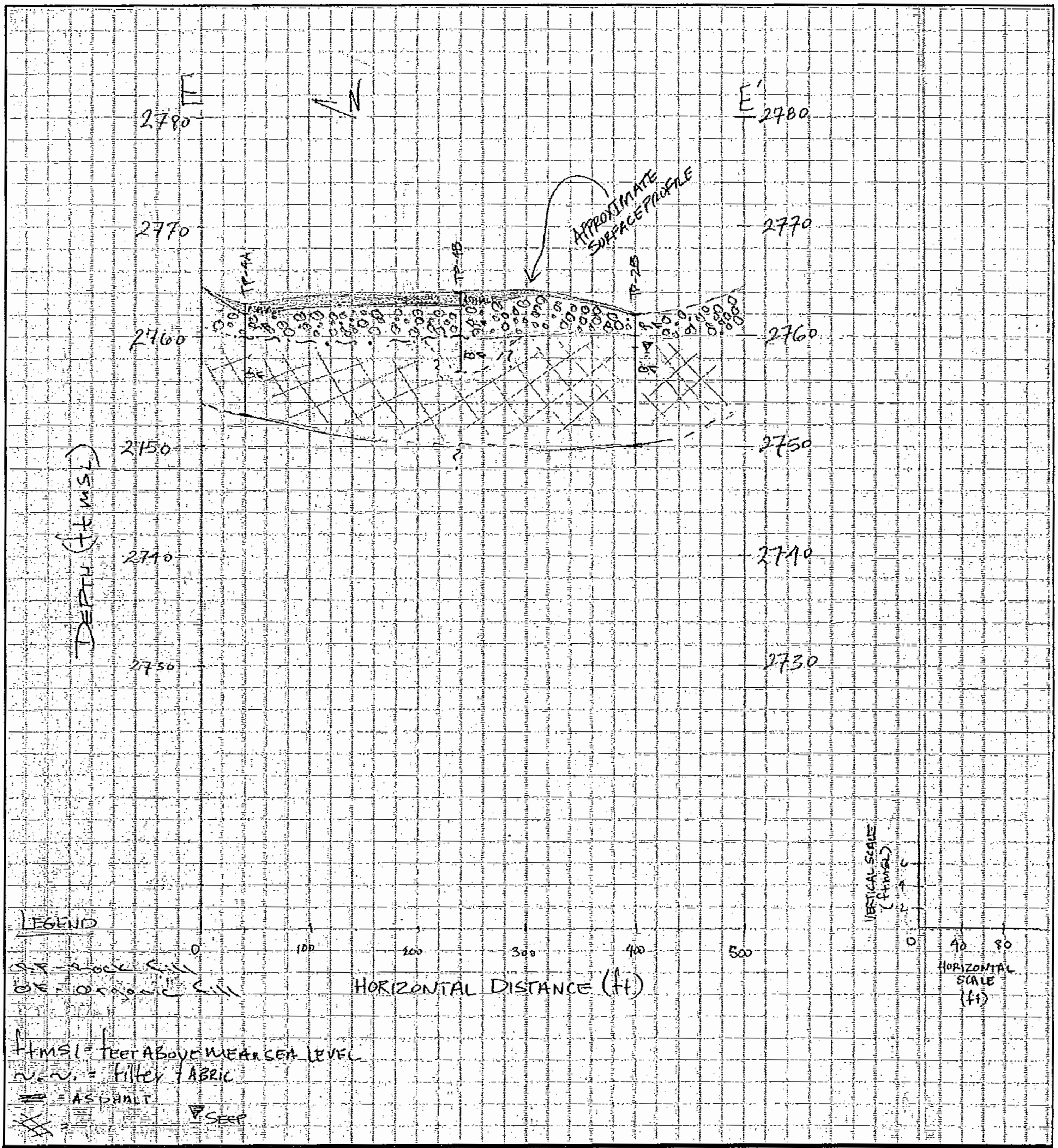
12.9 Soluble arsenic by DI WET method in mg/L (>MCL of 0.010 mg/L)

(c)/(d) Composite sample/discrete sample

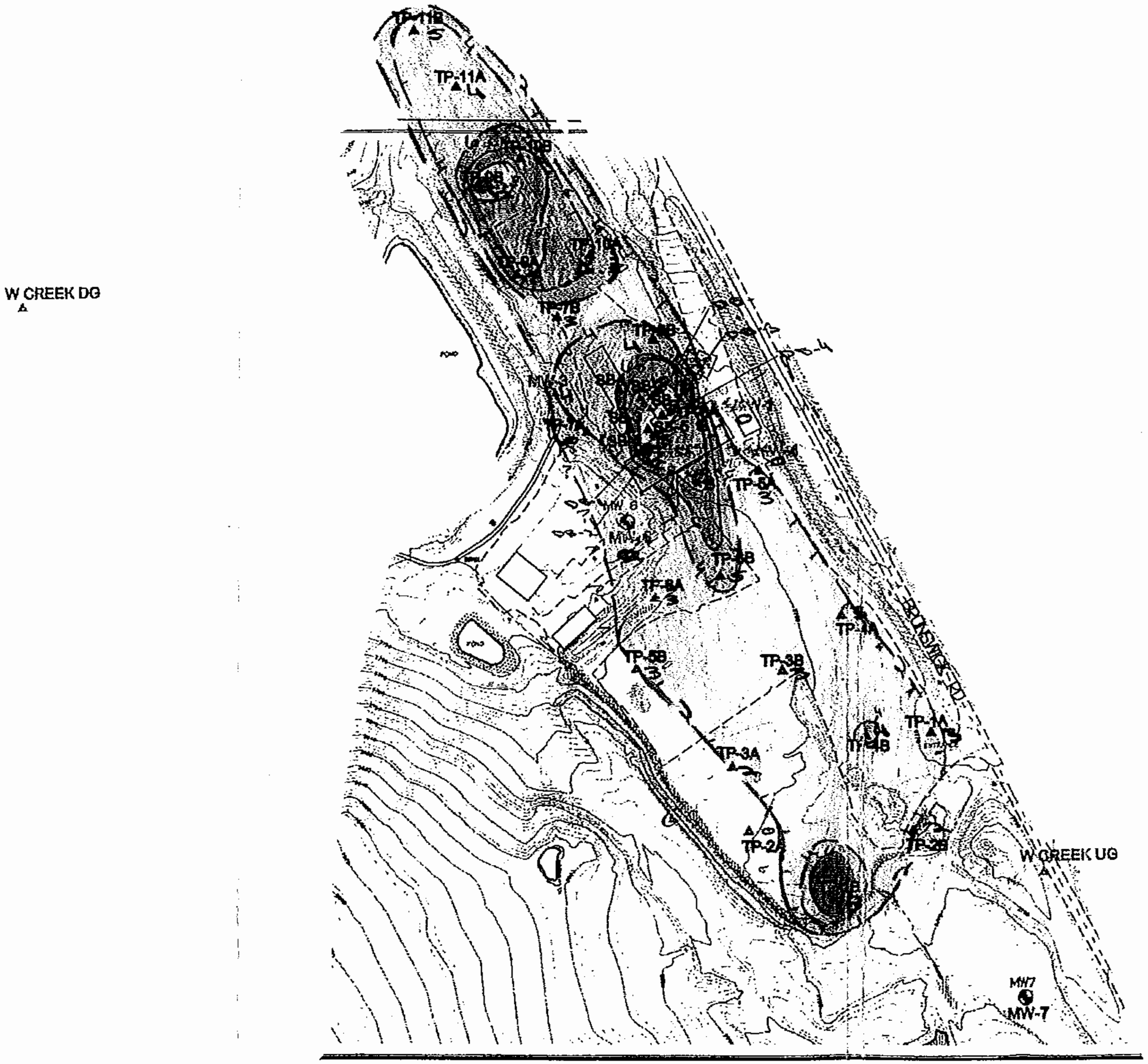
12.9 Dissolved arsenic reported in perched water in mg/L (>MCL of 0.010 mg/L)

Geomatrix

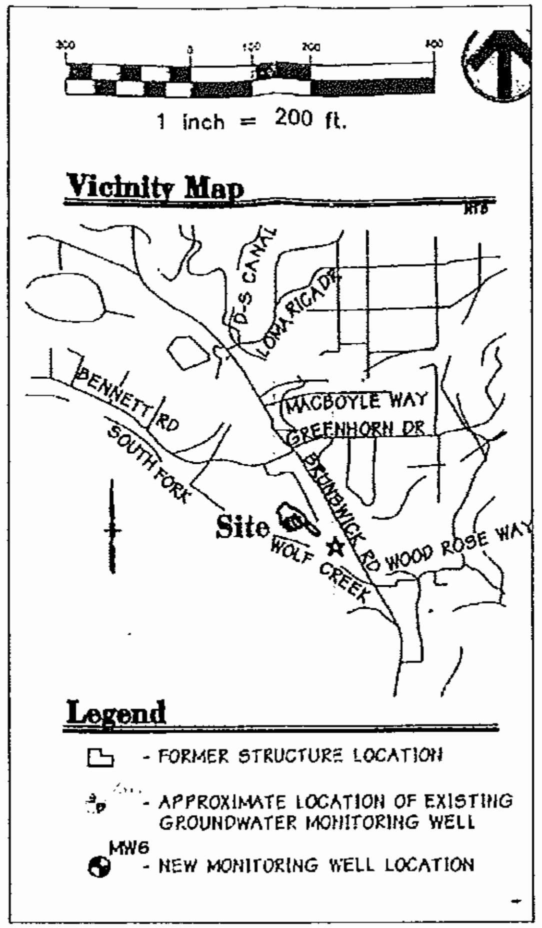
ARSENIC ISOCONCENTRATION MAP Brunswick Lumber Mill Site Nevada County, California	Figure By ML	Project No. 011096.000
	Map No.	
	Date	Figure 8



Geomatrix	CROSS SECTION E - E' Brunswick Lumber Mill Site Nevada County, California	Figure By ML	Project No. 011096.000
		Map No.	Figure
		Date	7



Map source: Carlton Engineering



Δ TP-3A = Trench locations

Δ W Creek DG = Wolf Creek Sample Locations

Δ SB-1 = Former sorter area soil sample locations

Δ MW-1 = Monitoring well locations

Waste rock depth intervals:

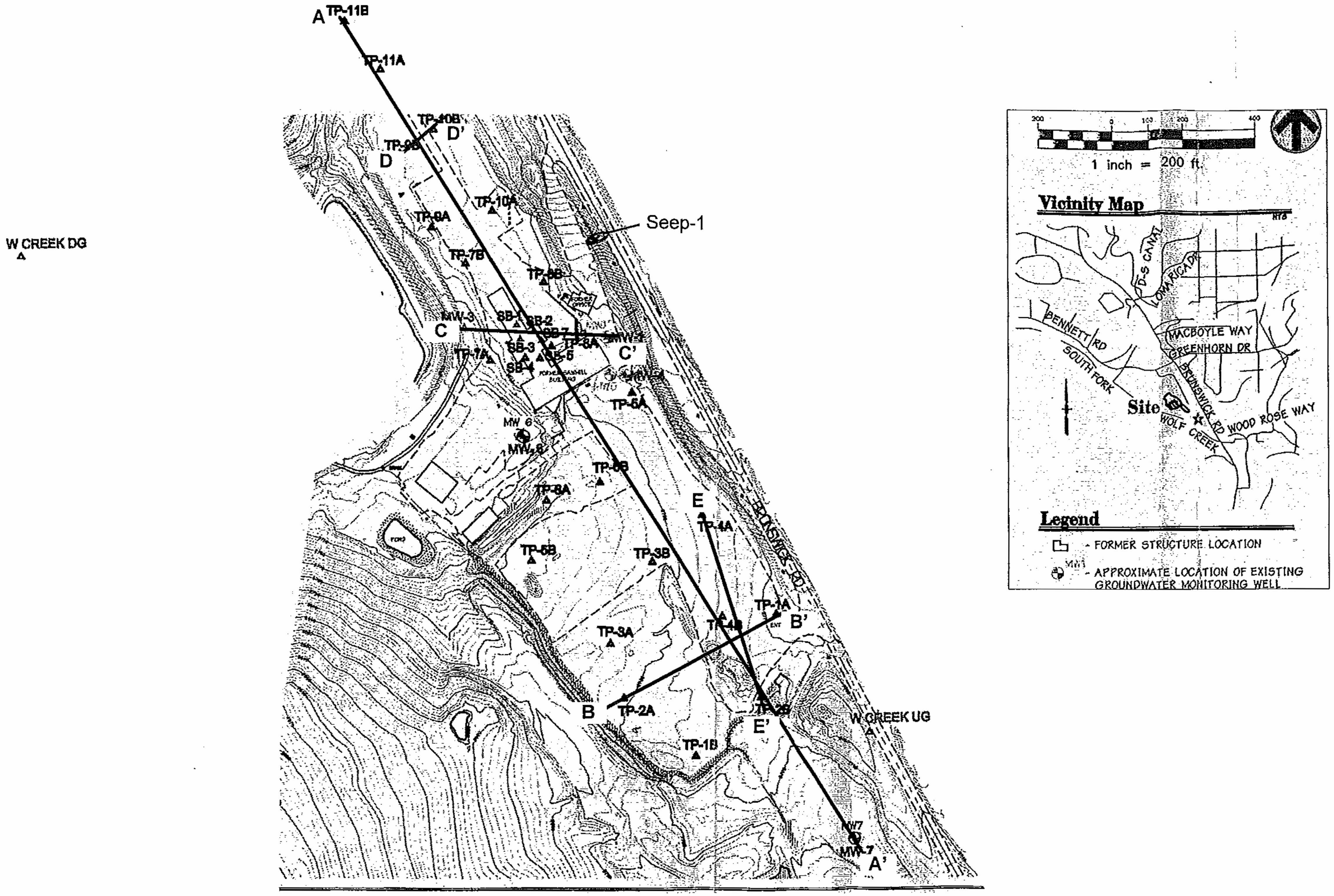
☐ 2 feet below ground surface
▨ 4 feet below ground surface
▨ 6 feet below ground surface
▨ 8 feet below ground surface
☐ 10 feet below ground surface
▨ 12 feet below ground surface

Geomatrix

WASTE ROCK ISOPACH MAP

Brunswick Lumber Mill Site
Nevada County, California

Figure By ML	Project No. 011096.000
Map No.	
Date	Figure 3



Map Source: Carlton Engineering

NOTES:

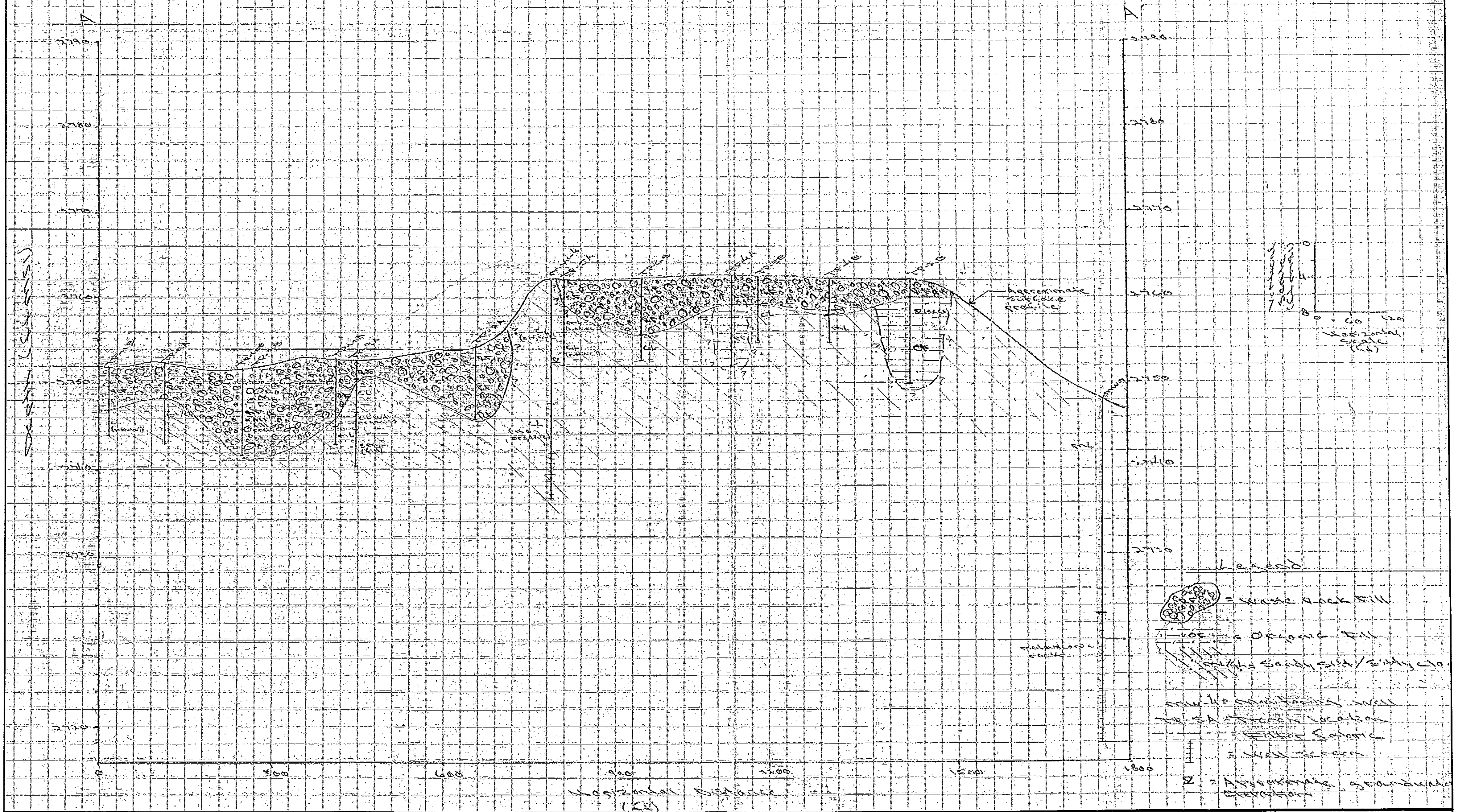
- Δ TP-3A = Trench locations
- Δ W Creek UG = Wolf Creek Sample Locations
- Δ SB-1 = Former sorter area soil sample locations
- Δ MW-1 = Monitoring well locations
- A—A' = Cross section line

Geomatrix

CROSS SECTION LOCATION MAP

Brunswick Lumber Mill Site
Nevada County, California

Figure By ML	Project No. 011096.000
Map No.	
Date	Figure 4

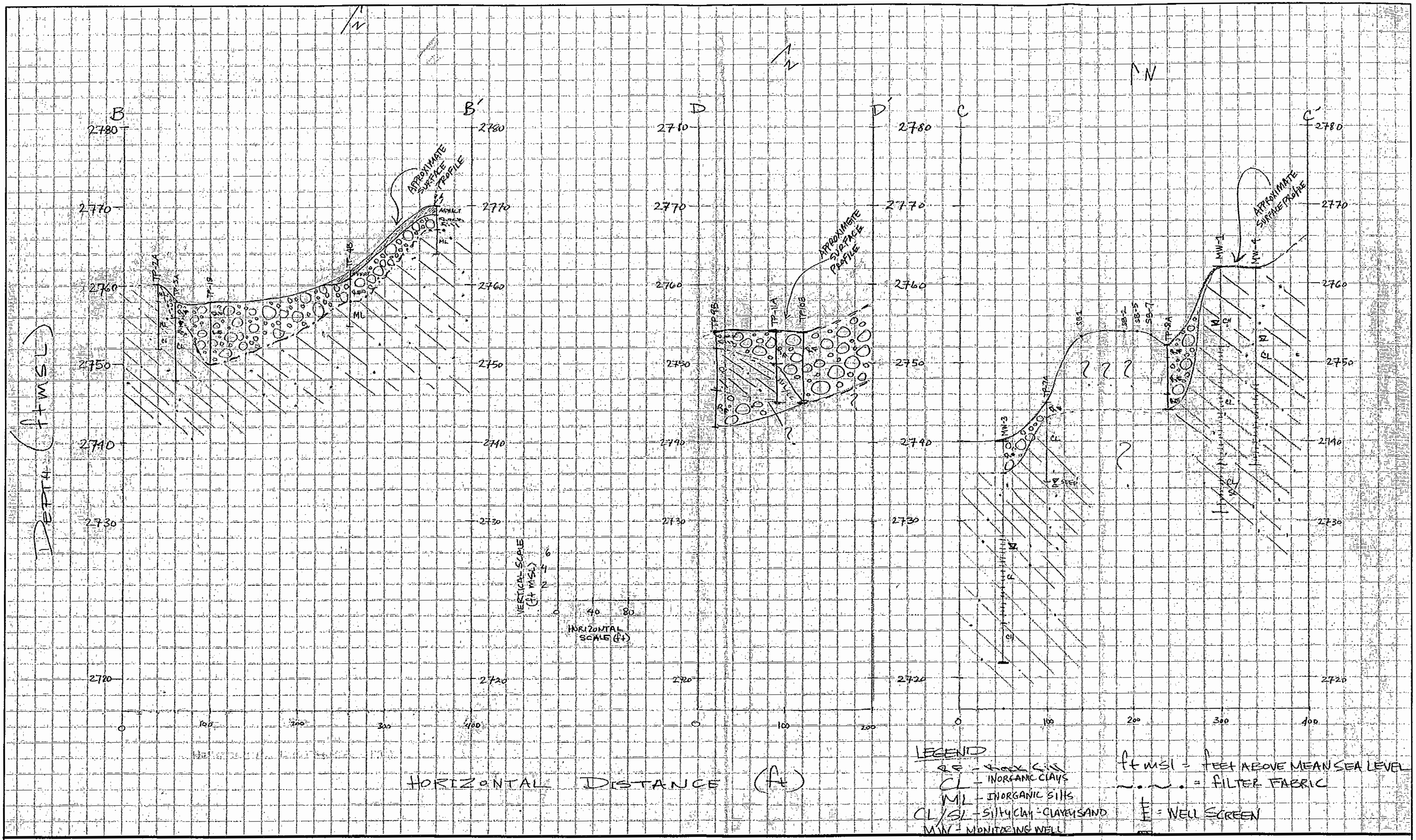


Geomatrix

CROSS SECTION A - A'

Brunswick Lumber Mill Site
Nevada County, California

Figure By
ML
Map No.
Date
Project No.
011096.000
Figure
5



Geomatrix

CROSS SECTIONS B-B', C-C' and D-D'

Brunswick Lumber Mill Site
Nevada County, California

Figure By ML	Project No. 011096.000
Map No.	
Date	Figure 6

TABLE 3

TRENCH AND FORMER SORTER AREA SOIL ANALYTICAL RESULTS

Brunswick Lumber Mill Development
Brunswick Road and N. Bennett Road
Grass Valley, CA

Trench/ Sample No.	Sample ID	Date Sampled	Sample Depth/ interval (in bgs)	Organics			Total Metals
				Pentachlorophenol EPA 8270 mg/kg	**2,4,6- Trichlorophenol** EPA 8270 mg/kg	**2,4,5- Trichlorophenol** EPA 8270 mg/kg	**As** EPA 7060 mg/kg
Trench Soil Composite Samples							
TP-3A & TP-3B	TP-3AB-S	6/12/2006	0-18 in	--	--	--	**1,260**
TP-4A & TP-4B	TP-4AB-S	6/8/2006	0-18 in	--	--	--	**4,700**
TP-5A & TP-5B	TP-5AB-S	6/9/2006	0-18 in	--	--	--	**1,120**
TP-6A & TP-6B	TP-6AB-S	6/9/2006	0-18 in	--	--	--	**47.3**
TP-7A & TP-7B	TP-7AB-S	6/9/2006	0-18 in	--	--	--	**11.8**
TP-8A & TP-8B	TP-8AB-S	6/9/2006	0-18 in	--	--	--	**19.7**
TP-9A & TP-9B	TP-9AB-S	6/9/2006	0-18 in	--	--	--	**13.4**
TP-10A & TP-10B	TP-10AB-S	6/9/2006	0-18 in	--	--	--	**18.4**
TP-11A & TP-11B	TP-11AB-S	6/12/2006	0-18 in	--	--	--	**14.8**
Former Sorter Area Soil Samples							
SB-1	SB-1	6/9/2006	1-24 in	<0.825	<0.330	<0.825	--
SB-2	SB-2	6/9/2006	1-24 in	<0.809	<0.323	<0.809	--
SB-3	SB-3	6/9/2006	1-24 in	<0.790	<0.316	<0.790	--
SB-4	SB-4	6/9/2006	1-24 in	<0.829	<0.331	<0.829	--
SB-5	SB-5	6/9/2006	1-24 in	<0.783	<0.313	<0.783	--
SB-7	SB-7	6/9/2006	1-24 in	<0.809	<0.323	<0.809	--
Screening Criteria [1]				*150*	*290*	*93000*	*2.9*

Notes:

[1] Direct Exposure Screeening Levels, Table K-3, Appendix 1. Construction/Trench Worker Exposure Scenario, SFRWQCB, 2005.

in bgs = Inches below ground surface

mg/kg = Milligrams per kilogram

mg/L = Milligrams per liter

As = Arsenic

TABLE 4

SURFACE AND PERCHED WATER ANALYTICAL RESULTS

Brunswick Lumber Mill Development
Brunswick Road and N. Bennett Road
Grass Valley, CA

Sample ID:		**SEEP-1**	**WOLF CREEK-DG (1)**	**WOLF CREEK-UG (2)**	**TP-6B**	**TP-7A**	**TP-8B**	**TP-11B**	***CMP-In**	***CMP-Out**	***Pond**
Sample Date:		6/7/2006	6/7/2006	6/7/2006	6/8/2006	6/8/2006	6/9/2006	6/12/2006	1/26/2004	1/26/2004	1/26/2004
Units:		µg/L	µg/L		µg/L				µg/L		
Sample Depth:		0 ft bgs	0 ft bgs	0 ft bgs	2.5 ft bgs	9.5 ft bgs	2.5 ft bgs	8 ft bgs	0 ft bgs	0 ft bgs	0 ft bgs
Sample Type:		site seep	surface water (Wolf Creek)		trench seep samples (perched water)				creek diversion pipe (CMP)		pond
CAM 17 Metals											
Arsenic	EPA 7060	<3.0	<3.0	<3.0	**7,600**	<3.0	**4.0**	<3.0	<2.0	<2.0	1.0
Silver	EPA 6010	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<10	<10
Arsenic		<25	<25	<25	**5,890**	<25	<25	<25	<2.0	<2.0	1.0
Barium		**26.4**	**45.8**	**48.3**	**65.6**	**35.6**	**27**	**76.6**	**29**	**38**	**26**
Beryllium		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0
Cadmium		<2.0	**2.1**	<2.0	<2.0	<2.0	<2.0	<2.0	<0.50	<0.50	<0.50
Cobalt		<6.0	<6.0	<6.0	**12.6**	<6.0	<6.0	<6.0	<20	<20	<20
Chromium		<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<20	<20	<20
Copper		<10	<10	<10	<10	<10	<10	<10	<20	<20	<20
Molybdenum		<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<10	<10	<10
Nickel		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Lead		<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<2.0	<2.0	<2.0
Antimony		<20	<20	<20	<20	<20	<20	<20	<6.0	<6.0	<6.0
Selenium		<40	<40	<40	<40	<40	<40	<40	<5.0	<5.0	<5.0
Thallium		<15	<15	<15	<15	<15	<15	<15	<1.0	<1.0	<1.0
Vanadium		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<20	<20	<20
Zinc		<10	<10	<10	<10	<10	<10	<10	<20	<20	<20
Mercury	EPA 7470A	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<2.0

Notes:

Historical data from Carlton Engineering

(1) = Wolf Creek surface water sample collected downstream of the Brunswick Lumber Mill Site

(2) = Wolf Creek surface water sample collected upstream of the Brunswick Lumber Mill Site

Samples analyzed by EPA Method 6010B and 7470 (mercury)

µg/L = Miligrams per liter

CMP In/Out = Influent (In) and effluent (Out) sample from Wolf Creek diversion pipe

Pond = Surface water sample collected from the recycle pond at the northwest portion of the Site

TABLE 5

SUMMARY OF GROUNDWATER FIELD PARAMETERS

Brunswick Lumber Mill Development
Brunswick Road and N. Bennett Road
Nevada County, California

Well ID		Date	Time	pH	Conductivity (µS/cm)[1]	Turbidity (NTUs)[2]	Temperature (°C)[4]
Monitoring Well Samples	MW-1	06/08/06	0945	5.45	68.9	4.30	13.90
	MW-3	06/08/06	1743	6.79	368	3.77	15.50
	MW-4	06/08/06	1148	5.99	188	53.20	15.20
	MW-6	06/08/06	1525	6.35	352	0.99	16.30
	MW-7	06/08/06	1657	5.04	67	2.76	14.10
Surface Water Samples	Wolf Creek Upgradient	06/07/06	1720	7.67	54.3	5.92	21.80
	Wolf Creek Down Gradient	06/07/06	1712	7.57	98	10.51	15.10
Trench Seep Water Sample	Seep-1	06/07/06	1525	6.45	132	1.56	15.10
	TP-7A	06/08/06	0740	7.86	225	23.8	15.50

Notes:

[1]= Indicates conductivity measured in microsiemens per centimeter.
[2] = Nephelometric turbidity units.
[3] = Milligrams per liter
[4] = Degrees centigrade
[5] = MilliVolts
NM = Not Measured

TABLE 6

MONITORING WELL GROUNDWATER ANALYTICAL RESULTS

Brunswick Lumber Mill Development
Brunswick Road and N. Bennett Road
Grass Valley, CA

Sample ID:	Sample Date:	Metals (µg/L)																
		EPA Method 6010B															EPA 7060	EPA 7471
		Ag	Ba	Be	Cd	Co	Cr	Cu	Mo	Ni	Pb	Sb	Se	Th	V	Zn	As	Hg
MW-1	6/8/2006	<5.0	40.3	<2.0	<2.0	<6.0	<6.0	--	<8	<10	<7.5	<20	<40	<15	<5.0	<10	<3.0	<0.20
	11/9/2004	<10	<20	<5.0	<5.0	<20	<5.0	--	<20	<20	<5.0	<6.0	<5.0	<10	<20	<10	1.2	<0.2
	1/26/2004	<10	33	<4.0	<5.0	<20	<20	<20	<10	<10	<2.0	<6.0	<5.0	<1.0	<20	59	0.52	<2.0
MW-3	6/8/2006	<5.0	229	<2.0	<2.0	<6.0	<6.0	--	<8	<10	<7.5	<20	<40	<15	<5.0	<10	<3.0	<0.20
MW-4	6/8/2006	<5.0	62.5	<2.0	<2.0	<6.0	<6.0	--	<8	<10	<7.5	<20	<40	<15	<5.0	<10	<3.0	<0.20
	11/9/2004	<10	<20	<5.0	<5.0	<20	<5.0	--	<20	<20	<5.0	<6.0	<5.0	<10	<20	<10	2.4	<0.2
	1/26/2004	<10	79	<4.0	0.17	<20	<20	<20	<10	<10	<2.0	<6.0	<5.0	<1.0	<20	44	0.59	<0.20
MW-6	6/8/2006	<5.0	5.3	<2.0	<2.0	<6.0	<6.0	--	<8.0	<10	<7.5	<20	<40	<15	<5.0	<10	<3.0	<0.20
	11/9/2004	<10	<20	<5.0	<5.0	<20	<5.0	<5.0	<20	<20	<5.0	<6.0	<5.0	<10	<20	<10	1.7	<2.0
MW-7	6/8/2006	<0.5	51.1	<2.0	<2.0	<6.0	<6.0	--	<8.0	<10	<7.5	<20	<40	<15	<5.0	<0.010	<3.0	<0.20
	11/11/2004	<10	21	<5.0	<5.0	<20	<5.0	<5.0	<20	<20	<5.0	<6.0	<5.0	<10	<20	<10	1.6	<0.20
MCL[1]		*100*	*1000*	*4*	*5*	*na*	*50*	*1000*	*na*	*100*	*15*	*6*	*50*	*2*	*na*	*5000*	*10*	*2*

Notes:

[1] Maximum Contaminant Level (MCL), California Department of Health Services

Historical data from Carollton Engineering

µg/L= Micrograms per liter

As = Arsenic
Sb = Antimony
Ba = Barium
Be = Beryllium
Cd = Cadmium
Co = Cobalt
Cu = Copper
Cr = Chromium

Pb = Lead
Mo = Molybdenum
Ni = Nickel
Se = Selenium
Ag = Silver
Th = Thallium
V = Vanadium
Zn = Zinc

-- = Not analyzed
na = Not available

TABLE 7

BACKGROUND ROCK AND SOIL ANALYTICAL RESULTS

Brunswick Lumber Mill Development
Brunswick Road and N. Bennett Road
Grass Valley, CA

Sample ID		**BKGRND-RK1**	**BKGRND-SS2**	**BKGRND-RK2**	**BKGRND-SS3**	**BKGRND-RK3**	**BKGRND-SS1**
Date Sampled		6/9/2006	7/7/2006	6/9/2006	7/7/2006	7/7/2006	7/7/2006
Sample Depth (ft bgs)		0 ft	0 ft	0 ft	0 ft	0 ft	0 ft
Sample Type		rock	soil	rock	soil	rock	soil
Location		Outcrop ~100 ft NE of Lava Rock Ave and Bennett Rd intersection, Grass Valley		Road cut at 937 Golden Gate Terrace, Grass Valley		Site (western hillside)	
CAM 17 Metals:	**EPA Method**						
Arsenic (mg/kg)	EPA 7060	<2.5	**644**	**6**	**6.33**	<2.5	**3.98**
Silver (mg/kg)	EPA 6010	<0.50	--	**1.21**	--	<0.50	--
Barium (mg/kg)		**19.5**	--	**0.77**	--	**32.9**	--
Beryllium (mg/kg)		<0.20	--	<0.20	--	**0.45**	--
Cadmium (mg/kg)		<0.20	--	<0.20	--	<0.20	--
Cobalt (mg/kg)		**8.42**	--	**67.5**	--	**22.8**	--
Chromium (mg/kg)		**267**	--	**591**	--	**85.5**	--
Copper (mg/kg)		**9.5**	--	**8.5**	--	**104**	--
Molybdenum (mg/kg)		**2.2**	--	<0.8	--	<0.8	--
Nickel (mg/kg)		**76.4**	--	**1,550**	--	**26.8**	--
Lead (mg/kg)		<0.75	--	**1.13**	--	**2.69**	--
Antimony (mg/kg)		**2**	--	<2	--	<2	--
Selenium (mg/kg)		<4	--	<4	--	<4	--
Thallium (mg/kg)		<1.5	--	<1.5	--	**3.8**	--
Vanadium (mg/kg)		**13.7**	--	**18.2**	--	**153**	--
Zinc (mg/kg)		**10.4**	--	**10**	--	**63.4**	--
Mercury (mg/kg)	EPA 7471A	<0.033	--	<0.033	--	<0.033	--

Notes:

mg/kg	= Results reported in milligrams per kilogram
ft bgs	= Feet below ground surface

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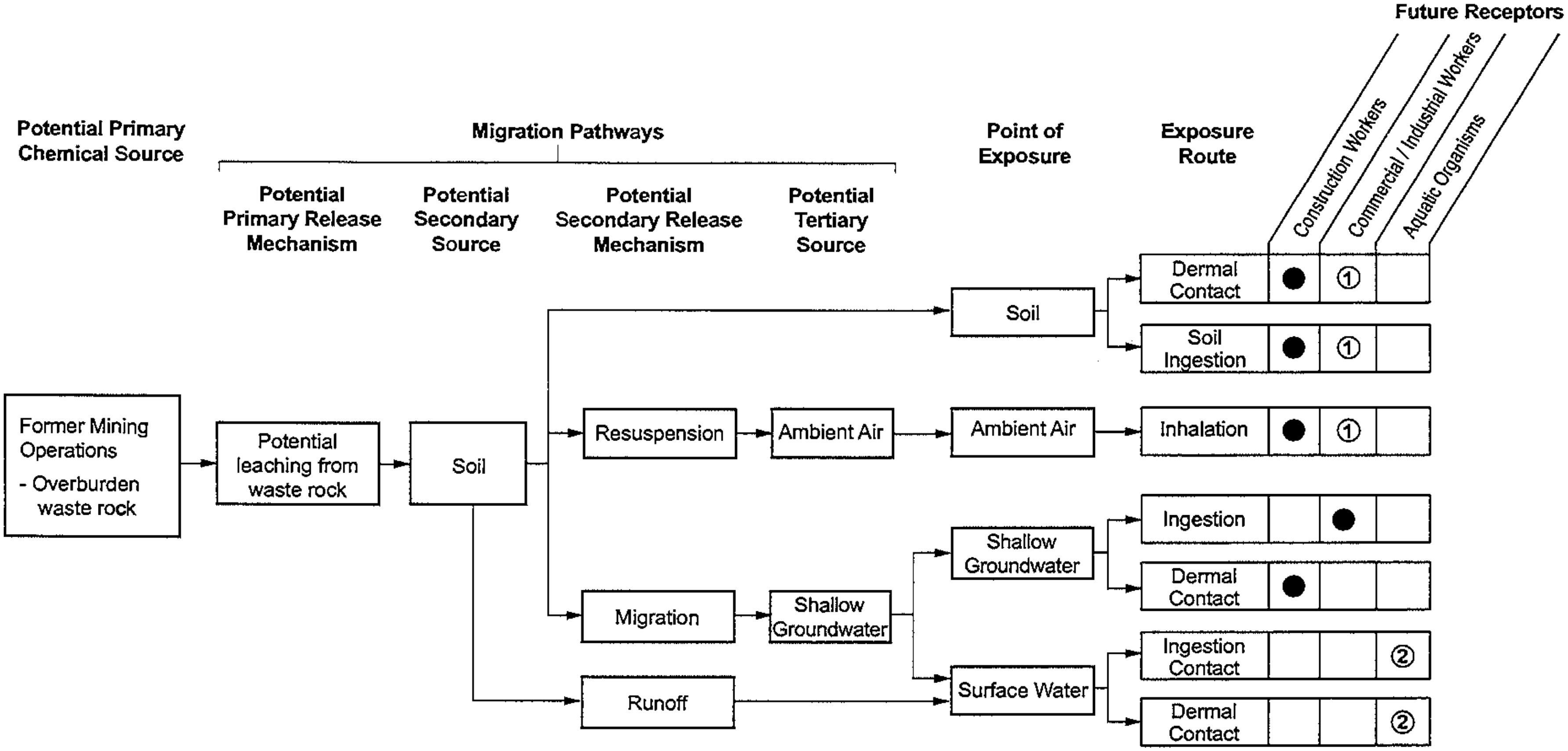

EXPLANATION

● Potentially complete pathway.

○ Pathway is potentially complete, but not quantitatively evaluated because of site-specific conditions.

① Under future conditions, the site will be paved.

② Wolf Creek is diverted under the site through piping (the "CMP"). Downstream measurements have not shown an impact.

SITE CONCEPTUAL MODEL
Brunswick Lumber Mill Development
Brunswick Road and N. Bennett Road
Grass Valley, California

By: CK	Date: 09-06-06	Project No. 11096

Geomatrix

Figure 2

SVL ANALYTICAL, INC.
One Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83827-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

REPORT OF ANALYTICAL RESULTS

CLIENT : GEOMATRIX
PROJECT:

Sample Receipt: 6/15/06
Report Date: 6/29/06

Page 1 of 1
SVL JOB: 123393

SVL ID	CLIENT SAMPLE ID		As 6010B	% Sol. 999
S514340	TP-3AB-S	6/12/06	1260mg/kg	77.6%
S514341	TP-4AB-S	6/08/06	4700mg/kg	92.2%
S514342	TP-5AB-S	6/09/06	1120mg/kg	89.5%
S514343	TP-6AB-S	6/09/06	47.3mg/kg	79.3%
S514344	TP-7AB-S	6/09/06	11.8mg/kg	94.2%
S514345	TP-8B-S	6/09/06	19.7mg/kg	89.6%
S514346	TP-9AB-S	6/09/06	13.4mg/kg	92.5%
S514347	TP-10AB-S	6/09/06	18.4mg/kg	92.6%

Soil Samples: As Received Basis

Certificate: CA NO. 2080
AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

Reviewed By: Kirby Gray Date: 06/29/06

Quality Control Report
Part I Prep Blank and Laboratory Control Sample

lient :GEOMATRIX SVL JOB No: 123393

Analyte	Method	Matrix	Units	Prep Blank	True —LCS—	Found	LCS %R	Analysis Date
rsenic	6010B	SOIL	mg/kg	<2.5	100	98.4	98.4	6/28/06

GEND:
CS = Laboratory Control Sample LCS %R = LCS Percent Recovery N/A = Not Applicable

cooler temp N/A 6.15.06 12.45 RS.

SVL ANALYTICAL

CHAIN OF CUSTODY RECORD

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

Page 3 of 5

FOR SVL USE ONLY
SVL JOB # 123393
TEMP on Receipt:

Report to Company: Geomatrix
Contact: Marty Lauenroth
Address: 10670 White Rock Rd Suite 100
Rancho Cordova 95670
Phone Number: 916-636-3200
FAX Number: 916-636-3208
E-mail: mlauenroth@geomatrix.com

Invoice Sent To: Same
Contact:
Address:
Phone Number:
FAX Number:
PO#:

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
③ = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, ⑦ Other Rock

Project Name: SPI-Brunswick
Sampler's Signature: Brian Rogers

Indicate State of sample origination: CA

USACE? ☐ Yes ☐ No

Please take care to distinguish between:
1 and I
2 and Z
5 and S
Ø and O
Thanks!

		Sample ID	Collection Date	Collection Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO_3 Filtered	HNO_3 Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify)	Total As EPA 7060	DI WET As (GFAA 7060)	Acid base Account CaCO3 Equiv/LECO	Total Au (Fire Assay)	Total metals (6010B)	CAM 17 (6010B)					Rush Instructions (Days)	Comments
	1	TP-1A *	6-12-06	0805	Br	7	1																			* Place samples on Hold at Lab
	2	TP-1B *	6-12-06	0840	Br	↓	1																			① Do not analyze for DI wet As
AS ①	3	TP-3AB-S	6-12-06	1446	Br	3	1	X							X	~~X~~	Br									
①	4	TP-4AB-S	6-8-06	1205	Br	3	1	X							X	~~X~~	Br									
①	5	TP-5AB-S	6-9-06	0900	Br	3	1	X							X	~~X~~	Br									
①	6	TP-6AB-S	6-9-06	1511	Br	3	1	X							X	~~X~~	Br									
①	7	TP-7AB-S	6-9-06	1548	Br	3	1	X							X	~~X~~	Br									
①	8	TP-8B-S	6-9-06	0945	Br	3	1	X							X	~~X~~	Br									
①	9	TP-9AB-S	6-9-06	1555	Br	3	1	X							X	~~X~~	Br									
①	10	TP-10AB-S	6-9-06	1410	Br	3	1	X							X	~~X~~	Br									

Relinquished by: Brian Rogers Date: 6-13-06 Time: 1100 Received by: Robin Strubling Date: 6-15-06 Time: 12:45
Relinquished by: Date: Time: Received by: Date: Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 9/05

*Sample Date reads 6.9.06

SVL ANALYTICAL, INC.
One Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83827-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

REPORT OF ANALYTICAL RESULTS

CLIENT : GEOMATRIX
PROJECT:

Sample Receipt: 7/05/06
Report Date: 7/20/06

Page 1 of 1
SVL JOB: 123755

SVL ID	CLIENT SAMPLE ID		As 7060A
E518532	TP-1AB	6/08/06	31mg/L E
E518533	TP-4AB	6/08/06	4mg/L E
E518534	TP-5AB	6/09/06	1.7mg/L E

SVL not certified by CA for STLC Extraction

Samples with SVL ID prefix 'E' were extracted according to STLC

Certificate: CA NO. 2080

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

Reviewed By: for: Kirby Gray by Date: 7/20/06

L ANALYTICAL, INC.

Quality Control Report
Part I Prep Blank and Laboratory Control Sample

lient :GEOMATRIX

SVL JOB No: 123755

Analyte	Method	Matrix	Units	Prep Blank	True——LCS	——Found	LCS %R	Analysis Date
rsenic	7060A	ESOIL	mg/L Ext	<0.003	0.025	0.025	100.0	7/19/06

GEND:

CS = Laboratory Control Sample

LCS %R = LCS Percent Recovery

N/A = Not Applicable

Chris Meyer

From: Mandy Lauenroth [mlauenroth@geomatrix.com]
Sent: Friday, June 30, 2006 5:05 PM
To: Chris Meyer
Subject: Re: Brunswick samples - Geomatrix

Hi Chris,

Based on the total As results, we would like to run DI WET As analysis on three samples as listed below:

TP-1AB (sample date 6/8/06)
TP-4AB (sample date 6/8/06)
TP-5AB (sample date 6/9/06)

use GFAA for As; if too high then run by ICP.....
gc

Per our original bid, lets try and run these samples by EPA 7060 and use EPA 6010 as a default if concentrations are too high. I have attached our revised COC which I amended with the above request.

To date the only data I haven't received are the asbestos results for the rock samples; and PCP and TCP data for the soils. Your group has done a great job with the electronic deliverables. Thanks for getting the data to us on schedule! Have a great weekend.

Mandy

Mandy A. Lauenroth, R.E.A.
Project Geologist
Geomatrix Consultants, Inc.
10670 White Rock Road, Suite 100
Rancho Cordova, CA 95670
Main Phone: 916-636-3200
Fax: 916-636-3208
Cell: (916) 302-6325
mlauenroth@geomatrix.com

Chain-of-Custody Record

Geomatrix
10670 White Rock Road, Suite 100
Rancho Cordova, CA 95670
Phone: 916-636-3200 Fax: 916-636-3208

Date: 6-13-06 Page 1 of 3

Project Name/Number: 11496.[illegible]
Sampler (Print): Brian [illegible]
Sampler (Signature): Brian [illegible]
Laboratory: PLEASE PRINT SVL Analytical
Company Name: ~~[illegible]~~
Address: One Government Gulch
Kellogg Idaho 83837
Attn: Chris Meyer
Phone: 208-784-1258
Fax: 208-783-0891

Filtered
Preserved

REMARKS

Additional Comments
- STLC for As only on 3 samples noted... per M. Leavenworth (Geomatrix) C. Meyer 7/5/06

	Date	Time	Sample Number	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					Soil (S), Water (W), Vapor (V), or Other (O)	Cooled	No. of Containers	
⑤	6-12-06	0535	TP-11AB-S	X	X												S		1	① Do not analyze [illegible] for [illegible] As.
①	6-8-06	1125	TP-1AB	X	X	X	X					X					O		1	
	6-7-06	1241	TP-2AB	X		X	X	X									O		1	② Do not analyze
	6-7-06	1503	TP-3AB	X		X	X										O		1	[illegible] for
	6-8-06	1435	TP-4AB	X		X	X	X				X					O		1	[illegible]
	6-9-06	0755	TP-5AB	X		X	X					X					O		1	③ Do not analyze
	6-8-06	1729	TP-6AB	X		X	X	X									O		1	[illegible]
	6-9-06	0850	TP-7AB	X		X	X										O		1	[illegible]
	6-9-06	0350	TP-8AB	X		X	X	X									O		1	
	6-8-06	1715	TP-9AB	X		X	X	X									O		1	[illegible]
	6-9-06	1415	TP-10AB	X		X	X										O		1	[illegible]
	6-12-06	0855	TP-11AB	X		X	X										O		1	[illegible]
②	6-9-06	1127	BKGND-AR1						X	X							O		1	[illegible]
	6-9-06	1350	BKGND-AR2							X							O		1	
	6-8-06	1605	TP-9B-ASB								X						O		1	
	6-7-06	1655	TP-1AB-ASB								X						O		1	

Total No. of Containers: 16

Laboratory: SVL Analytical
Results to: M. Leavenworth

Relinquished by (Signature): Brian [illegible]
Printed Name: Brian [illegible]
Company: Geomatrix
Date: 6-13-06
Time: 1100

Received by:
Printed Name:
Company:
Date:
Time:

Relinquished by (Signature):
Printed Name:
Company:
Date:
Time:

Received by:
Printed Name:
Company:
Date:
Time:

Method of Shipment:

Laboratory Comments and Log No.:

'L ANALYTICAL, INC. Certificate: CA NO. 2080
Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: TP-11AB-S
Sample Collected: 6/12/06 8:35
Sample Receipt : 6/15/06
Date of Report : 6/29/06

SVL JOB: 123391
SAMPLE: 514295
% Solids: 94.9%
Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
Arsenic	14.8	mg/kg		6010B	6/28/06

Reviewed By: Kirby Gray Date 6/29/06
6/29/06 15:11

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: TP-1AB
Sample Collected: 6/08/06 11:25
Sample Receipt : 6/15/06
Date of Report : 6/29/06

SVL JOB: 123391
SAMPLE: 514296

Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
ABP	43.1	TCaCO3/1000T		EPA600	6/23/06
Acid Generating	20.6	TCaCO3/1000T		EPA600	6/23/06
Acid Neut. Pot.	63.8	TCaCO3/1000T		EPA600	6/23/06
Non-Ext Sulfur,S	<0.01	%		LECO	6/23/06
Pyritic Sulfur,S	0.66	%		LECO	6/23/06
Sulfate Sulfur,S	0.12	%		LECO	6/23/06
Total Sulfur, S	0.78	%		LECO	6/23/06
Arsenic	3170	mg/kg	10	6010B	6/28/06

SVL NOT CERTIFIED BY CA FOR ABA'S BY METHOD EPA 600
SVL NOT CERTIFIED BY CA FOR SULPHUR BY LECO

Reviewed By: Kirby Gray Date 6/29/06
6/29/06 15:11

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

SVL ANALYTICAL, INC.
Certificate: CA NO. 2080
ie Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: TP-2AB
Sample Collected: 6/07/06 12:44
Sample Receipt : 6/15/06
Date of Report : 6/29/06

SVL JOB: 123391
SAMPLE: 514297

Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
ABP	51.7	TCaCO3/1000T		EPA600	6/23/06
Acid Generating	0.3	TCaCO3/1000T		EPA600	6/23/06
Acid Neut. Pot.	52.1	TCaCO3/1000T		EPA600	6/23/06
Non-Ext Sulfur,S	<0.01	%		LECO	6/23/06
Pyritic Sulfur,S	0.01	%		LECO	6/23/06
Sulfate Sulfur,S	<0.01	%		LECO	6/23/06
Total Sulfur, S	0.01	%		LECO	6/23/06
Arsenic	12.9	mg/kg		6010B	6/28/06
Gold	0.001	oz/Ton		FAssay	6/24/06

GOLD SUBCONTRACTED
SVL NOT CERTIFIED BY CA FOR ABA'S BY METHOD EPA 600
SVL NOT CERTIFIED BY CA FOR SULPHUR BY LECO
SVL NOT CERTIFIED BY CA FOR GOLD BY FIRE ASSAY

Reviewed By: Kirby Gray

Date 6/29/06
6/29/06 15:11

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

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CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: TP-3AB
Sample Collected: 6/07/06 15:03
Sample Receipt : 6/15/06
Date of Report : 6/29/06

SVL JOB: 123391
SAMPLE: 514298

Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
ABP	39.1	TCaCO3/1000T		EPA600	6/23/06
Acid Generating	18.1	TCaCO3/1000T		EPA600	6/23/06
Acid Neut. Pot.	57.3	TCaCO3/1000T		EPA600	6/23/06
Non-Ext Sulfur,S	0.01	%		LECO	6/23/06
Pyritic Sulfur,S	0.58	%		LECO	6/23/06
Sulfate Sulfur,S	<0.01	%		LECO	6/23/06
Total Sulfur, S	0.59	%		LECO	6/23/06
Arsenic	21.7	mg/kg		6010B	6/28/06

SVL NOT CERTIFIED BY CA FOR ABA'S BY METHOD EPA 600
SVL NOT CERTIFIED BY CA FOR SULPHUR BY LECO

Reviewed By: Kirby Gray Date 6/29/06
6/29/06 15:11

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

SVL ANALYTICAL, INC.

Certificate: CA NO. 2080

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CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: TP-4AB
Sample Collected: 6/08/06 14:36
Sample Receipt : 6/15/06
Date of Report : 7/21/06 As Received Basis

SVL JOB: 123391
SAMPLE: 514299

Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
ABP	47.7	TCaCO3/1000T		EPA600	6/23/06
Acid Generating	5.6	TCaCO3/1000T		EPA600	6/23/06
Acid Neut. Pot.	53.4	TCaCO3/1000T		EPA600	6/23/06
Non-Ext Sulfur,S	0.01	%		LECO	6/23/06
Pyritic Sulfur,S	0.18	%		LECO	6/23/06
Sulfate Sulfur,S	<0.01	%		LECO	6/23/06
Total Sulfur, S	0.19	%		LECO	6/23/06
Arsenic	1910	mg/kg	10	6010B	6/28/06
Gold	0.010	oz/Ton		FAssay	6/24/06

GOLD SUBCONTRACTED
SVL NOT CERTIFIED BY CA FOR ABA'S BY METHOD EPA 600
SVL NOT CERTIFIED BY CA FOR SULPHUR BY LECO
SVL NOT CERTIFIED BY CA FOR GOLD BY FIRE ASSAY

Reviewed By: For: Kirby Gray by Date 7/21/06

7/21/06 13:34

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

SVL ANALYTICAL, INC.
Certificate: CA NO. 2080
ne Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: TP-5AB
Sample Collected: 6/09/06 7:55
Sample Receipt : 6/15/06
Date of Report : 6/29/06

SVL JOB: 123391
SAMPLE: 514300

Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
ABP	76.9	TCaCO3/1000T		EPA600	6/23/06
Acid Generating	11.6	TCaCO3/1000T		EPA600	6/23/06
Acid Neut. Pot.	88.5	TCaCO3/1000T		EPA600	6/23/06
Non-Ext Sulfur,S	0.01	%		LECO	6/23/06
Pyritic Sulfur,S	0.37	%		LECO	6/23/06
Sulfate Sulfur,S	<0.01	%		LECO	6/23/06
Total Sulfur, S	0.38	%		LECO	6/23/06
Arsenic	547	mg/kg		6010B	6/28/06

SVL NOT CERTIFIED BY CA FOR ABA'S BY METHOD EPA 600
SVL NOT CERTIFIED BY CA FOR SULPHUR BY LECO

Reviewed By: Kirby Gray

Date 6/29/06
6/29/06 15:11

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

VL ANALYTICAL, INC. Certificate: CA NO. 2080

e Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: TP-6AB
Sample Collected: 6/08/06 17:24
Sample Receipt : 6/15/06
Date of Report : 7/21/06 As Received Basis

SVL JOB: 123391
SAMPLE: 514301

Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
ABP	96.2	TCaCO3/1000T		EPA600	6/23/06
Acid Generating	5.3	TCaCO3/1000T		EPA600	6/23/06
Acid Neut. Pot.	102	TCaCO3/1000T		EPA600	6/23/06
Non-Ext Sulfur,S	<0.01	%		LECO	6/23/06
Pyritic Sulfur,S	0.17	%		LECO	6/23/06
Sulfate Sulfur,S	<0.01	%		LECO	6/23/06
Total Sulfur, S	0.18	%		LECO	6/23/06
Arsenic	15.1	mg/kg		6010B	6/28/06
Gold	0.008	oz/Ton		FAssay	6/24/06

GOLD SUBCONTRACTED
SVL NOT CERTIFIED BY CA FOR ABA'S BY METHOD EPA 600
SVL NOT CERTIFIED BY CA FOR SULPHUR BY LECO
SVL NOT CERTIFIED BY CA FOR GOLD BY FIRE ASSAY

Reviewed By: For: Kirby Gray by Date 7/21/06

7/21/06 13:34

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

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Certificate: CA NO. 2080
e Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: TP-7AB
Sample Collected: 6/08/06 8:50
Sample Receipt : 6/15/06
Date of Report : 6/29/06

SVL JOB: 123391
SAMPLE: 514302

Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
ABP	-9.4	TCaCO3/1000T		EPA600	6/23/06
Acid Generating	9.4	TCaCO3/1000T		EPA600	6/23/06
Acid Neut. Pot.	<0.3	TCaCO3/1000T		EPA600	6/23/06
Non-Ext Sulfur,S	0.01	%		LECO	6/23/06
Pyritic Sulfur,S	0.30	%		LECO	6/23/06
Sulfate Sulfur,S	0.01	%		LECO	6/23/06
Total Sulfur, S	0.32	%		LECO	6/23/06
Arsenic	16.3	mg/kg		6010B	6/28/06

SVL NOT CERTIFIED BY CA FOR ABA'S BY METHOD EPA 600
SVL NOT CERTIFIED BY CA FOR SULPHUR BY LECO

Reviewed By: Kirby Gray Date 6/29/06
6/29/06 15:11

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

SVL ANALYTICAL, INC. Certificate: CA NO. 2080
ne Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX SVL JOB: 123391
PROJECT: 11096.000/004 SAMPLE: 514303
CLIENT SAMPLE ID: TP-8AB
Sample Collected: 6/09/06 8:50
Sample Receipt : 6/15/06 Matrix: SOIL
Date of Report : 7/21/06 As Received Basis

Determination	Result	Units	Dilution	Method	Analyzed
ABP	116	TCaCO3/1000T		EPA600	6/23/06
Acid Generating	19.4	TCaCO3/1000T		EPA600	6/23/06
Acid Neut. Pot.	135	TCaCO3/1000T		EPA600	6/23/06
Non-Ext Sulfur,S	0.01	%		LECO	6/23/06
Pyritic Sulfur,S	0.62	%		LECO	6/23/06
Sulfate Sulfur,S	0.20	%		LECO	6/23/06
Total Sulfur, S	0.83	%		LECO	6/23/06
Arsenic	5.7	mg/kg		6010B	6/28/06
Gold	0.006	oz/Ton		FAssay	6/24/06

GOLD SUBCONTRACTED
SVL NOT CERTIFIED BY CA FOR ABA'S BY METHOD EPA 600
SVL NOT CERTIFIED BY CA FOR SULPHUR BY LECO
SVL NOT CERTIFIED BY CA FOR GOLD BY FIRE ASSAY

Reviewed By: For: Kirby Gray by Date 7/21/06
7/21/06 13:34

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: TP-9AB
Sample Collected: 6/09/06 13:15
Sample Receipt : 6/15/06
Date of Report : 7/21/06 As Received Basis

SVL JOB: 123391
SAMPLE: 514304
Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
ABP	131	TCaCO3/1000T		EPA600	6/23/06
Acid Generating	2.2	TCaCO3/1000T		EPA600	6/23/06
Acid Neut. Pot.	133	TCaCO3/1000T		EPA600	6/23/06
Non-Ext Sulfur,S	0.02	%		LECO	6/23/06
Pyritic Sulfur,S	0.07	%		LECO	6/23/06
Sulfate Sulfur,S	0.11	%		LECO	6/23/06
Total Sulfur, S	0.20	%		LECO	6/23/06
Arsenic	9.9	mg/kg		6010B	6/28/06
Gold	0.016	oz/Ton		FAssay	6/24/06

GOLD SUBCONTRACTED
SVL NOT CERTIFIED BY CA FOR ABA'S BY METHOD EPA 600
SVL NOT CERTIFIED BY CA FOR SULPHUR BY LECO
SVL NOT CERTIFIED BY CA FOR GOLD BY FIRE ASSAY

Reviewed By: for: Kirby Gray by Date 7/21/06
7/21/06 13:34

SVL ANALYTICAL, INC. Certificate: CA NO. 2080
ne Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: TP-10AB
Sample Collected: 6/09/06 14:15
Sample Receipt : 6/15/06
Date of Report : 6/29/06

SVL JOB: 123391
SAMPLE: 514305

Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
ABP	192	TCaCO3/1000T		EPA600	6/23/06
Acid Generating	0.9	TCaCO3/1000T		EPA600	6/23/06
Acid Neut. Pot.	193	TCaCO3/1000T		EPA600	6/23/06
Non-Ext Sulfur,S	<0.01	%		LECO	6/23/06
Pyritic Sulfur,S	0.03	%		LECO	6/23/06
Sulfate Sulfur,S	0.04	%		LECO	6/23/06
Total Sulfur, S	0.07	%		LECO	6/23/06
Arsenic	13.7	mg/kg		6010B	6/28/06

SVL NOT CERTIFIED BY CA FOR ABA'S BY METHOD EPA 600
SVL NOT CERTIFIED BY CA FOR SULPHUR BY LECO

Reviewed By: Kirby Gray Date 6/29/06
6/29/06 15:11

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

SVL ANALYTICAL, INC. Certificate: CA NO. 2080
ne Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: TP-11AB
Sample Collected: 6/12/06 8:40
Sample Receipt : 6/15/06
Date of Report : 6/29/06

SVL JOB: 123391
SAMPLE: 514306

Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
ABP	177	TCaCO3/1000T		EPA600	6/23/06
Acid Generating	10.0	TCaCO3/1000T		EPA600	6/23/06
Acid Neut. Pot.	187	TCaCO3/1000T		EPA600	6/23/06
Non-Ext Sulfur,S	0.01	%		LECO	6/23/06
Pyritic Sulfur,S	0.32	%		LECO	6/23/06
Sulfate Sulfur,S	0.01	%		LECO	6/23/06
Total Sulfur, S	0.34	%		LECO	6/23/06
Arsenic	2.8	mg/kg		6010B	6/28/06

SVL NOT CERTIFIED BY CA FOR ABA'S BY METHOD EPA 600
SVL NOT CERTIFIED BY CA FOR SULPHUR BY LECO

Reviewed By: Kirby Gray Date 6/29/06
6/29/06 15:11

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

REPORT NO:	107869	CLIENT:	SVL ANALYTICAL ONE GOVERNMENT GULCH KELLOGG, ID 83837
DATE:	Jul 7, 2006		
DATE RECEIVED:	Jun 23, 2006	ATTENTION:	CHRIS MEYER
DATE ANALYZED:	Jul 7, 2006	REFERENCE:	JOB#123391
DATE / TIME COLLECTED:	6/9/06 AT 0805-1055		

SUBJECT: Polarized Light Microscopy Analysis for Asbestos; 5 Samples

METHODOLOGY: "Method for Determination of Asbestos in Bulk Building Materials."
NIOSH 9002

ACCREDITED: National Institute of Standards and Technology (NVLAP) #101218

CERTIFIED: California Department of Health Services Environmental Testing Laboratory ELAP 1119,
County Sanitation Districts of Los Angeles County, Laboratory Identification No. 10120

QUALITY CONTROL SAMPLE (SRM 1866 GLASS FIBERS AS THE BLANK): NONE DETECTED

SAMPLE ID NUMBER	SAMPLE LOCATION & DESCRIPTION	VISUAL DESCRIPTION	ASBESTIFORM MINERALS	OTHER FIBROUS MATERIALS	NON-FIBROUS MATERIALS
514309	NON-FRIABLE	GRAY GRANULAR	TREMOLITE LESS THAN 1%	CELLULOSE- LESS THAN 1%	GRANULAR MINERALS OPAQUES
514310	NON-FRIABLE	GRAY GRANULAR	CHRYSOTILE LESS THAN 1% ACTINOLITE LESS THAN 1%	CELLULOSE- LESS THAN 1%	GRANULAR MINERALS OPAQUES
514311	NON-FRIABLE	GRAY GRANULAR	NONE DETECTED	CELLULOSE- LESS THAN 1%	GRANULAR MINERALS OPAQUES
514312	NON-FRIABLE	GRAY GRANULAR	NONE DETECTED	CELLULOSE- LESS THAN 1%	GRANULAR MINERALS OPAQUES
514313	NON-FRIABLE	GRAY GRANULAR	NONE DETECTED	CELLULOSE- LESS THAN 1%	GRANULAR MINERALS OPAQUES

Optical Microscopist

BM Kolk
B.M. Kolk, Laboratory Director

BMK/vm

The EPA method is a semi quantitative procedure. The detection limit is between 1/10 to 1 percent by area and is dependent upon the size of the asbestos fibers, the means of sampling and the matrix of the sampled material.

The test results reported are for the sample or samples delivered to us and may not represent the entire material from which the sample was taken. The EPA recommends three samples or more be taken of a "homogeneous sampling area" before friable material is considered non-asbestos-containing.

This report, from a NIST accredited laboratory through NVLAP, must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

NOTE: This report shall not be reproduced, except in full, without the written approval of EMS Laboratories, Inc.

** Negative floor tile samples may contain significant amounts (>1%) of very thin asbestos fibers which cannot by detected by PLM. Confirmation by X-Ray diffraction or TEM is recommended by EPA (Federal Register Vol. 59, No. 146).

SVL ANALYTICAL, INC.
Certificate: CA NO. 2080
One Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: TP-9B-ASB
Sample Collected: 6/08/06 10:05
Sample Receipt : 6/15/06
Date of Report : 7/21/06

SVL JOB: 123391
SAMPLE: 514309

Matrix: SOIL

Determination	Result	Method	Analyzed
Asbestos	Thermolite less than 1%	NIOSH 9002	7/07/06

SUBCONTRACTED

Reviewed By: For: Kirby Gray by

Date 7/21/06
7/21/06 13:35

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

SVL ANALYTICAL, INC. Certificate: CA NO. 2080
Ine Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: TP-10A-ASB
Sample Collected: 6/09/06 10:55
Sample Receipt : 6/15/06
Date of Report : 7/21/06

SVL JOB: 123391
SAMPLE: 514310

Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
Asbestos	Chrysotile less than 1%			NIOSH 9002	7/07/06
	Actinolite less than 1%				

SUBCONTRACTED

Reviewed By: For: Kirby Gray by Date 7/21/06
7/21/06 13:35

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

SVL ANALYTICAL, INC.
Certificate: CA NO. 2080
ne Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: TP-8B-ASB
Sample Collected: 6/09/06 8:55
Sample Receipt : 6/15/06
Date of Report : 7/21/06

SVL JOB: 123391
SAMPLE: 514311

Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
Asbestos	None Detected			NIOSH 9002	7/07/06

SUBCONTRACTED

Reviewed By: for: Kirby Gray by Date 7/21/06
7/21/06 13:35

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

SVL ANALYTICAL, INC.

Certificate: CA NO. 2080

One Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: TP-5A-ASB
Sample Collected: 6/09/06 8:05
Sample Receipt : 6/15/06
Date of Report : 7/21/06

SVL JOB: 123391
SAMPLE: 514312

Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
Asbestos	None Detected			NIOSH 9002	7/07/06

SUBCONTRACTED

Reviewed By: For: Kirby Gray by Date 7/21/06
7/21/06 13:35

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

SVL ANALYTICAL, INC.
Certificate: CA NO. 2080
ne Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: TP-7B-ASB
Sample Collected: 6/08/06 9:00
Sample Receipt : 6/15/06
Date of Report : 7/21/06

SVL JOB: 123391
SAMPLE: 514313

Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
Asbestos	None Detected			NIOSH 9002	7/07/06

SUBCONTRACTED

Reviewed By: For: Kirby Gray by

Date 7/21/06
7/21/06 13:35

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

SVL ANALYTICAL, INC.
One Government Gulch ■ P.O. Box 929 ■ Kellogg, Idaho 83837-0929 ■ Phone: (208)784-1258 ■ Fax: (208)783-0891

Certificate: CA NO. 2080

CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: BKGNRD-RK 1
Sample Collected: 6/09/06 11:27
Sample Receipt : 6/15/06
Date of Report : 6/29/06

SVL JOB: 123391
SAMPLE: 514307

Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
Silver	<0.50	mg/kg		6010B	6/26/06
Arsenic	<2.5	mg/kg		6010B	6/26/06
Barium	19.5	mg/kg		6010B	6/26/06
Beryllium	<0.20	mg/kg		6010B	6/26/06
Cadmium	<0.20	mg/kg		6010B	6/26/06
Cobalt	8.42	mg/kg		6010B	6/26/06
Chromium	267	mg/kg		6010B	6/26/06
Copper	9.5	mg/kg		6010B	6/26/06
Mercury	<5.50	mg/kg		7471A	6/21/06
Molybdenum	2.2	mg/kg		6010B	6/26/06
Nickel	76.4	mg/kg		6010B	6/26/06
Lead	<0.75	mg/kg		6010B	6/26/06
Antimony	2	mg/kg		6010B	6/26/06
Selenium	<4	mg/kg		6010B	6/26/06
Thallium	<1.5	mg/kg		6010B	6/26/06
Vanadium	13.7	mg/kg		6010B	6/26/06
Zinc	10.4	mg/kg		6010B	6/26/06

Reviewed By: Kirby Gray Date 6/29/06
6/29/06 15:11

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

VL ANALYTICAL, INC.
Certificate: CA NO. 208
Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-089

CLIENT : GEOMATRIX
PROJECT: 11096.000/004
CLIENT SAMPLE ID: BKGRND-RK 2
Sample Collected: 6/09/06 13:50
Sample Receipt : 6/15/06
Date of Report : 6/29/06

SVL JOB: 123391
SAMPLE: 514308

Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
Silver	1.21	mg/kg		6010B	6/26/06
Arsenic	6.0	mg/kg		6010B	6/26/06
Barium	0.77	mg/kg		6010B	6/26/06
Beryllium	<0.20	mg/kg		6010B	6/26/06
Cadmium	<0.20	mg/kg		6010B	6/26/06
Cobalt	67.5	mg/kg		6010B	6/26/06
Chromium	591	mg/kg		6010B	6/26/06
Copper	8.5	mg/kg		6010B	6/26/06
Mercury	<5.50	mg/kg		7471A	6/21/06
Molybdenum	<0.8	mg/kg		6010B	6/26/06
Nickel	1550	mg/kg		6010B	6/26/06
Lead	1.13	mg/kg		6010B	6/26/06
Antimony	<2	mg/kg		6010B	6/26/06
Selenium	<4	mg/kg		6010B	6/26/06
Thallium	<1.5	mg/kg		6010B	6/26/06
Vanadium	18.2	mg/kg		6010B	6/26/06
Zinc	10.0	mg/kg		6010B	6/26/06

Reviewed By: Kirby Gray Date 6/29/06
6/29/06 15:11

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

SVL ANALYTICAL, INC.

Quality Control Report
Part I Prep Blank and Laboratory Control Sample

Client :GEOMATRIX

SVL JOB No: 123391

Analyte	Method	Matrix	Units	Prep Blank	True—LCS—Found		LCS %R	Analysis Date
Silver	6010B	SOIL	mg/kg	<0.50	5.00	5.05	101.0	6/26/06
Arsenic	6010B	SOIL	mg/kg	<2.5	100	96.4	96.4	6/28/06
Barium	6010B	SOIL	mg/kg	<0.20	100	104	104.0	6/26/06
Beryllium	6010B	SOIL	mg/kg	<0.20	100	103	103.0	6/26/06
Cadmium	6010B	SOIL	mg/kg	<0.20	100	97.9	97.9	6/26/06
Cobalt	6010B	SOIL	mg/kg	<0.60	100	104	104.0	6/26/06
Chromium	6010B	SOIL	mg/kg	<0.60	100	105	105.0	6/26/06
Copper	6010B	SOIL	mg/kg	<1.0	100	103	103.0	6/26/06
Molybdenum	6010B	SOIL	mg/kg	<0.8	100	107	107.0	6/26/06
Nickel	6010B	SOIL	mg/kg	<1.0	100	95.9	95.9	6/26/06
Lead	6010B	SOIL	mg/kg	<0.75	100	103	103.0	6/26/06
Antimony	6010B	SOIL	mg/kg	<2	100	108	108.0	6/26/06
Selenium	6010B	SOIL	mg/kg	<4	100	101	101.0	6/26/06
Thallium	6010B	SOIL	mg/kg	<1.5	100	102	102.0	6/26/06
Vanadium	6010B	SOIL	mg/kg	<0.50	100	108	108.0	6/26/06
Zinc	6010B	SOIL	mg/kg	<1.0	100	97.0	97.0	6/26/06
Mercury	7471A	SOIL	mg/kg	<0.033	0.834	0.928	111.3	6/21/06
Acid Generating	EPA600	SOIL	TCaCO3/k	N/A	9.4	9.7	103.2	6/23/06
Acid Neut. Pot.	EPA600	SOIL	TCaCO3/k	N/A	52.0	46.3	89.0	6/23/06
Non-Ext Sulfur,S	LECO	SOIL	%	<0.01	N/A		N/A	6/23/06
Pyritic Sulfur,S	LECO	SOIL	%	<0.01	N/A		N/A	6/23/06
Sulfate Sulfur,S	LECO	SOIL	%	<0.01	N/A		N/A	6/23/06
Total Sulfur, S	LECO	SOIL	%	<0.01	0.30	0.31	103.3	6/23/06

LEGEND:

LCS = Laboratory Control Sample

LCS %R = LCS Percent Recovery

N/A = Not Applicable

6/29/06 14:23

SVL ANALYTICAL, INC.

Quality Control Report
Part II Duplicate and Spike Analysis

Client :GEOMATRIX

SVL JOB No: 123391

Test	Method	Mtx	QC SAMPLE ID	Units	Result	Duplicate Found	or	MSD RPD%	Matrix Spike Result	SPK ADD		%R	Analysis Date
g	6010B	S	1	mg/kg	<0.50	5.35	M	0.4	5.37	5.00		107.4	6/26/06
As	6010B	S	2	mg/kg	3170	3090	M	1.9	3150	100		R >4S	6/28/06
	6010B	S	1	mg/kg	<2.5	112	M	6.5	105	100		105.0	6/26/06
	6010B	S	1	mg/kg	19.5	123	M	0.8	124	100		104.5	6/26/06
Be	6010B	S	1	mg/kg	<0.20	105	M	0.9	106	100		106.0	6/26/06
Cd	6010B	S	1	mg/kg	<0.20	95.6	M	1.8	93.9	100		93.9	6/26/06
	6010B	S	1	mg/kg	8.42	107	M	0.9	108	100		99.6	6/26/06
	6010B	S	1	mg/kg	267	455	M	0.2	456	100		189.0	6/26/06
Cr	6010B	S	1	mg/kg	267	N/A		N/A	375	100	A	108.0	6/26/06
	6010B	S	1	mg/kg	9.5	119	M	0.8	118	100		108.5	6/26/06
	6010B	S	1	mg/kg	2.2	104	M	0.0	104	100		101.8	6/26/06
	6010B	S	1	mg/kg	76.4	200	M	1.0	198	100		121.6	6/26/06
Pb	6010B	S	1	mg/kg	<0.75	102	M	1.0	101	100		101.0	6/26/06
	6010B	S	1	mg/kg	2	51	M	2.0	50	100		48.0	6/26/06
	6010B	S	1	mg/kg	2	N/A		N/A	113	100	A	111.0	6/26/06
Se	6010B	S	1	mg/kg	<4	104	M	1.9	102	100		102.0	6/26/06
Tl	6010B	S	1	mg/kg	<1.5	97.6	M	1.6	99.2	100		99.2	6/26/06
	6010B	S	1	mg/kg	13.7	129	M	0.8	128	100		114.3	6/26/06
	6010B	S	1	mg/kg	10.4	107	M	1.9	105	100		94.6	6/26/06
Hg	7471A	S	1	mg/kg	<0.033	0.173	M	5.1	0.182	0.167		109.0	6/21/06
ABP	EPA600	S	2	TCaCO3/	43.1	43.5		0.9	N/A	N/A		N/A	6/23/06
P	EPA600	S	2	TCaCO3/	20.6	20.3		1.5	N/A	N/A		N/A	6/23/06
NNP	EPA600	S	2	TCaCO3/	63.8	63.8		0.0	N/A	N/A		N/A	6/23/06
S N-EX	LECO	S	2	%	<0.01	<0.01		UDL	N/A	N/A		N/A	6/23/06
PYR	LECO	S	2	%	0.66	0.65		1.5	N/A	N/A		N/A	6/23/06
SO4	LECO	S	2	%	0.12	0.14		15.4	N/A	N/A		N/A	6/23/06
S-TOT	LECO	S	2	%	0.78	0.79		1.3	N/A	N/A		N/A	6/23/06

LEGEND:

RPD% = (|SAM - DUP|/((SAM + DUP)/2) * 100) UDL = Both SAM & DUP not detected. *Result or *Found: Interference required dilution.

RPD% = (|SPK - MSD|/((SPK + MSD)/2) * 100) M in Duplicate/MSD column indicates MSD.

SPIKE ADD column, A = Post Digest Spike; %R = Percent Recovery N/A = Not Analyzed; R > 4S = Result more than 4X the Spike Added

limits for MS recoveries apply only if the spike is at least 1/4 the concentration of the analyte in the sample.

Control limits for the RPD apply only if the concentration of the analyte in the sample is at least five times the reporting limit.

QC Sample 1: SVL SAM No.: 514307 Client Sample ID: BKGNRD-RK 1

QC Sample 2: SVL SAM No.: 514296 Client Sample ID: TP-1AB

'00' [illegible] NI 6 06 1

Chain-of-Custody Record

Date: 6-13-06 Page 4 of 5

Geomatrix
10670 White Rock Road, Suite 100,
Rancho Cordova, CA 95670
Phone: 916-636-3200 Fax: 916-636-3208

Project Name/Number: 11096.000/004
Sampler (Print): Brian Ragan
Sampler (Signature): Brian Ragan
Laboratory: PLEASE PRINT SVL ANALYTICAL
Company Name: ~~Geomatrix~~
Address: One Government Gulch
Kellogg Idaho, 83837
Attn: Chris Meyer
Phone: 208-784-1258
Fax: 208-783-0891

Filtered
Preserved

Date	Time	Sample Number	Total As (7060)	DI Wet As (GFAA 7060)	Acid Base Account	CaCO3 Equiv/1000	Total Au (Fire Assay)	Total Metals (6010B)	CAM 17 (6010B)	Asbestos (Bulk Method)	Soil (S), Water (W), Vapor (V), or Other (o)	Cooled	No. of Containers
③ 6-12-06	0835	TP-11AB-S DR	X	~~X~~							S		1
① 6-8-06	1125	TP-1AB DR	~~X~~	~~X~~	X	X					O		1
6-7-06	1244	TP-2AB	X		X	X	X				O		1
6-7-06	1503	TP-3AB	X		X	X					O		1
6-8-06	1436	TP-4AB	X		X	X	X				O		1
6-9-06	0755	TP-5AB	X		X	X					O		1
6-8-06	1724	TP-6AB	X		X	X	X				O		1
6-8-06	0850	TP-7AB	X		X	X					O		1
6-9-06	0850	TP-8AB	X		X	X	X				O		1
6-9-06	1315	TP-9AB	X		X	X	X				O		1
6-9-06	1415	TP-10AB	X		X	X					O		1
6-12-06	0840	TP-11AB	X		X	X					O		1
② 6-9-06	1127	BKGRND-RK1						~~X~~ DR	X		O		1
6-9-06	1350	BKGRND-RK2							X		O		1
6-8-06	1005	TP-9B-ASB								X	O		1
6-9-06	1055	TP-10A-ASB								X	O		1

REMARKS

Additional Comments

123391

① DO NOT ANALYZE TP-1AB FOR DI WET AS.

② DO NOT ANALYZE BKGRND-RK1 FOR TOTAL METALS

③ DO NOT ANALYZE TP-11AB-S FOR DI WET AS.

Laboratory: SVL ANALYTICAL
Results to: M. Lauerroth
Total No. of Containers: 16

Relinquished by (Signature): Brian Ragan
Date: 6-13-06
Printed Name: Brian Ragan
Time: 1100
Company: Geomatrix
Received by: Robin Stribling
Date: 6/15/06
Printed Name: Robin Stribling
Time: 12:45
Company: SVL

Date:
Time:
Date:
Time:

Relinquished by (Signature):
Date:
Printed Name:
Time:
Company:
Received by:
Date:
Printed Name:
Time:
Company:

Method of Shipment:

Laboratory Comments and Log No.:

C[illegible] t, N[illegible] 6 06 7:45 [illegible]

Chain-of-Custody Record

Date: 6-13-06 Page 5 of 5

Project Name/Number: 11096.000/004

Sampler (Print): Brian Ragan

Sampler (Signature): Brian Ragan

Geomatrix
10670 White Rock Road, Suite 100,
Rancho Cordova, CA 95670
Phone: 916-636-3200 Fax: 916-636-3208

REMARKS

Laboratory: PLEASE PRINT

Company Name: SVL ANALYTICAL

Address: One Government Gulch
Kellogg Idaho, 83837

Atten: Chris Meyer

Phone: 208-784-1258

Fax: 208-783-0891

Filtered

Preserved

Additional Comments: 12339X

Date	Time	Sample Number	ASBESTOS (BULK METHOD)	Soil (S), Water (W), Vapor (V), or Other (O)	Cooled	No. of Containers
6-9-06	0855	TP-8B-ASB	X	O		1
6-9-06	0805	TP-5A-ASB	X	O		1
6-8-06	0900	TP-7B-ASB	X	O		1

Laboratory: SVL ANALYTICAL

Results to:

Total No. of Containers: 3

Relinquished by (Signature): Brian Ragan
Printed Name: Brian Ragan
Company: Geomatrix
Date: 6-13-06
Time: 1600

Received by: Robin Stribling
Printed Name: Robin Stribling
Company:
Date: 6-15-06
Time: 12:45

Relinquished by (Signature):
Printed Name:
Company:
Date:
Time:

Received by:
Printed Name:
Company:
Date:
Time:

Method of Shipment:

Laboratory Comments and Log No.:

SAMPLE PREPARATION

Job # 123391
Client CHEMMATRIX

Date 6/20/06 Initials JH

Sample Matrix

Rock X Soil ___ Drill Core ___ Vegetation ___
Other (describe) ___

Drying

Air ___ Oven ___ None X

Riffle Splitting

Yes X No ___

Sieving

Yes ___ Mesh ___ No X

Crushing

Yes X Jaw X Roll X

Mortar and Pestle ___ No ___

Pulverizing

Yes X No ___

Wiley Mill

Yes ___ No ___

Rejects

Retained X Disposed ___ Returned ___

Special Preparation:

OC' to N' 6 15 06 1 ~ 40 K:

Chain-of-Custody Record

Date: 6-13-06 Page 4 of 5

REMARKS

Project Name/Number: 11096.000/004
Sampler (Print): BRIAN RAGAN
Sampler (Signature): Brian Ragan
Laboratory: PLEASE PRINT SVL ANALYTICAL
Company Name: ~~GEOMATRIX~~
Address: ONE GOVERNMENT GULCH
KELLOGG IDAHO, 83837
Atton: CHRIS MEYER
Phone: 208-784-1258
Fax: 208-783-0891

Geomatrix
10670 White Rock Road, Suite 100,
Rancho Cordova, CA 95670
Phone: 916-636-3200 Fax: 916-636-3208

Filtered
Preserved

Additional Comments
123391

Date	Time	Sample Number	TOTAL As (7060)	DI WET As GFAA 7060	ACID BASE ACCOUNT	CaCO3 EQUIV/LECO	TOTAL Au (FIRE ASSAY)	TOTAL METALS (6010B)	CAM 17 (6010B)	ASBESTOS (BULK method)						Soil (S), Water (W), Vapor (V), or Other (o)	Cooled	No. of Containers			Additional Comments
③ 6-12-06	0835	TP-11AB-S Dr	X													S		1			① DO NOT ANALYZE
① 6-8-06	1125	TP-1AB Dr	X		X	X										O		1			TP-1AB FOR DI WET As.
6-7-06	1244	TP-2AB	X		X	X	X									O		1			② DO NOT ANALYZE
6-7-06	1503	TP-3AB	X		X	X										O		1			BKGRND-RK1 FOR
6-8-06	1436	TP-4AB	X		X	X	X									O		1			TOTAL METALS
6-9-06	0755	TP-5AB	X		X	X										O		1			③ DO NOT ANALYZE
6-8-06	1724	TP-6AB	X		X	X	X									O		1			TP-11AB-S FOR
6-8-06	0850	TP-7AB	X		X	X										O		1			DI WET AS.
6-9-06	0850	TP-8AB	X		X	X	X									O		1			
6-9-06	1315	TP-9AB	X		X	X	X									O		1			
6-9-06	1415	TP-10AB	X		X	X										O		1			
6-12-06	0840	TP-11AB	X		X	X										O		1			
② 6-9-06	1127	BKGRND-RK1						Dr	X							O		1			
6-9-06	1350	BKGRND-RK2							X							O		1			
6-8-06	1005	TP-9B-ASB								X						O		1			
6-9-06	1055	TP-10A-ASB								X						O		1			

Laboratory: SVL ANALYTICAL
Results to: M. LACHLOTH
Total No. of Containers: 16

Relinquished by (Signature): Brian Ragan
Date: 6-13-06
Printed Name: BRIAN RAGAN
Time: 1100
Company: GEOMATRIX
Received by: Robin Stribling
Date: 6/15/06
Printed Name: Robin Stribling
Time: 12:45
Company: SVL

Date:
Time:
Date:
Time:

Relinquished by (Signature):
Date:
Printed Name:
Time:
Company:
Received by:
Date:
Printed Name:
Time:
Company:

Method of Shipment:
Laboratory Comments and Log No.:

Chain-of-Custody Record

Date: 6-13-06 Page 5 of 5

Geomatrix

10670 White Rock Road, Suite 100,
Rancho Cordova, CA 95670
Phone: 916-636-3200 Fax: 916-636-3208

Project Name/Number: 11096.000/004

Sampler (Print): Brian Ragan

Sampler (Signature): Brian Ragan

Laboratory: PLEASE PRINT

Company Name: SVL Analytical

Address: One Government Gulch
Kellogg Idaho, 83837

Atten: Chris Meyer

Phone: 208-784-1258

Fax: 208-783-0891

REMARKS

Filtered

Preserved

Additional Comments

123391

Date	Time	Sample Number	ASBESTOS (Bulk Method)	Soil (S), Water (W), Vapor (V), or Other (o)	Cooled	No. of Containers
6-9-06	0855	TP-8B-ASB	X	O		1
6-9-06	0805	TP-5A - ASB	X	O		1
6-8-06	0900	TP-7B -ASB	X	O		1

Laboratory: SVL Analytical

Results to:

Total No. of Containers: 3

Relinquished by (Signature): Brian Ragan

Printed Name: Brian Ragan

Company: Geomatrix

Date: 6-13-06

Time: 1600

Received by: Robin Stribling

Printed Name: Robin Stribling

Company:

Date: 6-15-06

Time: 12:45

Date:

Time:

Date:

Time:

Relinquished by (Signature):

Printed Name:

Company:

Date:

Time:

Received by:

Printed Name:

Company:

Date:

Time:

Method of Shipment:

Laboratory Comments and Log No.:

SAMPLE PREPARATION

Job # 123391
Client CHEMMATRIX

Date 6/26/06 Initials JH

Sample Matrix

[✓ Rock] Soil Drill Core Vegetation
Other (describe)

Drying

Air Oven [✓ None]

Riffle Splitting

[✓ Yes] No

Sieving

Yes Mesh [✓ No]

Crushing

[✓ Yes] [✓ Jaw] [✓ Roll]
Mortar and Pestle No

Pulverizing

[✓ Yes] No

Wiley Mill

Yes No

Rejects

[✓ Retained] Disposed Returned

Special Preparation:

SVL ANALYTICAL, INC. Certificate: CA NO. 2080
One Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT: BRUNSWICK
CLIENT SAMPLE ID: BKGRND-SS1
Sample Collected: 7/07/06 9:00
Sample Receipt : 7/11/06
Date of Report : 7/19/06 As Received Basis

SVL JOB: 123875
SAMPLE: 519852
% Solids: 89.3%
Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
Arsenic	3.98	mg/kg	2	7060A	7/13/06

Tests:As - 7060|% Sol.|

Reviewed By: for Kirby Gray Date 7/19/06
7/19/06 9:21

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

SVL ANALYTICAL, INC. Certificate: CA NO. 2080
One Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT: BRUNSWICK
CLIENT SAMPLE ID: BKGRND-RK3
Sample Collected: 7/07/06 9:05
Sample Receipt : 7/11/06
Date of Report : 7/19/06 As Received Basis

SVL JOB: 123875
SAMPLE: 519853
% Solids: 98.3%
Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
Silver	<0.50	mg/kg		6010B	7/17/06
Arsenic	<2.5	mg/kg		6010B	7/17/06
Barium	32.9	mg/kg		6010B	7/17/06
Beryllium	0.45	mg/kg		6010B	7/17/06
Cadmium	<0.20	mg/kg		6010B	7/17/06
Cobalt	22.8	mg/kg		6010B	7/17/06
Chromium	85.5	mg/kg		6010B	7/17/06
Copper	104	mg/kg		6010B	7/17/06
Mercury	<0.033	mg/kg		7471A	7/17/06
Molybdenum	<0.8	mg/kg		6010B	7/17/06
Nickel	26.8	mg/kg		6010B	7/17/06
Lead	2.69	mg/kg		6010B	7/17/06
Antimony	<2	mg/kg		6010B	7/17/06
Selenium	<4	mg/kg		6010B	7/17/06
Thallium	3.8	mg/kg		6010B	7/17/06
Vanadium	153	mg/kg		6010B	7/17/06
Zinc	63.4	mg/kg		6010B	7/18/06

Tests:CAM-17 - TOTAL

Reviewed By: for Kirby Gray Date 7/19/06
7/19/06 9:47

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

SVL ANALYTICAL, INC.
Certificate: CA NO. 2080

ne Government Gulch ■ P.O. Box 929 ■ Kellogg, Idaho 83837-0929 ■ Phone: (208)784-1258 ■ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT: BRUNSWICK
CLIENT SAMPLE ID: BKGRND-SS2
Sample Collected: 7/07/06 10:30
Sample Receipt : 7/11/06
Date of Report : 7/19/06 As Received Basis

SVL JOB: 123875
SAMPLE: 519854
% Solids: 98.0%
Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
Arsenic	644	mg/kg	500	7060A	7/13/06

Tests:As - 7060|% Sol.|

Reviewed By: for Kirby Gray Date 7/19/06

7/19/06 9:21

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

SVL ANALYTICAL, INC.
Certificate: CA NO. 2080
ıe Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT: BRUNSWICK
CLIENT SAMPLE ID: BKGRND-SS3
Sample Collected: 7/07/06 10:45
Sample Receipt : 7/11/06
Date of Report : 7/19/06 As Received Basis

SVL JOB: 123875
SAMPLE: 519855
% Solids: 94.1%
Matrix: SOIL

Determination	Result	Units	Dilution	Method	Analyzed
Arsenic	6.33	mg/kg	10	7060A	7/13/06

Tests:As - 7060|% Sol.|

Reviewed By:________ Date 7/19/06
7/19/06 9:21

AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C126B

VL ANALYTICAL, INC.

Quality Control Report
Part I Prep Blank and Laboratory Control Sample

Client :GEOMATRIX

SVL JOB No: 123875

Analyte	Method	Matrix	Units	Prep Blank	LCS		LCS %R	Analysis Date
					True	Found		
Silver	6010B	SOIL	mg/kg	<0.50	5.00	5.26	105.2	7/17/06
Arsenic	6010B	SOIL	mg/kg	<2.5	100	107	107.0	7/17/06
Barium	6010B	SOIL	mg/kg	<0.20	100	109	109.0	7/17/06
Beryllium	6010B	SOIL	mg/kg	<0.20	100	109	109.0	7/17/06
Cadmium	6010B	SOIL	mg/kg	<0.20	100	108	108.0	7/17/06
Cobalt	6010B	SOIL	mg/kg	<0.60	100	111	111.0	7/17/06
Chromium	6010B	SOIL	mg/kg	<0.60	100	112	112.0	7/17/06
Copper	6010B	SOIL	mg/kg	<1.0	100	110	110.0	7/17/06
Molybdenum	6010B	SOIL	mg/kg	<0.8	100	111	111.0	7/17/06
Nickel	6010B	SOIL	mg/kg	<1.0	100	103	103.0	7/17/06
Lead	6010B	SOIL	mg/kg	<0.75	100	110	110.0	7/17/06
Antimony	6010B	SOIL	mg/kg	<2	100	108	108.0	7/17/06
Selenium	6010B	SOIL	mg/kg	<4	100	105	105.0	7/17/06
Thallium	6010B	SOIL	mg/kg	<1.5	100	110	110.0	7/17/06
Vanadium	6010B	SOIL	mg/kg	<0.50	100	112	112.0	7/17/06
Zinc	6010B	SOIL	mg/kg	<1.0	100	106	106.0	7/18/06
Arsenic	7060A	SOIL	mg/kg	<0.300	2.50	2.62	104.8	7/13/06
Mercury	7471A	SOIL	mg/kg	<0.033	0.834	0.845	101.3	7/17/06

LEGEND:

LCS = Laboratory Control Sample

LCS %R = LCS Percent Recovery

N/A = Not Applicable

VL ANALYTICAL, INC.

Quality Control Report
Part II Duplicate and Spike Analysis

lient :GEOMATRIX SVL JOB No: 123875

Test	Method	Mtx	QC SAMPLE ID	Units	Result	Duplicate or Found		MSD RPD%	Matrix Spike Result	SPK ADD		%R	Analysis Date
	6010B	S	1	mg/kg	<0.50	4.15	M	2.4	4.25	5.00		85.0	7/17/06
As	6010B	S	1	mg/kg	<2.5	83.5	M	2.4	85.5	100		85.5	7/17/06
	6010B	S	1	mg/kg	32.9	138	M	1.4	140	100		107.1	7/17/06
	6010B	S	1	mg/kg	0.45	96.9	M	1.9	98.8	100		98.4	7/17/06
	6010B	S	1	mg/kg	<0.20	93.1	M	2.0	95.0	100		95.0	7/17/06
Co	6010B	S	1	mg/kg	22.8	117	M	2.5	120	100		97.2	7/17/06
	6010B	S	1	mg/kg	85.5	183	M	2.2	187	100		101.5	7/17/06
	6010B	S	1	mg/kg	104	216	M	1.4	219	100		115.0	7/17/06
Mo	6010B	S	1	mg/kg	<0.8	75.1	M	1.5	76.2	100		76.2	7/17/06
Ni	6010B	S	1	mg/kg	26.8	118	M	2.5	121	100		94.2	7/17/06
	6010B	S	1	mg/kg	2.69	97.5	M	2.0	99.5	100		96.8	7/17/06
	6010B	S	1	mg/kg	<2	25	M	3.9	26	100		26.0	7/17/06
Sb	6010B	S	1	mg/kg	<2	N/A		N/A	102	100	A	102.0	7/17/06
	6010B	S	1	mg/kg	<4	91	M	0.0	91	100		91.0	7/17/06
	6010B	S	1	mg/kg	3.8	96.3	M	0.1	96.2	100		92.4	7/17/06
V	6010B	S	1	mg/kg	153	264	M	2.2	270	100		117.0	7/17/06
Zn	6010B	S	1	mg/kg	63.4	150	M	2.0	153	100		89.6	7/18/06
	7060A	S	2	mg/kg	3.98	4.14	M	0.5	4.12	2.50		5.6	7/13/06
	7471A	S	1	mg/kg	<0.033	0.175	M	3.9	0.182	0.167		109.0	7/17/06

LEGEND:

PD% = (|SAM - DUP|/((SAM + DUP)/2) * 100) UDL = Both SAM & DUP not detected. *Result or *Found: Interference required dilution.

PD% = (|SPK - MSD|/((SPK + MSD)/2) * 100) M in Duplicate/MSD column indicates MSD.

SPIKE ADD column, A = Post Digest Spike; %R = Percent Recovery N/A = Not Analyzed; R > 4S = Result more than 4X the Spike Added

limits for MS recoveries apply only if the spike is at least 1/4 the concentration of the analyte in the sample.

ontrol limits for the RPD apply only if the concentration of the analyte in the sample is at least five times the reporting limit.

QC Sample 1: SVL SAM No.: 519853 Client Sample ID: BKGRND-RK3

QC Sample 2: SVL SAM No.: 519852 Client Sample ID: BKGRND-SS1

001 Temp 8.5° 7-11 10:45 KS

Chain-of-Custody Record

Date: 7/7/06 Page 1 of 1

Geomatrix
10670 White Rock Road, Suite 100,
Rancho Cordova, CA 95670
Phone: 916-636-3200 Fax: 916-636-3208

Project Name/Number: Brunswick - SRD

Sampler (Print): [illegible] Lavenson

Sampler (Signature):

Laboratory: PLEASE PRINT

Company Name: SVL Analytical

Address: One Government Gulch
Kellogg, ID 83837

Atten: Chris [illegible]

Phone: (208) 784-1258

Fax: (208) 783-0891

REMARKS

Date	Time	Sample Number	[illegible]	[illegible]	[illegible]	Soil (S), Water (W), Vapor (V), or Other (o) rock (R)	Cooled	No. of Containers	Additional Comments
									123875
7/7/06	0900	Bkgrnd-SS1			X	S	Y	1	Need metal
↓	0905	Bkgrnd-RK3	X			R	Y	1	results by
	1030	Bkgrnd-SS2			X	S	Y	1	7/12/06.
	1045	Bkgrnd-SS3			X	S	Y	1	

Laboratory: SVL Analytical

Results to:

Total No. of Containers:

Relinquished by (Signature):	Date: 7/10/06	Date:	Relinquished by (Signature):	Date:	Method of Shipment:
Printed Name: [illegible] Lavenson	Time: 1500	Time:	Printed Name:	Time:	Laboratory Comments and Log No.:
Company: Geomatrix			Company:		
Received by: Robin Strebling	Date: 7-11-06	Date:	Received by:	Date:	
Printed Name: Robin STRIBLING	Time: 10:45	Time:	Printed Name:	Time:	
Company: SVL			Company:		

Del Mar Analytical

17461 Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046
9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

LABORATORY REPORT

Prepared For: SVL Analytical
P O Box 929
Kellogg, ID 83837-0929
Attention: Chris Meyer

Project: 123310

Sampled: 06/09/06
Received: 06/16/06
Issued: 06/27/06 12:02

NELAP #01109CA Arizona DHS#AZ0426

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 2 pages, are included and are an integral part of this report.
This entire report was reviewed and approved for release.

CASE NARRATIVE

LABORATORY ID	CLIENT ID	MATRIX
PPF0515-01	513580 (SB-1)	Soil
PPF0515-02	513581 (SB-2)	Soil
PPF0515-03	513582 (SB-3)	Soil
PPF0515-04	513583 (SB-4)	Soil
PPF0515-05	513584 (SB-5)	Soil
PPF0515-06	513585 (SB-6)	Soil

SAMPLE RECEIPT: Samples were received intact, at 6°C, on ice and with chain of custody documentation

HOLDING TIMES: All samples were analyzed within prescribed holding times and/or in accordance with the Del Mar Analytical Sample Acceptance Policy unless otherwise noted in the report

PRESERVATION: Samples requiring preservation were verified prior to sample analysis

QA/QC CRITERIA: All analyses met method criteria, except as noted in the report with data qualifiers.

COMMENTS: No significant observations were made.

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report

eviewed By:

Del Mar Analytical - Phoenix
Kiera Hunter
oject Manager

VL Analytical
O Box 929
ellogg, ID 83837-0929
Attention: Chris Meyer

Project ID: 123310

Report Number: PPF0515

Sampled: 06/09/06
Received: 06/16/06

Semivolatile Organic Compounds by EPA Method 8270C

nalyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
ample ID: PPF0515-01RE1 (513580 - Soil)				**Sampled: 06/09/06**				
Reporting Units: mg/kg								
tachlorophenol	SW846 8270C	6064035	0.825	ND	0.99	6/21/2006	6/23/2006	
,4,6-Trichlorophenol	SW846 8270C	6064035	0.330	ND	0.99	6/21/2006	6/23/2006	
,4,5-Trichlorophenol	SW846 8270C	6064035	0.825	ND	0.99	6/21/2006	6/23/2006	
rogate: 2,4,6-Tribromophenol (21-125%)				*86 %*				
rogate: Phenol-d5 (33-109%)				*86 %*				
urrogate: 2-Fluorophenol (26-105%)				*67 %*				
nple ID: PPf0515-02RE1 (513581 - Soil)				**Sampled: 06/09/06**				
Reporting Units: mg/kg								
entachlorophenol	SW846 8270C	6064035	0.809	ND	0.971	6/21/2006	6/23/2006	
,6-Trichlorophenol	SW846 8270C	6064035	0.323	ND	0.971	6/21/2006	6/23/2006	
,5-Trichlorophenol	SW846 8270C	6064035	0.809	ND	0.971	6/21/2006	6/23/2006	
urrogate: 2,4,6-Tribromophenol (21-125%)				*81 %*				
rogate: Phenol-d5 (33-109%)				*80 %*				
rogate: 2-Fluorophenol (26-105%)				*62 %*				
ample ID: PPf0515-03RE1 (513582 - Soil)				**Sampled: 06/09/06**				
Reporting Units: mg/kg								
itachlorophenol	SW846 8270C	6064035	0.790	ND	0.948	6/21/2006	6/23/2006	
2,4,6-Trichlorophenol	SW846 8270C	6064035	0.316	ND	0.948	6/21/2006	6/23/2006	
,5-Trichlorophenol	SW846 8270C	6064035	0.790	ND	0.948	6/21/2006	6/23/2006	
rogate: 2,4,6-Tribromophenol (21-125%)				*84 %*				
urrogate: Phenol-d5 (33-109%)				*74 %*				
Surrogate: 2-Fluorophenol (26-105%)				*56 %*				
nple ID: PPf0515-04RE1 (513583 - Soil)				**Sampled: 06/09/06**				
Reporting Units: mg/kg								
Pentachlorophenol	SW846 8270C	6064035	0.829	ND	0.995	6/21/2006	6/23/2006	
2 ,6-Trichlorophenol	SW846 8270C	6064035	0.331	ND	0.995	6/21/2006	6/23/2006	
2,,5-Trichlorophenol	SW846 8270C	6064035	0.829	ND	0.995	6/21/2006	6/23/2006	
Surrogate: 2,4,6-Tribromophenol (21-125%)				*69 %*				
rogate: Phenol-d5 (33-109%)				*56 %*				
rogate: 2-Fluorophenol (26-105%)				*43 %*				
Sample ID: PPf0515-05RE1 (513584 - Soil)				**Sampled: 06/09/06**				
Reporting Units: mg/kg								
itachlorophenol	SW846 8270C	6064035	0.783	ND	0.94	6/21/2006	6/23/2006	
2,4,6-Trichlorophenol	SW846 8270C	6064035	0.313	ND	0.94	6/21/2006	6/23/2006	
,5-Trichlorophenol	SW846 8270C	6064035	0.783	ND	0.94	6/21/2006	6/23/2006	
rogate: 2,4,6-Tribromophenol (21-125%)				*82 %*				
Surrogate: Phenol-d5 (33-109%)				*74 %*				
rrogate: 2-Fluorophenol (26-105%)				*56 %*				

Del Mar Analytical - Phoenix
Kiera Hunter
oject Manager

VL Analytical
O Box 929
Kellogg, ID 83837-0929
Attention: Chris Meyer

Project ID: 123310

Report Number: PPF0515

Sampled: 06/09/06
Received: 06/16/06

METHOD BLANK/QC DATA

Semivolatile Organic Compounds by EPA Method 8270C

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
tch: 6064035 Extracted: 06/21/06										
lank Analyzed: 06/22/2006 (6064035-BLK1)										
4-Chloro-3-methylphenol	ND	0.333	mg/kg							
Chlorophenol	ND	0.333	mg/kg							
5-Dichlorophenol	ND	1.67	mg/kg							
2,4-Dichlorophenol	ND	0.333	mg/kg							
4-Dimethylphenol	ND	0.333	mg/kg							
6-Dinitro-2-methylphenol	ND	0.833	mg/kg							
2,4-Dinitrophenol	ND	0.833	mg/kg							
2-Methylphenol	ND	0.333	mg/kg							
4-Methylphenol	ND	0.333	mg/kg							
2-Nitrophenol	ND	0.333	mg/kg							
4-Nitrophenol	ND	0.833	mg/kg							
ntachlorophenol	ND	0.833	mg/kg							
enol	ND	0.333	mg/kg							
2,4,6-Trichlorophenol	ND	0.333	mg/kg							
4,5-Trichlorophenol	ND	0.833	mg/kg							
rrogate: 2,4,6-Tribromophenol	*1.42*		*mg/kg*	*1.67*		*85*	*21-125*			
Surrogate: Phenol-d5	*1.65*		*mg/kg*	*1.67*		*99*	*33-109*			
Surrogate: 2-Fluorophenol	*1.43*		*mg/kg*	*1.67*		*86*	*26-105*			
CS Analyzed: 06/22/2006 (6064035-BS1)										
Pentachlorophenol	0.999	0.833	mg/kg	1.67		60	30-127			
4,6-Trichlorophenol	1.74	0.333	mg/kg	1.67		104	48-111			
4,5-Trichlorophenol	1.76	0.833	mg/kg	1.67		105	50-116			
Surrogate: 2,4,6-Tribromophenol	*1.87*		*mg/kg*	*1.67*		*112*	*21-125*			
Surrogate: Phenol-d5	*1.75*		*mg/kg*	*1.67*		*105*	*33-109*			
rrogate: 2-Fluorophenol	*1.58*		*mg/kg*	*1.67*		*95*	*26-105*			
LCS Dup Analyzed: 06/22/2006 (6064035-BSD1)										
Pentachlorophenol	1.05	0.833	mg/kg	1.67		63	30-127	5	44	
4,6-Trichlorophenol	1.73	0.333	mg/kg	1.67		104	48-111	1	36	
4,5-Trichlorophenol	1.71	0.833	mg/kg	1.67		102	50-116	3	37	
Surrogate: 2,4,6-Tribromophenol	*1.77*		*mg/kg*	*1.67*		*106*	*21-125*			
rrogate: Phenol-d5	*1.65*		*mg/kg*	*1.67*		*99*	*33-109*			
rrogate: 2-Fluorophenol	*1.47*		*mg/kg*	*1.67*		*88*	*26-105*			

Del Mar Analytical - Phoenix
Kiera Hunter
roject Manager

SVL Analytical
O Box 929
Kellogg, ID 83837-0929
Attention: Chris Meyer

Project ID: 123310

Report Number: PPF0515

Sampled: 06/09/06
Received: 06/16/06

METHOD BLANK/QC DATA

Semivolatile Organic Compounds by EPA Method 8270C

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<u>atch: 6064035 Extracted: 06/21/06</u>										
Matrix Spike Analyzed: 06/22/2006 (6064035-MS1)					**Source: PPf0515-05**					
Pentachlorophenol	0.947	0.800	mg/kg	1.60	ND	59	15-135			
4,6-Trichlorophenol	1.44	0.320	mg/kg	1.60	ND	90	37-113			
4,5-Trichlorophenol	1.40	0.800	mg/kg	1.60	ND	88	41-119			
Surrogate: 2,4,6-Tribromophenol	*1.52*		*mg/kg*	*1.61*		*94*	*21-125*			
rrogate: Phenol-d5	*1.33*		*mg/kg*	*1.61*		*83*	*33-109*			
urrogate: 2-Fluorophenol	*1.15*		*mg/kg*	*1.61*		*71*	*26-105*			
Matrix Spike Dup Analyzed: 06/22/2006 (6064035-MSD1)					**Source: PPf0515-05**					
ntachlorophenol	0.779	0.784	mg/kg	1.57	ND	50	15-135	19	44	
4,6-Trichlorophenol	1.22	0.314	mg/kg	1.57	ND	78	37-113	17	36	
2,4,5-Trichlorophenol	1.26	0.784	mg/kg	1.57	ND	80	41-119	11	37	
urrogate: 2,4,6-Tribromophenol	*1.24*		*mg/kg*	*1.58*		*78*	*21-125*			
urrogate: Phenol-d5	*1.27*		*mg/kg*	*1.58*		*80*	*33-109*			
Surrogate: 2-Fluoraphenol	*1.02*		*mg/kg*	*1.58*		*65*	*26-105*			

Del Mar Analytical - Phoenix
Kiera Hunter
roject Manager

SVL Analytical
P O Box 929
Kellogg, ID 83837-0929
Attention: Chris Meyer

Project ID: 123310

Report Number: PPF0515

Sampled: 06/09/06
Received: 06/16/06

DATA QUALIFIERS AND DEFINITIONS

ND	Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
RPD	Relative Percent Difference

Del Mar Analytical - Phoenix
Kiera Hunter
roject Manager

SVL Analytical
P O Box 929
Kellogg, ID 83837-0929
Attention: Chris Meyer

Project ID: 123310

Report Number: PPF0515

Sampled: 06/09/06
Received: 06/16/06

Certification Summary

Del Mar Analytical - Phoenix

Method	Matrix	Nelac	Arizona
EPA 8270C	Soil		

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at www.testamericainc.com

Subcontracted Laboratories

TestAmerica Analytical - Nashville *Arizona Cert #AZ0473*
2960 Foster Creighton Drive - Nashville, TN 37204
Method Performed: SW846 8270C
Samples: PPF0515-01RE1, PPf0515-02RE1, PPf0515-03RE1, PPf0515-04RE1, PPf0515-05RE1, PPf0515-06RE1

Cooler temp 5.5 6·13·06 2:10 RS

CHAIN OF CUSTODY RECORD

Page 3 of 3

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

FOR SVL USE ONLY
SVL JOB # 123310
TEMP on Receipt:

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other

Report to Company: Geomatrix
Contact: Sandra Lorenzo
Address: 10670 White Rock Rd
Ste 100
Rancho Cordova, CA 95670
Phone Number: (916) 636-3200
FAX Number: (916) 636-3208
E-mail: slorenzo@geomatrix.com

Invoice Sent To: Same
Contact:
Address:
Phone Number:
FAX Number:
PO#:

Project Name: SPI-Brunswick
Sampler's Signature:

Indicate State of sample origination: CA

USACE? ☐ Yes ☐ No

Sample ID: Please take care to distinguish between:
1 and I
2 and Z
5 and S
Ø and O
Thanks!

	Sample ID	Collection			Misc.		Preservative(s)							Analyses Required										Rush Instructions (Days)	Comments
		Date	Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO_3 Filtered	HNO_3 Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify) ice	PCP & TCP by 8270 mod											
1	SB-1	6·9·06	0828	ml	3	1							X	X											PCP = Pentachlorophenol
2	SB-2	↓	0841	ml	3	1							X	X											TCP = Trichlorophenol
3	SB-3		0849	ml	3	1							X	X											
4	SB-4		0856	ml	3	1							X	X											
5	SB-6		0901	ml	3	1							X	X											
6	SB-7		0905	ml	3	1							X	X											
7	~~SB-6~~				~~3~~	~~1~~							~~X~~	~~X~~											
8													~~X~~	~~X~~											
9																									
10																									

Relinquished by: Date: 6/12/06 Time: 1500 Received by: Robin Stribling Date: 6·13·06 Time: 2:10
Relinquished by: Date: Time: Received by: Date: Time:

* Sample Reject: ☐ Return ☐ Dispose ☒ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 9/05

SVL ANALYTICAL, INC. **REPORT OF ANALYTICAL RESULTS**

One Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT:

Sample Receipt: 6/13/06
Report Date: 6/27/06

Page 1 of 3
SVL JOB: 123311

SVL ID	CLIENT SAMPLE ID	Ag 6010B	As 6010B	Ba 6010B	Be 6010B	Cd 6010B	Co 6010B	Cr 6010B	Cu 6010B
W513588	SEEP-1 ^D 6/07/06	<0.0050mg/L	<0.025mg/L	0.0264mg/L	<0.0020mg/L	<0.0020mg/L	<0.0060mg/L	<0.0060mg/L	<0.010mg/L
W513589	WOLF CREEK-DG ^D 6/07/06	<0.0050mg/L	<0.025mg/L	0.0458mg/L	<0.0020mg/L	0.0021mg/L	<0.0060mg/L	<0.0060mg/L	<0.010mg/L
W513590	WOLF CREEK-UG ^D 6/07/06	<0.0050mg/L	<0.025mg/L	0.0483mg/L	<0.0020mg/L	<0.0020mg/L	<0.0060mg/L	<0.0060mg/L	<0.010mg/L
W513591	TP-7A ^D 6/08/06	<0.0050mg/L	<0.025mg/L	0.0356mg/L	<0.0020mg/L	<0.0020mg/L	<0.0060mg/L	<0.0060mg/L	<0.010mg/L
W513592	MW-1 ^D 6/08/06	<0.0050mg/L	<0.025mg/L	0.0403mg/L	<0.0020mg/L	<0.0020mg/L	<0.0060mg/L	<0.0060mg/L	<0.010mg/L
W513593	MW-4 ^D 6/08/06	<0.0050mg/L	<0.025mg/L	0.0625mg/L	<0.0020mg/L	<0.0020mg/L	<0.0060mg/L	<0.0060mg/L	<0.010mg/L
W513594	MW-6 ^D 6/08/06	<0.0050mg/L	<0.025mg/L	0.0053mg/L	<0.0020mg/L	<0.0020mg/L	<0.0060mg/L	<0.0060mg/L	<0.010mg/L
W513595	MW-7 ^D 6/08/06	<0.0050mg/L	<0.025mg/L	0.0511mg/L	<0.0020mg/L	<0.0020mg/L	<0.0060mg/L	<0.0060mg/L	<0.010mg/L
W513596	TP-6B ^D 6/08/06	<0.0050mg/L	5.89mg/L	0.0656mg/L	<0.0020mg/L	<0.0020mg/L	0.0126mg/L	<0.0060mg/L	<0.010mg/L
W513597	MW-3 ^0 6/08/06	<0.0050mg/L	<0.025mg/L	0.229mg/L	<0.0020mg/L	<0.0020mg/L	<0.0060mg/L	<0.0060mg/L	<0.010mg/L
W513598	TP-8B ^0 6/09/06	<0.0050mg/L	<0.025mg/L	0.0270mg/L	<0.0020mg/L	<0.0020mg/L	<0.0060mg/L	<0.0060mg/L	<0.010mg/L
W513599	TP-11B ^D 6/12/06	<0.0050mg/L	<0.025mg/L	0.0766mg/L	<0.0020mg/L	<0.0020mg/L	<0.0060mg/L	<0.0060mg/L	<0.010mg/L

Certificate: CA NO. 2080
AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

Reviewed By: Kirby Gray Date: 06/27/2006

SVL ANALYTICAL, INC. REPORT OF ANALYTICAL RESULTS

One Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT:

Sample Receipt: 6/13/06
Report Date: 6/27/06

Page 2 of 3
SVL JOB: 123311

SVL ID	CLIENT SAMPLE ID	Mo 6010B	Ni 6010B	Pb 6010B	Sb 6010B	Se 6010B	Tl 6010B	V 6010B	Zn 6010B
W513588	SEEP-1 ^D 6/07/06	<0.008mg/L	<0.010mg/L	<0.0075mg/L	<0.02mg/L	<0.04mg/L	<0.015mg/L	<0.0050mg/L	<0.010mg/L
W513589	WOLF CREEK-DG ^D 6/07/06	<0.008mg/L	<0.010mg/L	<0.0075mg/L	<0.02mg/L	<0.04mg/L	<0.015mg/L	<0.0050mg/L	<0.010mg/L
W513590	WOLF CREEK-UG ^D 6/07/06	<0.008mg/L	<0.010mg/L	<0.0075mg/L	<0.02mg/L	<0.04mg/L	<0.015mg/L	<0.0050mg/L	<0.010mg/L
W513591	TP-7A ^D 6/08/06	<0.008mg/L	<0.010mg/L	<0.0075mg/L	<0.02mg/L	<0.04mg/L	<0.015mg/L	<0.0050mg/L	<0.010mg/L
W513592	MW-1 ^D 6/08/06	<0.008mg/L	<0.010mg/L	<0.0075mg/L	<0.02mg/L	<0.04mg/L	<0.015mg/L	<0.0050mg/L	<0.010mg/L
W513593	MW-4 ^D 6/08/06	<0.008mg/L	<0.010mg/L	<0.0075mg/L	<0.02mg/L	<0.04mg/L	<0.015mg/L	<0.0050mg/L	<0.010mg/L
W513594	MW-6 ^D 6/08/06	<0.008mg/L	<0.010mg/L	<0.0075mg/L	<0.02mg/L	<0.04mg/L	<0.015mg/L	<0.0050mg/L	<0.010mg/L
W513595	MW-7 ^D 6/08/06	<0.008mg/L	<0.010mg/L	<0.0075mg/L	<0.02mg/L	<0.04mg/L	<0.015mg/L	<0.0050mg/L	<0.010mg/L
W513596	TP-6B ^D 6/08/06	<0.008mg/L	<0.010mg/L	<0.0075mg/L	<0.02mg/L	<0.04mg/L	<0.015mg/L	<0.0050mg/L	<0.010mg/L
W513597	MW-3 ^0 6/08/06	<0.008mg/L	<0.010mg/L	<0.0075mg/L	<0.02mg/L	<0.04mg/L	<0.015mg/L	<0.0050mg/L	<0.010mg/L
W513598	TP-8B ^0 6/09/06	<0.008mg/L	<0.010mg/L	<0.0075mg/L	<0.02mg/L	<0.04mg/L	<0.015mg/L	<0.0050mg/L	<0.010mg/L
W513599	TP-11B ^0 6/12/06	<0.008mg/L	<0.010mg/L	<0.0075mg/L	<0.02mg/L	<0.04mg/L	<0.015mg/L	<0.0050mg/L	<0.010mg/L

Certificate: CA NO. 2080
AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

Reviewed By: Kirby Gray

Date: 06/27/2006

SVL ANALYTICAL, INC. REPORT OF ANALYTICAL RESULTS

One Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83837-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

CLIENT : GEOMATRIX
PROJECT:

Sample Receipt: 6/13/06
Report Date: 6/27/06

Page 3 of 3
SVL JOB: 123311

SVL ID	CLIENT SAMPLE ID	Hg 7470A
W513588	SEEP-1 ^D 6/07/06	<0.00020mg/L
W513589	WOLF CREEK-DG ^D 6/07/06	<0.00020mg/L
W513590	WOLF CREEK-UG ^D 6/07/06	<0.00020mg/L
W513591	TP-7A ^D 6/08/06	<0.00020mg/L
W513592	MW-1 ^D 6/08/06	<0.00020mg/L
W513593	MW-4 ^D 6/08/06	<0.00020mg/L
W513594	MW-6 ^D 6/08/06	<0.00020mg/L
W513595	MW-7 ^D 6/08/06	<0.00020mg/L
W513596	TP-6B ^D 6/08/06	<0.00020mg/L
W513597	MW-3 ^D 6/08/06	<0.00020mg/L
W513598	TP-8B ^D 6/09/06	<0.00020mg/L
W513599	TP-11B ^D 6/12/06	<0.00020mg/L

Certificate: CA NO. 2080
AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

Reviewed By: Kirby Gray Date: 06/27/2006

VL ANALYTICAL, INC.

Quality Control Report
Part I Prep Blank and Laboratory Control Sample

Client :GEOMATRIX

SVL JOB No: 123311

Analyte	Method	Matrix	Units	Prep Blank	LCS		LCS %R	Analysis Date
					True	Found		
Silver	6010B	WATER	mg/L	<0.0050	0.0500	0.0513	102.6	6/26/06
Arsenic	6010B	WATER	mg/L	<0.025	1.00	1.02	102.0	6/26/06
Barium	6010B	WATER	mg/L	<0.0020	1.00	1.04	104.0	6/26/06
Beryllium	6010B	WATER	mg/L	<0.0020	1.00	1.01	101.0	6/26/06
Cadmium	6010B	WATER	mg/L	<0.0020	1.00	1.02	102.0	6/26/06
Cobalt	6010B	WATER	mg/L	<0.0060	1.00	1.01	101.0	6/26/06
Chromium	6010B	WATER	mg/L	<0.0060	1.00	1.01	101.0	6/26/06
Copper	6010B	WATER	mg/L	<0.010	1.00	0.983	98.3	6/26/06
Molybdenum	6010B	WATER	mg/L	<0.008	1.00	1.03	103.0	6/26/06
Nickel	6010B	WATER	mg/L	<0.010	1.00	0.975	97.5	6/26/06
Lead	6010B	WATER	mg/L	<0.0075	1.00	1.05	105.0	6/26/06
Antimony	6010B	WATER	mg/L	<0.02	1.00	1.03	103.0	6/26/06
Selenium	6010B	WATER	mg/L	<0.04	1.00	1.09	109.0	6/26/06
Thallium	6010B	WATER	mg/L	<0.015	1.00	1.05	105.0	6/26/06
Vanadium	6010B	WATER	mg/L	<0.0050	1.00	1.04	104.0	6/26/06
Zinc	6010B	WATER	mg/L	<0.010	1.00	1.02	102.0	6/26/06
Mercury	7470A	WATER	mg/L	<0.00020	0.00500	0.00507	101.4	6/14/06

LEGEND:

LCS = Laboratory Control Sample

LCS %R = LCS Percent Recovery

N/A = Not Applicable

Quality Control Report
Part II Duplicate and Spike Analysis

Client :GEOMATRIX

SVL JOB No: 123311

				QC SAMPLE ID		Duplicate or MSD			Matrix Spike			Analysis
Test	Method	Mtx		Units	Result	Found		RPD%	Result	SPK ADD	%R	Date
g	6010B	W	1	mg/L	<0.0050	0.0515	M	1.2	0.0509	0.0500	101.8	6/26/06
As	6010B	W	1	mg/L	<0.025	1.01	M	0.0	1.01	1.00	101.0	6/26/06
Ba	6010B	W	1	mg/L	0.0264	1.05	M	0.9	1.06	1.00	103.4	6/26/06
Be	6010B	W	1	mg/L	<0.0020	1.02	M	2.0	1.00	1.00	100.0	6/26/06
Cd	6010B	W	1	mg/L	<0.0020	1.01	M	1.0	1.02	1.00	102.0	6/26/06
Co	6010B	W	1	mg/L	<0.0060	1.01	M	0.0	1.01	1.00	101.0	6/26/06
Cr	6010B	W	1	mg/L	<0.0060	1.00	M	0.1	0.999	1.00	99.9	6/26/06
u	6010B	W	1	mg/L	<0.010	0.967	M	1.8	0.985	1.00	98.5	6/26/06
Mo	6010B	W	1	mg/L	<0.008	1.03	M	1.0	1.02	1.00	102.0	6/26/06
Ni	6010B	W	1	mg/L	<0.010	1.00	M	2.5	0.975	1.00	97.5	6/26/06
b	6010B	W	1	mg/L	<0.0075	1.02	M	1.9	1.04	1.00	104.0	6/26/06
b	6010B	W	1	mg/L	<0.02	1.03	M	0.0	1.03	1.00	103.0	6/26/06
Se	6010B	W	1	mg/L	<0.04	1.11	M	0.0	1.11	1.00	111.0	6/26/06
Tl	6010B	W	1	mg/L	<0.015	1.03	M	1.0	1.04	1.00	104.0	6/26/06
	6010B	W	1	mg/L	<0.0050	1.03	M	0.0	1.03	1.00	103.0	6/26/06
Zn	6010B	W	1	mg/L	<0.010	1.02	M	0.0	1.02	1.00	102.0	6/26/06
Hg	7470A	W	1	mg/L	<0.00020	0.00101	M	1.0	0.00102	0.0010	102.0	6/14/06

LEGEND:

RPD% = (|SAM - DUP|/((SAM + DUP)/2) * 100) UDL = Both SAM & DUP not detected. *Result or *Found: Interference required dilution.

RPD% = (|SPK - MSD|/((SPK + MSD)/2) * 100) M in Duplicate/MSD column indicates MSD.

SPIKE ADD column, A = Post Digest Spike; %R = Percent Recovery N/A = Not Analyzed; R > 4S = Result more than 4X the Spike Added

QC limits for MS recoveries apply only if the spike is at least 1/4 the concentration of the analyte in the sample.

Control limits for the RPD apply only if the concentration of the analyte in the sample is at least five times the reporting limit.

QC Sample 1:   SVL SAM No.: 513588   Client Sample ID: SEEP-1   ^D

Cooler temp 5.5 6·13·06 2:10 RS

CHAIN OF CUSTODY RECORD

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Page 1 of 3

FOR SVL USE ONLY
SVL JOB #
123311
TEMP on Receipt

Report to Company: [illegible]
Contact: [illegible]
Address: 10670 White Rock Rd
Ste 100
Rancho Cordova, CA 95670
Phone Number: (916) 636-3200
FAX Number: (916) 632-3208
E-mail:

Invoice Sent To: Same
Contact:
Address:
Phone Number:
FAX Number:
PO#:

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other

Project Name: [illegible]
Sampler's Signature:

Indicate State of sample origination:

USACE? ☐ Yes ☐ No

	Sample ID	Collection Date	Collection Time	Collected by: (Init.)	Misc. Matrix Type (From Table 1)	Misc. No. of Containers	Unpreserved	HNO_3 Filtered	HNO_3 Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify) ice	Analyses Required: [illegible]										* Rush Instructions (Days)	Comments
1	Seep-1	6.7.06	1525 ml		1	1		X					X	X											
2	Wolf Creek-DG	↓	1712 ml		1	1		X					X	X											
3	Wolf Creek-UG	↓	1733 ml		1	1		X					X	X											
4	TR-7A	6.8.06	0735 ml		1	1		X					X	X											
5	MW-1	↓	0918 ml		1	1		X					X	X											
6	MW-4		1450 ml		1	1		X					X	X											
7	MW-6		1553 ml		1	1		X					X	X											
8	MW-7		1608 ml		1	1		X					X	X											
9	TR-6B		1630 ml		1	1		X					X	X											
10	MW-3	↓	1730 ml		1	1		X					X	X											

Comments: time on sample label reads 7:44 RS 6·13·06 (for sample 4, marked *)

Please take care to distinguish between:
1 and I
2 and Z
5 and S
Ø and O

Thanks!

Relinquished by: Date: 6/12/06 Time: 1500 Received by: Robert Stribling Date: 6·13·06 Time: 2:10
Relinquished by: Date: Time: Received by: Date: Time:

* Sample Reject: ☐ Return ☐ Dispose ☒ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

cooler temp 5.5 6·13·06 2:10 RS

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CHAIN OF CUSTODY RECORD

Page 2 of 3

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FOR SVL USE ONLY
SVL JOB # 123311
TEMP on Receipt:

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other

Report to Company: GEOMATRIX CONSULTANTS
Contact: M. LAURENROTH
Address: 10670 WHITE ROCK RD SUITE 100
RANCHO CORDOVA CA, 95670
Phone Number: 916-636-3200
FAX Number: 916-636-3208
E-mail:

Invoice Sent To: Same
Contact:
Address:
Phone Number:
FAX Number:
PO#:

Project Name:
Sampler's Signature:

Indicate State of sample origination:

USACE? ☐ Yes ☐ No

Please take care to distinguish between:
1 and I
2 and Z
5 and S
Ø and O
Thanks!

	Sample ID	Collection Date	Collection Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO_3 Filtered	HNO_3 Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify) ice	CAM 17 metals EPA 6010B										Rush Instructions (Days)	Comments
* 1	TP-6B	6-9-06	0930	BR	1	1		X					X	X										*	Sample ID reads TP-8B RS 6·13·06
2	TP-11B	6/10/06	0917	BR	1	1		X					X	X											
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									

Relinquished by: Date: 6/13/06 Time: 1500 Received by: Robin Stribling Date: 6·13·06 Time: 2:10
Relinquished by: Date: Time: Received by: Date: Time:

* Sample Reject: ☐ Return ☐ Dispose ☒ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 9/05

SVL ANALYTICAL

CHAIN OF CUSTODY RECORD

Page 2 of 3

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FOR SVL USE ONLY
SVL JOB # 123311
TEMP on Receipt:

Table 1. -- Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other

Report to Company: Geomatrix Consultants
Contact: M. Lavzoroni
Address: 10670 White Rock RD Suite 100
Rancho Cordova CA, 95670
Phone Number: 916-636-3200
FAX Number: 916-636-3208
E-mail:

Invoice Sent To: Same
Contact:
Address:
Phone Number:
FAX Number:
PO#:

Project Name:
Sampler's Signature:

Indicate State of sample origination:
USACE? ☐ Yes ☐ No

Please take care to distinguish between:

1 and I
2 and Z
5 and S
Ø and O

Thanks!

	Sample ID	Collection Date	Collection Time	Collected by: (Init.)	Misc. Matrix Type (From Table 1)	Misc. No. of Containers	Preservative(s) Unpreserved	HNO_3 Filtered	HNO_3 Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify) ice	Analyses Required [illegible]										Rush Instructions (Days)	Comments
1	TR-6888	6-21-06	0930	BR	2	1		X					X	X											
2	TR-116	6/21/06	0915	BR	1	1		X					X	X											
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									

Relinquished by:	Date: 6/21/06	Time: 1500	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

* Sample Reject: ☐ Return ☐ Dispose ☒ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 9/05

SVL ANALYTICAL, INC.
One Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83827-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

REPORT OF ANALYTICAL RESULTS

CLIENT : GEOMATRIX
PROJECT:

Sample Receipt: 7/07/06
Report Date: 7/20/06

Page 1 of 1
SVL JOB: 123842

SVL ID	CLIENT SAMPLE ID		As 7060A
E519513	TP-1B	6/07/06	0.24mg/L E
E519514	TP-1A	6/08/06	8mg/L E
E519515	TP-4A	6/08/06	10mg/L E
E519516	TP-4B	6/08/06	6mg/L E
E519517	TP-5A	6/09/06	9mg/L E
E519518	TP-5B	6/08/06	0.16mg/L E

SVL not certified by CA for STLC Extraction

Samples with SVL ID prefix 'E' were extracted according to STLC

Certificate: CA NO. 2080
AZ: AZ0538 CA: NO. 208D CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C126B

Reviewed By: For: Kirby Gray by Date: 7/20/06

VL ANALYTICAL, INC.

Quality Control Report
Part I Prep Blank and Laboratory Control Sample

Client :GEOMATRIX

SVL JOB No: 123842

Analyte	Method	Matrix	Units	Prep Blank	True—LCS	—Found	LCS %R	Analysis Date
Arsenic	7060A	ESOIL	mg/L Ext	<0.003	0.025	0.025	100.0	7/19/06

LEGEND:

LCS = Laboratory Control Sample

LCS %R = LCS Percent Recovery

N/A = Not Applicable

7/20/06 14:14

VL ANALYTICAL, INC.

Quality Control Report
Part II Duplicate and Spike Analysis

Client :GEOMATRIX

SVL JOB No: 123842

				QC SAMPLE ID		Duplicate or		MSD	Matrix Spike			Analysis
Test	Method	Mtx		Units	Result	Found		RPD%	Result	SPK ADD	%R	Date
s	7060A	E	1	mg/L Ex	0.24	0.27	M	0.0	0.27	0.0250	120.0	7/19/06

LEGEND:

RPD% = (|SAM - DUP|/((SAM + DUP)/2) * 100) UDL = Both SAM & DUP not detected. *Result or *Found: Interference required dilution.

RPD% = (|SPK - MSD|/((SPK + MSD)/2) * 100) M in Duplicate/MSD column indicates MSD.

SPIKE ADD column, A = Post Digest Spike; %R = Percent Recovery N/A = Not Analyzed; R > 4S = Result more than 4X the Spike Added

QC limits for MS recoveries apply only if the spike is at least 1/4 the concentration of the analyte in the sample.

Control limits for the RPD apply only if the concentration of the analyte in the sample is at least five times the reporting limit.

QC Sample 1: SVL SAM No.: 519513 Client Sample ID: TP-1B

[illegible]

~~123392~~ [illegible]

SVL ANALYTICAL

CHAIN OF CUSTODY RECORD

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Page 1 of 5

FOR SVL USE ONLY
SVL JOB #
TEMP on Receipt: [illegible]

Report to Company: Geomatrix
Contact: [illegible]
Address: 10670 White Rock Rd
Ste 100
Rancho Cordova, CA 95670
Phone Number: (916) 636-3200
FAX Number: (916) 636-3208
E-mail: [illegible]

Invoice Sent To: Same
Contact:
Address:
Phone Number:
FAX Number:
PO#:

Table 1. — Matrix Type
1 = Surface Water, 2 = Ground Water
[✓ 3 = Soil/Sediment], 4 = Rinsate, 5 = Oil
6 = Waste, [✓ 7 = Other] ROCK

Project Name: SPI - Brunswick
Sampler's Signature: Brian Rogers

Indicate State of sample origination: CA

USACE? ☐ Yes ☐ No

Please take care to distinguish between:
1 and I
2 and Z
5 and S
Ø and O
Thanks!

	Sample ID	Date	Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO₃ Filtered	HNO₃ Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify)	[illegible]	[illegible]	[illegible]	DI WET As (GFAA 7060)	TOTAL METALS (EPA 6010B)						Rush Instructions (Days)
1	[illegible]*	6-7-06	[illegible]	Br	7	1	X										X	[illegible]						
2	[illegible]*	6-7-06	[illegible]	Br			X																	
3	TP-1A*	6-8-06	1125	Br			X										X	[illegible]						
4	TP-2A*	6-7-06	1210	Br			X																	
5	TP-3A*	6-7-06	1421	Br			X																	
6	TP-3B*	6-7-06	1454	Br			X																	
7	TP-4A*	6-8-06	1436	Br			X										X	[illegible]						
8	TP-4B*	6-8-06	1202	Br			X										X	[illegible]						
9	TP-5A*	6-9-06	0755	Br			X										X	[illegible]						
10	TP-5B*	6-8-06	1525	Br			X										X	[illegible]						

Comments

* Place samples on hold at lab

• Analyze noted samples for STLC w/ As by 7060 GFAA...
Cruger
7/7/06

Relinquished by: Brian Rogers Date: 6-13-06 Time: 1100 Received by: Date: Time:
Relinquished by: Date: Time: Received by: Date: Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 9/05

Chris Meyer

• See attached COC

From: Mandy Lauenroth [mlauenroth@geomatrix.com]
Sent: Thursday, July 06, 2006 5:30 PM
To: Chris Meyer
Subject: Re: Brunswick analysis request and sample notification

Hi Chris,

— As by GFAA....

We need to request DI WET As analysis on a few more rock samples (6 total) collected from our Brunswick Site. Please run DI WET analysis on the following samples:

Sample ID	Time / Date collected
TP-1B	0940 / 6-7-06
TP-1A	1125 / 6-8-06
TP-4A	1430 / 6-8-06
TP-4B	1202 / 6-8-06
TP-5A	0755 / 6-9-06
TP-5B	1525 / 6-8-06

See the attached COC amended with the above changes.

We also plan to collect a few more soil samples for metals analysis. We are still deciding whether we want to run these samples for CAM 17 metals or just total As, but plan to send these samples to SVL by Tuesday of next week. Feel free to call me at (916) 853-8909 with any questions.

Thanks!
Mandy

Mandy A. Lauenroth, R.E.A.
Project Geologist
Geomatrix Consultants, Inc.
10670 White Rock Road, Suite 100
Rancho Cordova, CA 95670
Main Phone: 916-636-3200
Fax: 916-636-3208
Cell: (916) 302-6325
mlauenroth@geomatrix.com

SVL ANALYTICAL, INC.
One Government Gulch ▪ P.O. Box 929 ▪ Kellogg, Idaho 83827-0929 ▪ Phone: (208)784-1258 ▪ Fax: (208)783-0891

REPORT OF ANALYTICAL RESULTS

CLIENT : GEOMATRIX
PROJECT:

Sample Receipt: 7/24/06
Report Date: 7/27/06

Page 1 of 1
SVL JOB: 124167

SVL ID	CLIENT SAMPLE ID	As 7060A
W523040	SEEP-1 ^D 6/07/06	<0.003mg/L
W523041	WOLF CREEK-DG ^D 6/07/06	<0.003mg/L
W523042	WOLF CREEK-UG ^D 6/07/06	<0.003mg/L
W523043	TP-7A ^D 6/08/06	<0.003mg/L
W523044	MW-1 ^D 6/08/06	<0.003mg/L
W523045	MW-4 ^D 6/08/06	<0.003mg/L
W523046	MW-6 ^D 6/08/06	<0.003mg/L
W523047	MW-7 ^D 6/08/06	<0.003mg/L
W523048	TP-6B ^D 6/08/06	7.6mg/L
W523049	MW-3 ^D 6/08/06	<0.003mg/L
W523050	TP-8B ^D 6/09/06	0.004mg/L
W523051	TP-11B ^D 6/12/06	<0.003mg/L

Certificate: CA NO. 2080
AZ: AZ0538 CA: NO. 2080 CO: 9/1/05 ID: ID00019 MT: 6/6/05 NV: 8/1/05 WA: C1268

Reviewed By: Kirby Gray Date: 07/27/2006

VL ANALYTICAL, INC.

Quality Control Report
Part I Prep Blank and Laboratory Control Sample

Client :GEOMATRIX

SVL JOB No: 124167

Analyte	Method	Matrix	Units	Prep Blank	True—LCS	—Found	LCS %R	Analysis Date
Arsenic	7060A	WATER	mg/L	<0.003	0.025	0.023	92.0	7/25/06

LEGEND:

LCS = Laboratory Control Sample

LCS %R = LCS Percent Recovery

N/A = Not Applicable

VL ANALYTICAL, INC.

Quality Control Report
Part II Duplicate and Spike Analysis

lient :GEOMATRIX

SVL JOB No: 124167

			QC SAMPLE ID		Duplicate or	MSD	Matrix Spike			Analysis
Test	Method	Mtx	Units	Result	Found	RPD%	Result	SPK ADD	%R	Date
s	7060A	W	1 mg/L	<0.003	<0.003	UDL	0.023	0.0250	92.0	7/25/06
s	7060A	W	2 mg/L	0.004	N/A	N/A	0.028	0.0250	96.0	7/25/06

EGEND:
PD% = (|SAM - DUP|/((SAM + DUP)/2) * 100) UDL = Both SAM & DUP not detected. *Result or *Found: Interference required dilution.
RPD% = (|SPK - MSD|/((SPK + MSD)/2) * 100) M in Duplicate/MSD column indicates MSD.
PIKE ADD column, A = Post Digest Spike; %R = Percent Recovery N/A = Not Analyzed; R > 4S = Result more than 4X the Spike Added
C limits for MS recoveries apply only if the spike is at least 1/4 the concentration of the analyte in the sample.
ontrol limits for the RPD apply only if the concentration of the analyte in the sample is at least five times the reporting limit.
QC Sample 1: SVL SAM No.: 523040 Client Sample ID: SEEP-1 ^D
C Sample 2: SVL SAM No.: 523050 Client Sample ID: TP-8B ^D

7/27/06 13:57

Phase I Environmental Site Assessment
Round-Hole and New Brunswick Mine Sites
Idaho-Maryland Mining Corporation
Grass Valley, CA

March 2007

Project No. 27-016

Prepared for:

Idaho-Maryland Mining Corporation
179 Clydesdale Court
Grass Valley, California 95945

Prepared by:

ERRG

Engineering/Remediation Resources Group, Inc.
185 Mason Circle, Suite A
Concord, California 94520
(925) 969-0750

Phase I Environmental Site Assessment
Round Hole and New Brunswick Mine Sites
Idaho-Maryland Mining Corporation
Grass Valley, CA

Submitted by:

Engineering/Remediation Resources Group, Inc.

Signature
Michael H. Friedman, REA
Project Manager

3/23/07
Date

CERTIFICATION PAGE

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental professional as defined in §312.10 of 40 CFR 312. I have the specific qualifications, based on education, training, and experience, to assess a property of the nature, history, and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

MICHAEL H. FRIEDMAN
No. 05583
Expires: 6/30/07

Michael H. Friedman. R.E.A..
Registered Environmental Assessor #05588

Table of Contents

List of Figures

List of Tables

List of Appendices

Acronyms and Abbreviations

APN	Assessor's Parcel Number
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
Bgs	below ground surface
CSMB	California State Mining Bureau
DOI	U.S. Department of the Interior
DTSC	Department of Toxic Substances Control
EDR	Environmental Data Resources, Inc.
EMJ	Engineering and Mining Journal
ERRG	Engineering/Remediation Resources Group, Inc.
ESA	Environmental Site Assessment
IMMC	Idaho-Maryland Mining Corporation
mg/kg	milligrams per kilogram
mg/l	milligrams per liter
msl	mean sea level
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PEA	Preliminary Site Assessment
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental concern
RWQCB	Regional Water Quality Control Board
SMBRP	Site Mitigation and Brownfields Reuse Program
SWRCB	State Water Resources Control Board
USDASCS	U.S. Department of Agricultural Soil Conservation Service

Acronyms and Abbreviations (continued)

USGS	U.S. Geological Survey
UST	underground storage tank
WAP	Wildan Associates/ PMC

Section 1. Introduction

Engineering/Remediation Resources Group, Inc. (ERRG) has prepared this Phase I Environmental Site Assessment (ESA) report for the Idaho-Maryland Mining Corporation (IMMC). This ESA was conducted for two individual properties: one parcel that includes the historic Round Hole Mine shaft and a group of parcels that include the historic New Brunswick Mine. Both properties became part of the Idaho-Maryland Mine and are located in Grass Valley, California (Figure 1).

1.1. PURPOSE

The goal of the ESA is to identify recognized environmental conditions (RECs) associated with the current and historical uses of the subject properties to facilitate permitting requirements to recommence mining operations at both properties. A REC, as applied in the scope of this work, "is the presence or likely presence of any *hazardous substance* or *petroleum product* on a *property* under conditions that indicate an existing release, a past release or a material threat of release into structures on the *property* or into the ground, groundwater or surface water of the *property*" (American Society for Testing Materials (ASTM) E 1527).

1.2. DETAILED SCOPE-OF-SERVICES

The scope of work included: a review of regulatory and government agency databases, city directories, U.S. Geological Survey (USGS) topographic maps and aerial photographs; a site visit; and an interviews with current IMMC representatives familiar with the property. This ESA was conducted in accordance with: 1) the ASTM guidance document "Standard Practice E-1527 for Environmental Site Assessments: Phase I Environmental Site Assessment Process" (ASTM E-1527, 2005); and 2) Proposal for Phase I Environmental Site Assessment for The New Brunswick and Round Hole Sites Grass Valley, California (ERRG, 2007).

The scope of this ESA did not include evaluations for possible natural hazards such as radon gas, methane gas or the potential for earthquake or flood damage.

The subsequent sections of this ESA report are organized as follows:

- Section 2 – Pr3operty Description and History
- Section 3 – User Provided Information
- Section 4 – Records Review
- Section 5 – Site Reconnaissance

- Section 6 – Findings and Opinions
- Section 7 – Data Gaps and Deviations
- Section 8 – Conclusions
- Section 9 – References

Appendix A provides the qualifications of the environmental professionals that performed and prepared this ESA. Appendix B presents photographs from the site visits. Appendix C presents historical research documentation. Appendix D presents interview documentation. Appendix E presents the regulatory database review.

1.3. LIMITATIONS AND EXCEPTIONS

The observations and conclusions presented in this report are professional opinions based on the activities conducted and the information obtained during the ESA described herein. Opinions presented here apply only to the observed Site conditions existing at the time of the assessment and cannot necessarily apply to Site conditions or changes of which the environmental assessor is not aware or has not had the opportunity to evaluate. Any conclusions drawn from this data rely on the integrity of the information available at the time of the assessment and from which an absolute determination of environmental risks cannot be made.

Section 2. Property Description and History

The following descriptions of the subject properties are based on reviews of site photographs, maps, and the site visits conducted on February 13 and 26, 2007. The subject properties are the historic Round Hole Mine shaft (Round Hole Property) and the historic New Brunswick Mine (New Brunswick Property), located in Grass Valley, California (Figure 1). The Round Hole Property is identified as Assessor's Parcel Number (APN) 09-690-30-000 and the New Brunswick Property is identified as APNs 09-630-37-000 and 09-630-39-000 (formerly 09-630-24-000, 09-630-27-000, 09-630-30-000, and 09-630-31-000). Subject property locations are presented in Figures 1 through 3.

2.1. SITE AND VICINITY GENERAL CHARACTERISTICS

The Round Hole Property and New Brunswick Property include former mine sites that have been inactive since the mid-1950's. This ESA was prepared to support the permit process to re-open the historic Idaho-Maryland Mine at both properties.

The Round Hole Property is an approximately triangular area consisting of 7.75 acres of forested land (Figure 2). The only man-made structures present on the property are the historic concrete shaft collar, hoist house foundation, a pile of drill core sections from creation of the mine shaft, remnants of the Idaho-Maryland Canal traversing the site from east to west, a small building foundation at the southern boundary of the property and power poles and lines along the southwest boundary. Adjacent properties are unoccupied forested land to the east, north and west and low density commercial development to the south across Whispering Pines Lane.

The New Brunswick Property is an oblong area, trending southeast to northwest along the south side of East Bennett Road and consists of 36.87 acres of grasslands, forest, and a graded area (Figure 3). The northern portion of the property is bisected by a parcel currently occupied by single family homes. Additional adjacent properties consist of low density residential housing to the north, unoccupied forested land to the west and south of the property, and graded land of a former lumber mill and mill pond to the east. Numerous adits and prospects were observed in the forested area south and west of the property. There are two distinct historic mine shafts at the New Brunswick Property: the New Brunswick Mine shaft located in the northeast portion of the property; and the Union Hill Mine shaft located in the northwest portion of the property. Man-made structures at the New Brunswick Mine shaft include a secured shaft collar constructed of concrete with a locked iron lid, ore waste silos adjacent to the shaft, two concrete slab foundations approximately 700 feet northwest of the shaft, a concrete foundation associated with the mill house, overhead power lines traversing from south to north across the property, and miscellaneous debris from the destruction of buildings. Remaining man-made structures at the Union Hill Mine shaft include a secured shaft collar constructed of concrete with an iron lid, a concrete foundation for a pelton wheel, and portions of the hoist house foundation.

There is an aboveground storage tank (AST) cradle located on the south side of East Bennett Road outside the property area. The AST cradle is adjacent to the north boundary, approximately 50 feet east of the entrance to the New Brunswick Mine shaft.

2.2. PHYSICAL SETTING

Current and historical topographic maps, aerial photographs, and soil and geologic databases were utilized to determine the general physical setting of the subject properties. All information was confirmed during site visits.

The Round Hole Property has a moderate slope to the northwest reaching a maximum elevation of 2,710 feet above mean sea level (msl) on the southern boundary of the property and a minimum elevation of 2,605 feet msl on the northern boundary. The U.S. Department of Agricultural Soil Conservation Service (USDASCS) data indicate the property is overlain by Cohasset Soil, a well-drained, Class B cobbly loam. Previous studies in the area have indicated there are no perennial streams in the immediate property vicinity.

The New Brunswick Property has an overall gradual slope to the northwest with an elevation along the South Fork Creek flood plain of 2,715 feet msl on the southeast boundary of the property and a minimum elevation of 2,605 feet msl on the northeast boundary. The New Brunswick Mine site is located on a small graded terrace, upslope to the north of South Fork Creek at 2,750 feet above msl. The USDASCS data indicate the property is overlain by Mariposa Soil, a well-drained, Class C gravelly loam.

2.2.1. Geology

The New Brunswick Property and Round Hole Property are located in the northern portion of the Sierra Nevada geomorphic province. This province includes the Sierra Nevada Mountain range and the broad foothills on the west slope. The province is bounded to the east by the Basin Range and to the west by the Great Valley geomorphic province. The Sierra Nevada Range is the result of millions of years of tectonic activity during which oceanic plates collided with and slid beneath the North American Plate. The basement of the Sierra Nevada Range is the Sierra Nevada batholith that was emplaced during the Mesozoic Era and subsequently uplifted in more recent geologic time. Rocks overlying and in contact with the batholith were folded, faulted, and metamorphosed as it was formed and later elevated (ESA, 2006).

There are four main rock units with exposures at the surface in the project area: The Mehrten Formation, Jurassic Hypabyssal Rock Formation, the Lake Crombie Complex Formation, and serpentinite rock (WAP, 1995).

The Mehrten Formation generally crowns the hilltops and ridge lines in the vicinity of the properties. It consists of Pliocene to Miocene andesitic mudflows and volcanic breccia and sediments.

Jurassic Hypabyssal Rock Formation is a Carboniferous to Upper Jurassic unit consisting of ophitic diabase and porphyrite. The ophitic diabase is a dark green to black, granular rock that grades to porphyritic rock containing phenocrysts of augite, plagioclase or hornblende. Much of the subsurface work of the mine is in the porphyritic rock. This formation comprises the valley floor along South Fork Creek, including the New Brunswick Mine.

The Lake Crombie Complex Formation is comprised of tuffs, flow breccia, and volcanic rocks associated with volcanic activity during the Jurassic period. Exposures of this unit are found upslope to the east of the New Brunswick Mine.

Serpentinite is typically grayish-green to black and can be cut by narrow veins of chrysotile asbestos. ERRG observed bedrock exposures and five-foot diameter cores of serpentinite at the Round Hole property and low grade serpentinite rocks as waste rock at the New Brunswick Property.

There are three known inactive faults on or adjacent to the New Brunswick Property: the 6-3 Fault on the property, the Idaho Fault immediately east of the property, and the Grass Valley Morehouse Fault immediately west of the property. None of these faults have had movement within the past 2 million years. The 6-3 fault traverses the eastern portion of the property with a strike of N10°W and dip of approximately 74° east. The Idaho Fault parallels the east boundary of the property and then curves to the northeast immediately past the north boundary of the property with an overall strike of N70°W and dips 65° to 70° southwest. The Grass Valley Morehouse Fault parallels the southwest boundary of the property at a horizontal distance of approximately 1,200 feet. It has a strike of approximately N50°W and dips 40° northeast (WAP, 1995).

2.2.2. Climate and Hydrology

General surface hydrology in the area flows from the higher elevations southeast of the subject properties to the northwest toward Grass Valley. No creeks were observed on the Round Hole property; however topography and small pools of water indicate intermittent streams may be present during the spring or periods of high rainfall.

South Fork Creek is approximately 300 feet southwest of the New Brunswick Mine shaft and follows the southwest boundary of the New Brunswick Property flowing from southeast to northwest. South Fork Creek is a perennial stream with a flood plain throughout the west portion of the New Brunswick Mine property. Grasses on the western portion of the property exhibited evidence of recent water flow in a northwest direction across the property.

A database search of water well records within one mile found only one public water supply well approximately 3/4 mile south of the New Brunswick Mine property, but no data was associated with the well.

2.3. PROPERTY HISTORY

Development in the Nevada County area began in 1848 with the California Gold Rush. Initial explorations consisted of placer mining in creeks and on hillsides that was quickly followed by quartz gold mining in 1850, primarily begun by George McKnight. Hydraulic mining began in the early to mid 1850's, which included construction of dams, flumes, and ditches to bring water to prospecting sites (WAP, 1995).

2.3.1. Round Hole Shaft

The Round Hole Mine shaft was initiated in 1935 as a test shaft for the 5-foot round core barrel being developed by Idaho-Maryland Mines Corporation. The bore hole was advanced to approximately 1,200 feet below ground surface (bgs) and was subsequently used for ventilation and access for men and equipment. An article regarding the core barrel and photos of the site from 1936 indicate the only structure at the site was a head frame used to raise and lower the core barrel (Engineering and Mining Journal (EMJ), 1936).

2.3.2. Union Hill Mine

Records indicate that ore from the Union Hill site was being worked in arrastras[1] in 1854. Historic documents indicate that a mill and hoist were erected at the site in 1865, and on June 26, 1866, James K. Byrne's claim for Union Hill Gold Quartz Mine was recorded. The mine was worked profitably until 1870 when it closed after reaching a depth of 300 feet bgs (California State Mining Bureau (CSMB), 1919).

The Union Hill Mine was reopened in 1900 and operated almost continuously until 1911. During this time the shaft was extended to 600 feet bgs. In 1914, it was reopened again by the San Francisco company, Gold Point Consolidated Mines, Inc., and was operated until 1919 (WAP, 1995). Between 1916 and 1918, tungsten-containing scheelite ore was also worked from the Tungsten vein at the Union Hill Mine (CSMB, 1944). By 1918, the shaft had been extended to 800 feet bgs, and a new hoist, air compressor, Cornish pump driven by a 12-foot pelton wheel, and a 20-stamp mill had been added to the mine. The mine was purchased by the Idaho-Maryland Mines Company shortly after its 1918 closure. The Metals Exploration Company assumed control of the Idaho-Maryland Mines Company holdings in 1919, including the Union Hill Mine. The 20-stamp mill was moved from the Union Hill Mine to the

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[1] A simple form of an arrastra is a circular rock-lined pit containing a center post with a long arm extended beyond the edge of the pit. A flat-bottomed drag stone was connected to the end of the long arm. The stone was slowly dragged in a circle by a horse, mule or person. Ore placed between the rock-lined floor and drag stone was crushed into a coarse powder which was treated with water and quicksilver mercury. The resulting slurry was moved to sluices (troughs) where the gold was recovered.

main Idaho-Maryland mine in 1920 as part of rehabilitation of the main Idaho-Maryland shaft operations (Wilden Associates/PMC (WAP), 1995).

Historic documents indicate that the surface operations at the Union Hill Mine were not reopened and the subsurface workings were included in the New Brunswick Mine operations. A historic photo of the Union Hill Mine shows numerous buildings in close proximity to each other over a large cleared area surrounding the mine shaft (Figure 4 and Appendix C).

2.3.3. New Brunswick Mine

The New Brunswick Mine shaft was started in September 1909 as an extension of the historic Brunswick Mine operations located 2,000 feet northeast of the new shaft. The site location was chosen in part because of its proximity to the Nevada County Narrow Gauge Railroad that passed immediately north of the proposed shaft location. A spur was added to the railroad that passed south of the shaft and terminated on the site. The shaft had a heavy inflow of water in 1910 when it reached 443 feet bgs. Equipment was not in place to dewater the shaft, and it remained closed until 1915 when a new steel head frame, a complete 20-stamp mill, and a cyanide plant were installed at the site. A cross-cut was dug from the old Brunswick Mine shaft to the new mine shaft to drain the water via pumps in the old Brunswick Mine shaft. (Turner, 1919).

The mine closed in 1918 after operating for a few years with intermittent profits. R.C. Turner's report on the mine in 1919 indicates that mine had reached 1,200 feet bgs and several corrugated metal buildings had been constructed at the site including: an office, an assay office, a hoist house a few feet south of the shaft, a mill building north of the shaft, a 22-foot by 51-foot galvanized iron carpenter shop west of the mill building, a 20-foot by 48-foot galvanized iron building equipped with a drying furnace west of the carpenter shop, a 22-foot by 92-foot galvanized iron blacksmith and machine shop southwest of the shaft, a 22-foot by 30-foot galvanized iron garage north of the furnace building, a 16-foot by 24-foot galvanized iron transformer house northeast of the garage, an 8-foot by 14-foot powder magazine southeast of the transformer house, and a 12-foot by 19-foot galvanized iron store house, and platform adjacent to the Nevada County Narrow Gauge Railroad spur (Figure 4). Equipment used in the hoist house included: 100 horse power General Electric induction motor, a Class P Ingersoll Rand compressor, and a horizontal air receiver. The mill contained 10-inch by 16-inch Blake ore crusher, three General Electric induction motors (20 horsepower, 75 horsepower, and 15 horsepower), twenty 1250-pound stamps, four suspended ore feeders, Johnston vanners, and an Empire cleanup pan. The galvanized iron transformer house contained three 50 kilowatt and three 100 kilowatt Westinghouse transformers (Turner, 1919).

The mine was dewatered in 1922 and was operated intermittently until 1927 when it was closed again (U.S. Department of Interior (DOI), 1941). Idaho-Maryland Consolidated Mines, Inc., the holding company of Idaho-Maryland Mines Company, had acquired 90 percent of the Brunswick Mine stock by the early 1930s and included the New Brunswick Mine shaft as part of the Idaho-Maryland Mine complex. Dewatering operations began at the New Brunswick Mine shaft in 1933 (DOI, 1941).

The core drilling techniques and equipment developed at the Round Hole mine shaft were implemented in the New Brunswick Mine in the late 1930's. Using the new technology the shaft was extended to 3,300 feet bgs (WAP, 1995). During the period from 1930 to 1940, a Marcy mill and a re-grind mill were installed that increased capacity to 600 tons in 24 hours.

In 1942, the War Production Board issued Order L-208, which ordered nonessential gold mines to close down, including the New Brunswick Mine. Mining at the Idaho-Maryland complex was resumed after the war, and the complex finally closed in 1956.

Structures have been dismantled over the past 50 years: the last effort occurred in 1997 when the concrete foundations remaining at the New Brunswick shaft site were broken up, crushed, and piled on the former lumber mill site to the east of the property. The soils from excavating the foundations, as well as some of the concrete, were re-graded and compacted (per the interview with IMMC).

Section 3. User Provided Information

3.1. INTERVIEWS

On February 13, 2007, ERRG conducted a group interview with IMMC employees, Mr. Robert Pease, Chief Geologist, Mr. William Watters, Senior Mining Engineer, and Mr. Grady Wilson, Field Technician for IMMC. An additional interview was conducted on February 21, 2007, with Ms. Patricia Nelson, Director of Environmental Affairs at IMMC. None of the IMMC employees interviewed were employed at the project properties during the period of active mining. Information from these interviews is included and referenced in the text of this report. Standard interview forms were used for each interview, and completed forms are included in Appendix D.

The following are summaries of information provided during the interviews with IMMC employees that are pertinent to suspect environmental concerns. During the interviews, the IMMC employees were asked if there has been storage, mixing or disposal of pesticide and if there are or have been monitoring wells at the properties. IMMC employees responded that there are no monitoring wells at the properties but the water in the mine has been tested for various analytes. Trace concentrations of pesticide were found in the New Brunswick Mine shaft but no contaminants were detected at concentrations greater than the maximum contaminant levels for drinking water. The 2006 data for the mine was still under review; however a summary was made available to ERRG at the time of the interview. The groundwater quality summary states that water samples were collected from the New Brunswick Mine shaft in January 2006 and were analyzed for volatile organic compounds, semi-volatile organic compounds, pesticides, petroleum hydrocarbons, inorganic constituents, trace ions/metals, bacteria, gases, isotopes, and aquatic bioassay. The summary report does not present the individual analyte data but does state the following:

- "Mine water meets the primary drinking water standards except turbidity (all samples) and coliform (detected in 1 sample)."
- "Heavy metals were either absent or detected at sufficiently low levels to meet drinking water standards."
- "Fish bioassays indicate 100% survival in all samples."
- "Sulfides were not detected."
- "Neutral pH levels indicate no acid mine drainage"

IMMC employees were also asked if any industrial drums, sacks, or chemicals were located or dumped on the property. ERRG was informed that there was an incident of vandalism at the New Brunswick shaft where hydrocarbon materials were apparently introduced into the mine shaft. The incident was reported to the sheriff's office, and the contaminants in the shaft water are being investigated. The results of the post-vandalism water quality testing are under review and were not available at the time of the interview.

The IMMC employees indicated that there had been water and power lines to the New Brunswick Property historically, including an 18-inch water line to the Union Hill Mine and a 9-inch water line to the New Brunswick Mine; however they did not know of any fuel lines associated with the properties.

Section 4. Records Review

A records review was conducted to examine documents that may assist in identifying RECs relative to the subject properties. Records included in the review pertain to the subject properties and properties within a minimum search distance from the properties to help assess the likelihood of hazardous substances or petroleum products migrating to the properties from off-site sources. The minimum search distances used for this ESA were as specified in the ASTM Standard 1527-05, unless otherwise stated.

4.1. STANDARD ENVIRONMENTAL RECORD SOURCES

ERRG contracted Environmental Data Resources, Inc. (EDR) to conduct a search of available environmental records on February 8, 2007, in accordance with ASTM 1527. Results of the EDR database reviews, including site names, addresses, and figures showing identified property locations, are compiled in the EDR report (Appendix E). The locations of some facilities in the databases were not mappable due to poor or inaccurate address information. Unmappable facilities were not observed to be within the ASTM minimum search distance of the subject property. Table 1 presents a summary of sites that appear in databases relevant to the subject properties.

The subject properties were not listed in any of the agency databases. Thirteen properties within the search radii were listed on at least one of the following agency databases:

Agency Database	
RCRA	Resource Conservation and Recovery Act (RCRA) list of generators of hazardous waste
RCRA - sqg	RCRA list of small quantity generators of hazardous waste
SWRCY	Statewide recycling facilities
UST	Underground Storage Tank (UST) Facilities that are active.
Hist-UST	Historical listing of UST sites.
SWEEPS UST	Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the State Water Resources Control Board (SWRCB) in the early 1980's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.
VCP	Voluntary Cleanup Program Properties are low threat level properties with either confirmed or unconfirmed releases with California Department of Toxic Substances Control (DTSC) over site

Agency Database	
ENVIROSTOR	The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) database identifies sites that have known contamination or sites for which there may be reasons to investigate further.
Response	Confirmed release sites where DTSC is involved in remediation; high priority or high potential risk
CA SLIC	California Spills, Leaks, Investigations and Cleanups managed by the State Water Resources Board with over site by the Regional Water Quality Control Board (RWQCB).

Inclusion on the RCRA, RCRA – sqg, SWRCY, UST, Hist UST, and SWEEPS UST lists indicates that the facility stored, handled, produced or used chemicals that may be harmful to the environment if released. It does not indicate a release has occurred. Sites on the VCP list have oversight by DTSC for investigations of potential or confirmed releases to the environment. Sites included on the ENVIROSTOR or Response lists have had a release of chemicals to the environment and investigations or further actions were required. Two sites within the database search radii had a current status of "no further action" or "case closed" indicating the regulating agency has determined there is no current impact from released substances.

The database search identifies sites with a radial horizontal distance without regard for topographic constraints such as ridges, streams, or gradients. There is one site with a reported release, described below, that is not separated by a natural stream or ridge, and is up-gradient from one of the subject properties.

Loma Rica Ranch - 12280 Loma Rica Drive - This property is listed as a voluntary cleanup of a release of metals to soil and surface water. The site contains evidence of past mining activities including approximately 2,000 cubic yards of angular waste rock in several piles next to two excavations, an abandoned mine shaft next to Wolf Creek, and approximately 1,000 cubic yards of mine waste rock located next to the mine shaft. Preliminary samples collected from the mine waste rock and from surface water flowing from the abandoned mine shaft contained concentrations of arsenic and lead. Arsenic was detected in waste rocks at concentrations ranging from 2.1 milligrams per kilogram (mg/kg) to 37 mg/kg and in the surface water at a concentration of 60 milligrams per liter (mg/l). Lead was only detected in the waste rock at concentrations ranging from 5.2 to 110 mg/kg. A Preliminary Endangerment Assessment (PEA) was filed with the lead agency, Central Valley DTSC, in February, 2006 (DTSC, 2007).

4.2. ENVIRONMENTAL LIENS OR ACTIVITY AND USE LIMITATIONS

An environmental lien review for the New Brunswick Property (APN: 09-630-24-000; 09-630-27-000; 09-630-30-000; 09-630-31-000) indicated that the title is "vested in: Mary Bouma, Erica Erikson, and William Tom, each as to an undivided 1/3 interest" and that no environmental liens or land use restrictions are associated with the subject property. The complete results of the environmental lien search are presented in Appendix D.

An environmental lien review for the Round Hole property (APN: 09-690-30-000) indicated that the title is "vested in: Sand Group, LLC" and that no environmental liens or land use restrictions are associated with the subject property. The complete results of the environmental lien search are presented in Appendix D.

The IMMC has a lease for site activities on the New Brunswick Property and a one-acre easement for site activities on the Round Hole Property (Figures 2, and 3).

This information was confirmed during the interview with Ms. Patricia Nelson, Director of Environmental Affairs at IMMC.

4.3. ADDITIONAL PUBLIC RECORDS AND HISTORICAL USE SOURCES

A parcel search by APN was conducted in the computer database provided at the Nevada County Assessors Office on February 13, 2007. The public records showed dates of transfer, owners, associated addresses, parcel sizes, parcel number retirements, and parcel creations associated with parcels 09-630-24-000; 09-630-27-000; 09-630-30-000; 09-630-31-000, and 09-690-30-000.

Historical records were reviewed at the Searls Historical Library and the Doris Foley Historical Library in Nevada City. Property specific documents reviewed include: historical photographs, fire insurance maps, State of California mining journals, and reports, deeds of trust, mine records and correspondence, newspaper clippings, and historical books. Documents of particular interest relevant to historical use are presented below with summaries of the relevant information:

- R.C. Turner, *Report on the Brunswick Mine*, November 30, 1919 – This report describes the history and the facilities of the New Brunswick Mine in detail, including the location, use, and contents of each building. According to the report all motors and pumps related to working the mine or processing the ore were electrical. Significant structures documented in the report are a galvanized iron mill building, a galvanized iron hoist house, a galvanized iron carpenter shop, a galvanized iron building equipped with a changing room and drying furnace, a galvanized iron transformer house, a concrete powder magazine, a machine shop, and a galvanized iron blacksmith shop. Some of the items listed in the inventory of 1919 were a gasoline-driven cement mixer, a converted truck, an automobile, six transformers, four amalgam traps, bullion melting furnace, lead covered power line, and telephone cable in the shaft.
- A partial inventory of the New Brunswick Mine warehouse from 1940 included ethyl and hi-octane gasoline, butane, 80 and 87 octane aviation fuels, kerosene, motor oils, drilling oils,

bitumuls road oil, copper sulphate, cresylic acid, cyanide, quicksilver-mercury, zinc dust, and sulphuric acid.

- Lode patent documents and pages from Dean's History of Nevada County 1867 detail the presence of the Lucky Mine and Cambridge Mine on Howard Hill, the south side of the Middle South Fork Creek opposite the Union Hill Mine. The Cambridge Mine and Lucky Mine included onsite mills utilizing ten stamps and fifteen stamps, respectively. Also located on Howard Hill are the Town Talk gravel claim, Independent claims (gravel diggings), the Oxford, and the Frankfort Quartz Mining Company (Appendix C).

Section 5. Site Reconnaissance

The New Brunswick and Round Hole properties were inspected by ERRG employees Mr. Michael Friedman and Ms. Robin Mock on February 13, 2007. ERRG was accompanied by Grady Wilson, Field Technician for IMMC, during the inspection. The weather during the inspection was sunny, with no noticeable wind. All general areas of the subject properties were accessible at the time of the inspection; however portions of the property were covered by grasses or thick vegetation that obscured views of the ground surface.

All three shaft sites, the immediately adjacent areas, the property boundaries, and transects across each property were inspected. Existing structures, exposed ground surfaces, and vegetation were evaluated for any RECs. Adjacent properties were observed from the property boundaries for any RECs.

5.1. NEW BRUNSWICK PROPERTY OBSERVATIONS

The New Brunswick Mine shaft is located south and down slope of East Brunswick Road on a flat graded area. Structures observed on the graded portion of the property were the cement shaft collar secured by a locked heavy gauge iron lid, large concrete waste ore silos, and large concrete foundation immediately north of the shaft. A storm sewer drain was observed approximately 100 feet northwest of the shaft. This drain appeared to be relatively new and in working condition. A partially dismantled fire hydrant was observed embedded in the base of a tree in a graded area on the south side of the entrance road to the property; however, no piping was noted in the area. West and south of the shaft is a thickly vegetated slope that terminates at the grade for a railroad spur. The slope contained concrete debris, old galvanized iron piping, rusted metal cables, and wood debris. The vegetative cover was too thick to observe whether the railroad ties were still present, and no ties were observed in the debris along the slope or the grade; however one loose piece of rail was observed on the slope west of the rail spur grade. A power line and associated access road traverse the property from southwest to northeast. Vegetation along portions of the access road was noted as wilted or dead.

A debris pile consisting of tires, appliances, asphalt, and wood, was observed on the property at the intersection of the power line maintenance road and East Brunswick Road. Foundations for two structures and the remains of an unpainted wooden structure were observed west of the debris pile. The wooden structure has completely collapsed, but the roof remained partially intact and was comprised of asphalt tiles. Debris, including empty diesel motor oil treatment containers, was noted in the area of the wood structure.

The Union Hill shaft is located in the northwest corner of the property, southwest and down slope of East Brunswick Road. Mine waste rock was observed at the toe of and on the slope of East Brunswick Road. The property is heavily over grown with thick vegetation and all concrete structures were covered with moss. Structures observed in the vicinity of the shaft include a secured shaft collar constructed of concrete with an iron lid, a concrete foundation for a pelton wheel, and portions of the hoist house foundation. Debris consisting of tires, appliances, and general trash was observed at the toe of the slope to East Brunswick Road.

Adjacent properties

A concrete AST cradle was observed approximately 50 feet east of the entrance to the property. The cradle was covered with moss and a younger pine tree was present in the middle of the cradle. The property to north and northwest consists of forested land with recent low density residential housing. The property to the southwest consists of forested land with numerous old adits and prospects southwest of South Fork Creek. The prospects include the former Lucky Mine and Cambridge Mine on Howard Hill (Appendix C). East of the New Brunswick Property is a pond and large graded area of the former Brunswick Lumber Mill. The dam along the southeast boundary of the property appeared to be constructed of mine waste rock, and a single prospect was observed at the toe of the dam at the approximate mid-point of the east boundary.

5.2. ROUND HOLE PROPERTY OBSERVATIONS

The Round Hole property is located north of Whispering Pines Lane on a hillside that slopes down to the northwest. The shaft is located near the center of the property, adjacent to a steep break in the slope. Structures at the shaft site consist of a concrete shaft collar and cap with locked metal access pipes and concrete hoist house foundation. Approximately 50 feet northwest of the shaft is the top of the waste core pile. The five-foot diameter cores were extracted from the shaft and dumped down slope of the former hoist house. Only a few pieces of cores remain onsite, and many were observed to be serpentinite. An additional concrete foundation for a small building was observed southwest of the shaft at the southwest boundary of the property. A debris pile, that consisted of concrete, bricks, and miscellaneous construction debris, was noted east of the Round Hole shaft. Additional debris consisting of old lumber, old empty drums, and recent empty antifreeze containers was observed further east of the shaft scattered along the slope toward Brunswick Road.

Adjacent Properties

The properties to the north, west, and east of the Round Hole property are unoccupied forest land or grassland. Adjacent property to the south, across Whispering Pines Lane consists of low density commercial development; however no RECs were observed upslope of the property.

Section 6. Findings and Opinion

6.1. FINDINGS

There are no current RECs at the Round Hole or New Brunswick properties; however, the results of this assessment have revealed the following suspect environmental concerns associated with the property:

- Reported spill of hydrocarbons from vandalism at the New Brunswick Mine shaft;
- The presence of roofing asphalt that may contain polycyclic aromatic hydrocarbons (PAHs) and asbestos
- The presence of serpentinite at the properties indicates the potential for naturally occurring asbestos; and
- Debris at the properties indicates the potential for uncontrolled dumping at the property boundaries.

The results of this assessment have revealed the following suspect historical environmental concerns associated with the New Brunswick Property.

- Transformers historically used may have contained polychlorinated biphenyls (PCBs);
- Previous storage and use of gasoline, diesel, motor oil, road oil, and lubricants;
- Previous storage and use of cyanide and of quicksilver/mercury (reference to arrastras, a cyanide plant and amalgam traps);
- Tailings produced from the recovery of gold and metals in accessory minerals that may leach from the tailings; and
- The presence of an AST cradle immediately outside and upgradient from the New Brunswick Property boundary;

6.2. OPINIONS

It is our professional opinion that the impact on the properties of the suspect environmental concerns identified are:

- Potential hydrocarbon contamination in the New Brunswick Mine shaft
- Potential PAHs and asbestos in roofing debris on the New Brunswick Property
- Potential naturally-occurring asbestos at both properties
- Potential cyanide and mercury contamination from historic use at the New Brunswick Property
- Potential PCBs contamination in the soil associated with the possible use of PCB-containing transformers in the former transformer house

- Potential hydrocarbon contamination near the former garage and AST cradle
- Potential metals (mercury, copper, lead, and chromium), reagent, and cyanicde contamination in the tailings.

ERRG recommends that the following additional investigation be conducted to determine the presence of hazardous substances or petroleum products and provide greater certainty regarding identified suspect environmental concerns on the property:

- Samples of surface exposures of serpentinite should be analyzed to determine potential worker exposure to asbestos during future activities at the properties.
- Additional investigation regarding the potential presence of cyanide, mercury, PCBs, PAHs, and hydrocarbons including:
  - More complete historical document review to determine the location of mercury storage and use; the model number and types of transformers; locations and types of hydrocarbon storage on the property; and locations of tailing piles for each mine.
  - Surface and subsurface soil samples collected and analyzed for the following:
    - cyanide and mercury in the area of the former amalgam traps and chemical storage building
    - PAHs and asbestos in roofing debris on the New Brunswick Property
    - PCBs in soil in the vicinity of the former transformer house, if it can't be determined that the transformers were not PCB-containing models
    - hydrocarbon contamination near the former garage, chemical storage house, and AST cradle
    - metals contamination in the waste rock and tailings at the mine sites.

The rationale for surface and subsurface soil sampling is based on historical chemical practices at similar properties that indicate the potential for spills and leaks. No previous investigations for metals, PCBs, or hydrocarbons in the soil have been conducted at these properties.

Section 7. Data Gaps and Deviations

Data gaps identified for this assessment include:

- Dense vegetative cover at the property precluded complete inspection of the ground surface of the New Brunswick Property and portions of the Round Hole Property.
- Current water quality data was unavailable for review.

Section 8. Conclusions

We have performed a Phase I Environmental Site Assessment, in conformance with the scope and limitations of ASTM Practice E 1527, of the Round Hole Property located north of Whispering Pines Lane and the New Brunswick Property located southwest of the intersection of East Bennett Road and Brunswick Road. Any exceptions to, or deletions from, this practice are described in Section 7 of this report. There are no RECs that result from current uses of either property. Suspect environmental concerns identified on the properties resulting from historic uses of the properties to mine and recover gold include:

- Potential hydrocarbon contamination in the New Brunswick Mine shaft
- Potential naturally occurring asbestos at both properties
- Potential mercury and cyanide contamination from historic use at the New Brunswick Property
- Potential PCB contamination in the soil near the former transformer house
- Potential hydrocarbon contamination near the former garage and AST cradle
- Potential metals cyanide and reagent contamination in the tailings.

Section 9. References

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Figures

SOURCE: GOOGLE EARTH

ERRG
Engineering/Remediation Resources Group, Inc.
185 Mason Circle, Suite A/B
Concord, California 94520
(925) 969-0750

CLIENT: IDAHO MARYLAND MINING CORPORATION	DESIGNED BY: MG 3-21-07	ROUND HOLE AND NEW BRUNSWICK PROPERTIES SITE VICINITY AND LOCATION MAP				
	CHECKED BY: MF 3-21-07					
LOCATION: GRASS VALLEY CALIFORNIA	P.E/P.G.: MF 3-21-07	ERRG PROJECT NO. 27-016	REVISION NO. 0	SHEET 1	OF 1	FIG NO. 1

P:\2007 Projects\27-016 IdahoMarylandMining PH-1 ESAIN MAPS DWGS\FIG 1.dwg

SOURCE: GOOGLE EARTH

NO.	DATE	REVISIONS	APP'D	DATE

ERRG
Engineering/Remediation
Resources Group, Inc.
185 Mason Circle, Suite A
Concord, California 94520
(925) 969-0750

CLIENT: IDAHO MARYLAND MINING CORPORATION

LOCATION: GRASS VALLEY CA

DESIGNED BY: MG 3-6-07

CHECKED BY: MF 3-6-07

P.E/P.G.: MF 3-6-07

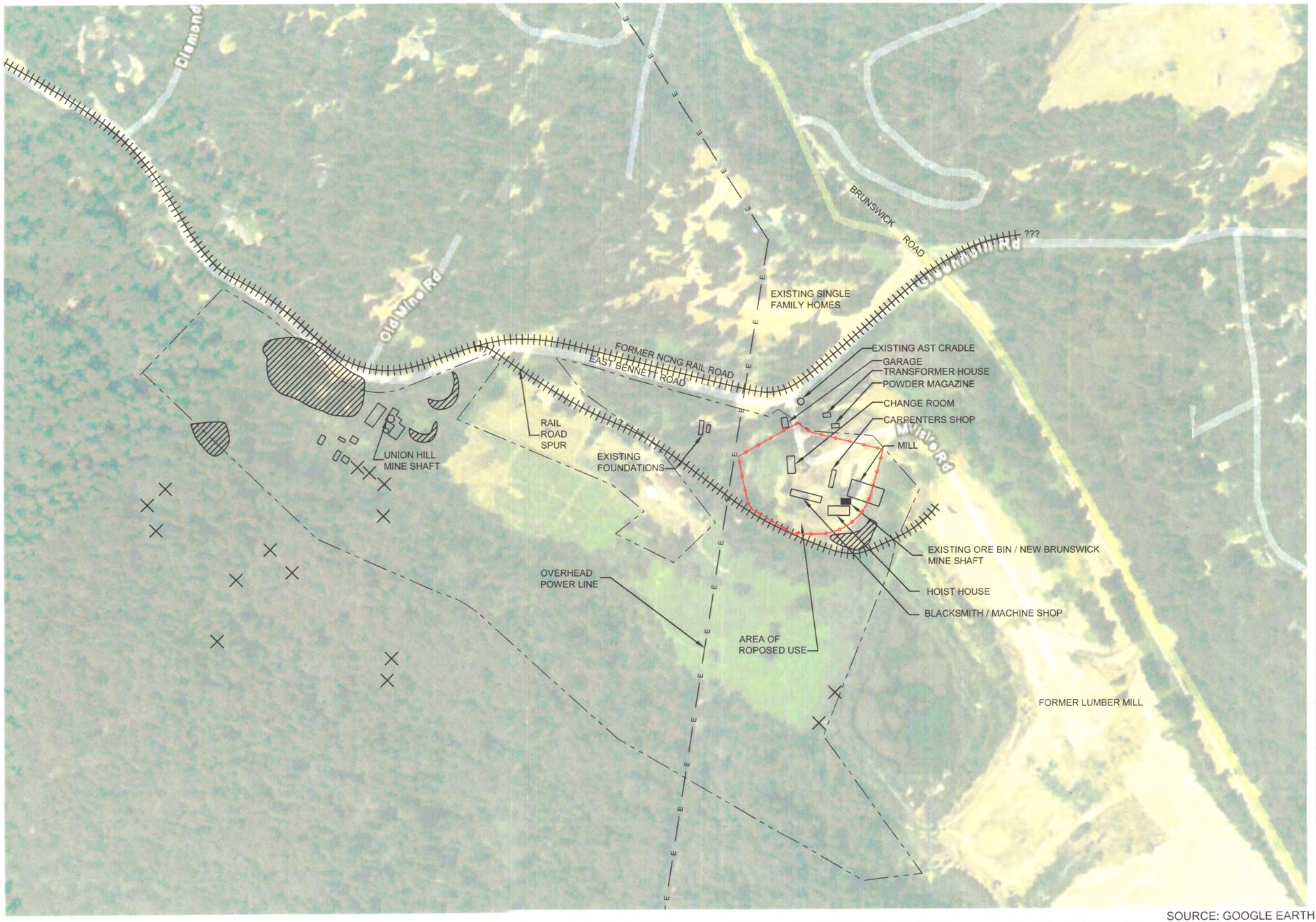
NEW BRUNSWICK PROPERTY
EXISTING STRUCTURES

ERRG PROJECT NO.	REVISION NO.	SHEET	OF	FIG NO.
27-016	0	1	1	3

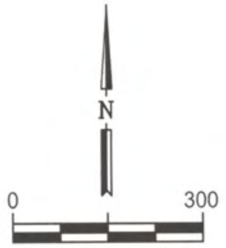
P:\2007_Projects\27-016_IdahoMarylandMining_PH-1 ESA\N_MAPS_DWGS\FIG 2-3-4_.dwg

LEGEND:

▨	HISTORIC TAILINGS/WASTE/CORE PILE
×	MINING ADIT OR PROSPECT
☐	HISTORIC BUILDING
┼┼┼┼┼	FORMER RAIL ROAD
— E —	OVERHEAD POWER LINES
— - - -	APPROXIMATE PROPERTY LINE
-o-o-	FENCE DELINEATING AREA OF PROPOSED USE



SOURCE: GOOGLE EARTH



APPROXIMATE SCALE IN FEET

NOTE: ALL HISTORICAL FEATURE LOCATIONS ARE APPROXIMATE.
SOURCES: IMMC PROJECT AREA W/HISTORICAL FEATURES MAP, IMMC 2007
HISTORICAL PHOTOGRAPHS RC TURNER, 1919

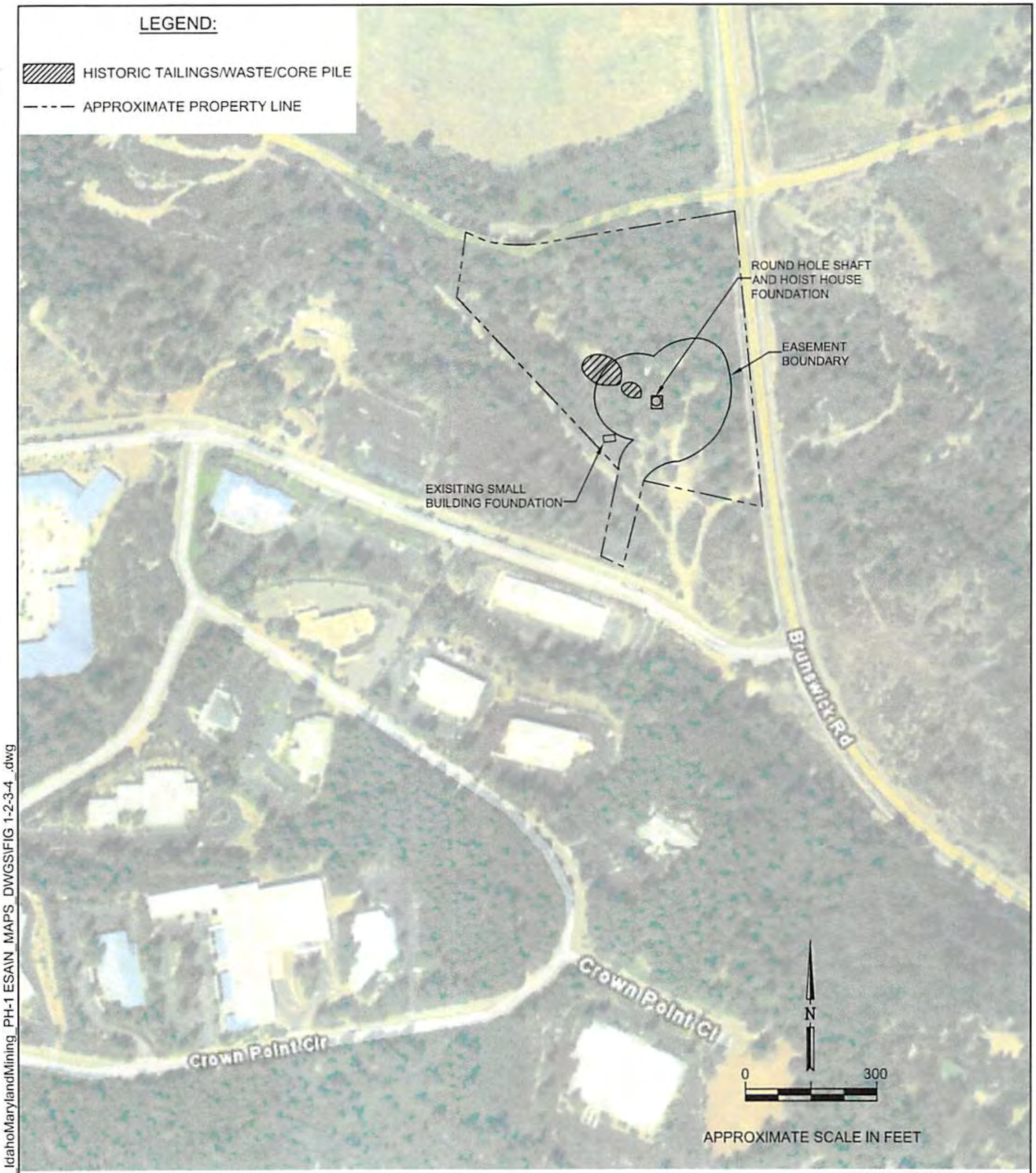
NO.	DATE	REVISIONS	APP'D

DATE

ERRG
Engineering/Remediation Resources Group, Inc.
185 Mason Circle, Suite A
Concord, California 94520
(925) 969-0750

CLIENT: IDAHO MARYLAND MINING CORPORATION	DESIGNED BY: MG 3-21-07	NEW BRUNSWICK PROPERTY HISTORICAL STRUCTURES				
	CHECKED BY: MF 3-21-07					
LOCATION: GRASS VALLEY CA	P.E/P.G.: MF 3-21-07	ERRG PROJECT NO. 27-016	REVISION NO. 0	SHEET 1	OF 1	FIG NO. 4

P:\2007_Projects\27-016_IdahoMarylandMining_PH-1 ESAIN_MAPS_DWGS\FIG 1-2-3-4_.dwg



SOURCE: GOOGLE EARTH

Engineering/Remediation Resources Group, Inc.
185 Mason Circle, Suite A/B
Concord, California 94520
(925) 969-0750
ERRG

CLIENT:
IDAHO MARYLAND MINING CORPORATION

LOCATION:
GRASS VALLEY
CA

DESIGNED BY:
MG 3-21-07

CHECKED BY:
MF 3-21-07

P.E/P.G.:
MF 3-21-07

ROUND HOLE PROPERTY

ERRG PROJECT NO	REVISION NO.	SHEET	OF	FIG NO
27-016	0	1	1	2

P:\2007 Projects\27-016 IdahoMarylandMining_PH-1 ESAN_MAPS DWGS\FIG 1-2-3-4_.dwg

Tables

Table 1
Database Search Summary
Round Hole and New Brunswick Properties
Phase I Environmental Site Assessment
Idaho-Maryland Mining Corporation

EDR Map ID		Facility Information			Database										
RH Map #	NBM Map #	Site Name	Address	Apt. #	RCRA	RCRA - sqg	SWRCY	VCP	Response	CA SLIC	ENVIRO STOR	LUST	UST	Hist-UST	SWEEPS UST
1		Lanmark Circuits incorporated	400 Crown Point Circle		X										
A2		Maier MFG Inc.	416 Crown Point Circle			X									
3 & 10	A3 & 4	Sierra Pacific Industries	12503 Brunswick Rd			X				Case Closed	Refer RWQCB	Case Closed			
A4		JDK Control Incorporated	424 Crown Point Circle			X									
6	7	California Completes	12301 Loma Rica Dr.	#A			X								
5	6	Loma Rica Ranch	12280 Loma Rica Dr.					Active			active				
11	5	AABurco Incorporated	13421 Grass Valley Avenue								NFA				
7	8	Lausmann Lumber	11452 E. Bennett Rd								Refer RWQCB				
8	9	Agate Sales Inc.	11429 E. Bennett Rd								Refer agency				
9		Idaho Maryland Mine Property	10344 Centennial Drive					Inactive - needs eval.			Inactive - needs eval.				
	10	Empire State Mine	10791 Empire Street						X		active				
	A1	Jehovah's Witness - Kindom Hall	12524 Brunswick Rd										X	X	X
	A2	Brunswick Sawmill	Corner of Brunswick Rd & Bennett										X	X	

Notes:

RCRA	Generators of hazardous waste
RCRA - sqg	Small quantity generator of hazardous waste
SWRCY	State Recycling facilities
VCP	low threat level properties with either confirmed or unconfirmed
ENVIRO STOR	The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known
Response	confirmed release sites where DTSC is involved in remediation;
UST	Active UST Facilities
Hist-UST	historical listing of UST sites.
SWEEPS UST	Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1980's. The

Appendix A. Qualification(s) of Environmental Professional(s)

Michael Friedman, REA

Project Geologist

Discipline/Specialty

- Environmental Sampling and Characterization
- Geology

Education

- M.A., Environmental Science, San Jose State University
- B.A., Geology, University of Colorado

Registrations

- California Registered Environmental Assessor (REA) #05588
- Washington Registered Geologist, #2616

Safety/Certifications

- 40-hour OSHA HAZWOPER training with 8 hour annual refresher training
- CPR and Emergency First Aid Training

Training/Certifications

- DOT HM126f

Summary of Qualifications

With over 17 years of experience, Mr. Friedman is an experienced environmental manager with strong analytical and project management skills. He has applied these skills locally on numerous high-profile military sites, such as Hunters Point Shipyard, Hamilton Army Field, and Alameda Naval Air Station, which typically require stringent quality control.

As part of his responsibilities, he has developed and implemented environmental scopes of work, selected and managed subcontractors, and completed GIS and database assignments. Mr. Friedman routinely prepares and insures implementation of work plans and site-specific health and safety plans, and his projects have included environmental sampling (air, soil, and groundwater), soil excavation, excavation and disposal of contaminated soils, coordination with and oversight of drilling subcontractors, field documentation, and client liaison.

Mr. Friedman has managed Phase I Environmental Site Assessments for rural and urban sites ranging from a single parcel to multiple property assessments in industrial and commercial settings. Clients for Phase I ESAs have included private owners, commercial groups, and government agencies including transportation corridor assessments for acquisition.

Mr. Friedman also developed, used, and trained staff on a GIS system that integrates analytical databases with geographical mapping, is proficient with database management, and serves as ERRG's computer systems manager. His clients have included commercial, industrial, regulatory entities, and government agencies, with strong project experience on Department of Defense projects.

Relevant Experience

Engineering/Remediation Resources Group, Inc. (ERRG) June 1998 to present, Project Geologist

As a geologist for ERRG, Mr. Friedman has been instrumental in developing and implementing uniform sampling and field protocols for conducting environmental investigations. He has assisted in preparation of work plans for remedial activities, sampling and analysis plans, and quality assurance/quality control plans. As a site project geologist, Mr. Friedman is the point of contact for clients and agencies and provides on-site field guidance in interpreting specifications and executing work plans. Selected project experience is provided below.

Travis Air Force Base Ground Water Sampling, Fairfield, California

Mr. Friedman served as Sampling Field Team leader for the April 2006 sampling event at Travis Air Force Base. Mr. Friedman organized and directed four two-person sampling teams tasked with sampling approximately 200 monitoring and extraction wells throughout Travis Air Force Base in Solano County, California. Groundwater sample collection included low flow purging, decontamination, documenting field water quality parameters and completing chain-of-custody forms.

Groundwater Monitoring at Hamilton Army Airfield (HAAF), Battelle Memorial Institute, Novato, California

Mr. Friedman managed field activities for the semi-annual groundwater sampling event that included operation and maintenance of the biosparging system to determine the optimum cycling frequency for the system. The overall objective of the testing was to determine the optimal air injection pulsing time and schedule for the biosparging system such that MTBE treatment efficiency can be maximized. Each test consisted of recording groundwater levels using 4 data loggers during air injection.

Townhouse Renovations, Concord Naval Weapons Station, US Coast Guard

Mr. Friedman provided construction oversight for $1.5M renovation of 40 single family townhouse units owned and operated by the US Coast Guard (USCG) at the Concord Naval Weapons Station. The existing townhouses are each two-bedroom units and the USCG was renovating them to convert 40 2-bedroom units into 20 4-bedroom units. This project included demolition of existing finishes, demolition of selected walls, installation of interior stairs between previously separated units, modifications electrical and plumbing systems, sheetrock and paint, and installation of new cabinets, doors, and floor coverings. This work was conducted on all 40 units simultaneously and was completed in 15 weeks.

Mangels Ranch Pesticide-Contaminated Soil Remediation, California DTSC, Fairfield, California

Mr. Friedman managed emediation of this former agricultural property contaminated with DDD, DDE, and DDT. Mr. Friedman assisted DTSC in evaluating current site conditions based on historical documents, interviews with the previous land owner and data from previous investigations. The work being conducted by ERRG includes removal of contaminated soil to varying depths between 2 and 5 feet below ground surface, collecting confirmation and waste characterization samples, collecting and disposing of groundwater accumulated in excavations, and restoring the site to pre-existing conditions. Mr. Friedman has been involved with all aspects of the project from daily site management and client/agency interaction through coordination and implementation of the work plan in the field.

Midway Village PAH-Contaminated Soil Remediation, California Department of Toxic Substances Control, Daly City, California

Mr. Friedman was part of the ERRG team to develop the soil remediation strategies for the site. He managed on-site environmental activities of the project during which ERRG remediated over 16,000 cubic yards of PAH-contaminated soil at the Midway Village Housing Complex and Bayshore Park on behalf of the DTSC. Remediation involved surgical excavation around the housing complex and daycare facilities, excavation of up to 2 feet over the entire 4-acre park area adjacent to the housing complex, evaluation of groundwater beneath the site, disposal of soil, and restoration of the site infrastructure and landscaping.

As the lead project geologist for ERRG, Mr. Friedman prepared the work plan, sampling and analysis plan, excavation plan, traffic control plan, health and safety plan, stormwater pollution prevention plan, and emergency utility shut-off and contingency plan. He was responsible for documenting site conditions prior to beginning remediation activities, performing day-to-day management of the field engineering, interpreting the project specifications and contract scope of work, preparing daily field logs, and QC testing (such as compaction testing and confirmation sampling). He has also assisted the project manager in developing schedules, tracking costs, and documenting any deviations in the project scope. The remediation project was completed under budget and within the allotted timeframe.

Soil Excavation at Hamilton Army Airfield (HAAF), IT Corporation, Novato, California

Mr. Friedman served as a project geologist responsible for organization of project tasks and supervision of field crews during various investigation, removal action, and rapid response efforts in the General Services Administration (GSA) portion of HAAF. He was an integral member of the project team that successfully completed closure of the GSA Phase II Sale Area at HAAF within the proposed time frame.

He was a key member of the team to design and implement the phased investigations of the North Antenna Field of HAAF to identify the nature and extent of potential impacts related to past airfield activities. Because historical information about the 270 acre area of the base was very limited, the site investigation activities were planned based on aerial photographs and field reconnaissance to identify impacted areas. He assisted in design and implementation of the surface and subsurface investigations involving drilling, soil sampling, monitoring well installation and sampling, geologic logging of excavations and borings being performed in both unexploded ordnance (UXO) and non-UXO areas. He supervised cleanup operations at several sites contaminated with volatile organic compounds, semivolatile organic compounds, metals, hydrocarbons, and pesticides; provided oversight during site restoration; and reviewed analytical data generated during the course of the project.

Mr. Friedman is proficient with database management and has worked extensively with the database system developed and used to manage all of the analytical data generated for HAAF projects. He prepared, managed and reviewed analytical data for the proposed site groundwater monitoring program.

Parsons Engineering Science, Inc., April 1990 to April 1998, Geologist

Mr. Friedman supervised hazardous waste management projects including a residential lead cleanup program, investigation and remediation of USTs, EIAs, and EIRs, Phase I and Phase II Environmental Assessments, groundwater study programs, establishment and implementation of environmental investigation protocols, and data analysis and report preparation. Mr. Friedman's clients encompassed private companies and governmental agencies ranging from DOD facilities to environmental regulatory agencies at the State and local level.

During Mr. Friedman's career with Parsons, worked on and managed several large scale Phase I ESAs for commercial properties and government agencies, including transportation corridor assessments involving dozens of properties for the evaluation of potential purchase by county and state agencies. He also assisted officials in the establishment of environmental protocols for the City and County of San Francisco, Bureau of Environmental Regulation and Management.

Lead-contaminated Soil Residential Restoration Project, Oakland, California

Mr. Friedman supervised subcontractors and associated field activities during a remediation project involving the removal of lead-contaminated soil from 28 residential properties in Oakland, California. The project was conducted under oversight of the US EPA, and involved coordination with subcontractors, homeowners, agency representatives, and client personnel.

City and County of San Francisco, San Francisco, California, Bureau of Environmental Regulation and Management, Environmental Protocols

Mr. Friedman assisted City officials in the establishment of environmental protocols for the City and County of San Francisco, Bureau of Environmental Regulation and Management.

Exceltech, Inc., 1989 to 1990, Geologist trainee

Mr. Friedman performed environmental sampling and data review, acted as a liaison for clients and regulatory agencies, prepared reports such as health and safety plans used for environmental investigations.

Robin Mock

Project Geologist

Discipline/Specialty
Geology

Education

- B.S., Geology, University of California, Davis, 1993
- M.S. Program, Geology, Pennsylvania State University, 1997

Safety/Certifications

- 40 Hour HAZWOPER with 8 Hour annual refresher
- Schlumberger Injury Prevention Program
- First Aid & CPR Training

Training/Certifications

- Helicopter Underwater Escape
- Canadian Workplace Hazardous Materials Information System
- Offshore Rigging Training Program
- XRF NITON analyzer training

Summary of Qualifications

Robin Mock is a Project Geologist with over nine years of experience with collection and data analysis of soil, soil gas, and groundwater samples; conditional use permit inspections; oversight of monitoring well and in situ ozone sparge point installations; oversight of CCTV and pressure testing of sewers; file reviews; preparation of Health and Safety Plans; and preparation of technical reports including Phase I Environmental Site Assessments, Phase II Environmental Site Assessments, expert reports, Work Plans, Annual Comprehensive Site Compliance Evaluations, and Response Plans. She is also familiar with Storm Water Pollution Prevention Plans and Storm Water Monitoring Plans.

Ms. Mock has direct experience with project management of quarterly groundwater monitoring programs for sites throughout San Francisco Bay Area and California Central Valley regions including sites in San Leandro, Petaluma, Fresno, Modesto, and Carmichael, California. She has conducted sewer release investigations with CCTV and pressure testing of sewers for sites in: Los Angeles, Woodland, Modesto, Santa Rosa, and Chico, CA; and Tyler, TX. She served as project geologist for installation of piezometers and groundwater monitoring wells at sites in Modesto, Carmichael, Fresno, Placerville, Sebastopol, Santa Cruz, Grass Valley, and Hayward, CA.

Relevant Experience

Engineering/Remediation Resources Group, Inc. (ERRG), August 2006-to present, Project Geologist

Ms. Mock is currently project manager for Phase II site investigations of lighthouse facilities in California, Oregon, and Washington for the U.S. Coast Guard and has prepared the sampling and analysis plans for the facilities. She has been project manager for remedial action and construction projects in Napa, North Highlands, San Francisco, and San Jose involving removal, construction, and permitting activities. She has also managed several projects at Presidio Trust in San Francisco, involving exploratory trenching, removal of vegetation, placement of erosion controls, and air monitoring for chemicals of potential concern.

West Environmental Services and Technology, Inc. (WEST), August 2004 to July 2006, Project Geologist

As Project Geologist with WEST, Ms. Mock worked on a variety of site characterization and monitoring projects. She managed groundwater monitoring programs, coordinated and supervised monitoring well installations, arranged permits and schedules, analyzed water quality data, oversaw and conducted numerous sampling programs, including the use of handheld sampling equipment, Geoprobe units, drilling rigs, and dedicated pump systems. In addition, she produced documents such as Phase I Environmental Site Assessments, Phase II Environmental Site Assessments, Quarterly Groundwater Monitoring reports, Health and Safety Plans, Remedial Action Plans, Stormwater Management Plans, Quality Assurance Project Plans, expert reports, and Work Plans.

Property Investigation and Remediation for Residental-use Rezoning, La Vista LLC, Hayward, California

Ms. Mock served as a Project Geologist conducting soil, soil gas, and groundwater investigation into potential presence of petroleum hydrocarbons, volatile organic compounds (VOCs), PCBs, metals and pesticides at the site. She collected over 100 samples using Geoprobe "Direct Push" unit and handheld sampling equipment. Provided oversight, air monitoring, and technical direction during excavation activities and confirmation sampling.

UST Spill Investigation, Bloomfield Properties, Petaluma, California

Ms. Mock served as Project Geologist, conducteding quarterly groundwater monitoring and providing regulatory guidance and compliance for site closure.

Former Dry Cleaning Facility Investigation, Team Enterprises, Fresno and Modesto, California

Ms. Mock served as a Project Geologist at three sites located in Fresno and Modesto related to the potential release of perchloroethylene from former dry cleaning facilities. She conducted soil, soil gas, and groundwater sampling to delineate extent and sources of VOC contamination. She determined locations and well specifications during oversight of groundwater monitoring well installations and CPT borings.

Mine Site Remedial Action, Barrows Property, Middletown, California

Ms. Mock served as on site Project Geologist during installation of mine adit plug to mitigate release of contaminated runoff.

LUFT Investigation, Tesoro, Carmichael, California

As Project Geologist, Ms. Mock was responsible for drilling coordination and oversight, well construction, collection of field data, logging of boreholes, and preparation of detailed field reports. She provided environmental services, assisting with management of the soil cuttings generated during the hollow-stem auger drilling. In addition, she conducted quarterly groundwater monitoring for closure of the site.

Property Investigation, First Community Housing, Redwood City, California

Ms. Mock served as Project Geologist for preliminary investigation of a potential housing project, including performing Phase I and Phase II Environmental Site Assessments including conducting soil, soil gas, and groundwater sampling with Geoprobe "Direct Push" units and field sampling equipment. She provided oversight, air monitoring, and dewatering sampling throughout construction of the site into low income housing.

Appendix B. Site Photographs

New Brunswick Property Photos

New Brunswick Mine: Ore bins adjacent to shaft – looking south.
Photographed: February 13, 2007

New Brunswick Mine: Iron lid for shaft – looking north.
Photographed: February 13, 2007

New Brunswick Mine: Storm drain northwest of the shaft – looking southeast.
Photographed: February 13, 2007

New Brunswick Mine: Close-up of the storm-drain – looking west.
Photographed: February 13, 2007

New Brunswick Mine: Discarded pipes along the toe of the slope south west of the shaft.
Photographed: February 13, 2007

New Brunswick Mine: Concrete debris and pipe along the toe of the slope south west of the shaft.
Photographed: February 13, 2007

New Brunswick Mine: Discarded corrugated iron pipe.
Photographed: February 13, 2007

New Brunswick Mine: View along the railroad spur southwest of the shaft – looking northwest.

Photographed: February 13, 2007

New Brunswick Mine: Debris along railroad spur – metal cables in foreground.

Photographed: February 13, 2007

New Brunswick Mine: Dead vegetation along power line corridor – possibly herbicide use.
Photographed: February 13, 2007

New Brunswick Mine: South Wolf Creek flood plain west of the mine shaft – looking south.
Photographed: February 13, 2007

New Brunswick Mine: South Wolf Creek flood plain viewed from the creek – looking east.
Photographed: February 13, 2007

New Brunswick Mine: View of the dam showing a break in the vegetation that may be a rail car track for dumping waste rock.
Photographed: February 13, 2007

New Brunswick Mine: View of South Wolf Creek flood plain from the dam with a prospect in the foreground – looking north.
Photographed: February 13, 2007

New Brunswick Mine: View of dam embankment from top of dam showing mine waste rock.
Photographed: February 13, 2007

New Brunswick Mine: Locked and tagged pipe inside ground vault along power line access road near E Bennett Road.

Photographed: February 13, 2007

New Brunswick Mine: Debris pile near power line access road near E Bennett Road – looking southeast.

Photographed: February 13, 2007

New Brunswick Mine: Two concrete slab foundations north west of mine shaft and power line (debris pile in background)– looking southeast.

Photographed: February 13, 2007

New Brunswick Mine: Slab foundations and former wooden structure northwest of mine shaft and power line – looking south.

Photographed: February 13, 2007

New Brunswick Mine: Former wooden structure – looking southeast.
Photographed: February 13, 2007

New Brunswick Mine: Former wooden structure showing asphalt roof tiles – looking north.
Photographed: February 13, 2007

New Brunswick Mine: Example oil can found around the former wooden strucure.
Photographed: February 13, 2007

New Brunswick Mine: Above ground storage tank craddle north of mine shaft – looking south.
Photographed: February 13, 2007

New Brunswick Mine: Above ground storage tank cradle north of mine shaft with E. Bennett Road and entrance to site to the right in the photo– looking west.
Photographed: February 13, 2007

New Brunswick Mine: Old fire hydrant embedded in the trunk of a tree – looking south.
Photographed: February 13, 2007

Round Hole Property Photos

Round Hole Site: Concrete cap to mine shaft with two access ports – looking southwest.
Photographed: February 13, 2007

Round Hole Site: Hoist foundation for the mine shaft – looking east.
Photographed: February 13, 2007

Round Hole Site: View of core pile from the top – looking northwest.
Photographed: February 13, 2007

Round Hole Site: View of core pile from the base – looking southeast.
Photographed: February 13, 2007

Round Hole Site: Portion of five-foot core near shaft.
Photographed: February 13, 2007

Round Hole Site: Debris from former structures scattered near the shaft.
Photographed: February 13, 2007

Round Hole Site: Debris pile southeast of the mine shaft – looking northeast.
Photographed: February 13, 2007

Round Hole Site: Recent debris scattered southeast of mine shaft.
Photographed: February 13, 2007

Round Hole Site: Debris east of the mine shaft along the slope west of Brunswick Road.
Photographed: February 13, 2007

Round Hole Site: Foundation of former building along the power line access road at the southwest boundary – looking southwest.
Photographed: February 13, 2007

Union Hill Mine Photos

Union Hill Mine: Mill house foundation viewed from East Bennett Road – looking south.
Photographed: February 13, 2007

Union Hill Mine: Hoist foundation near the mine shaft – looking north.
Photographed: February 13, 2007

Union Hill Mine: Hoist foundation near the mine shaft – looking north.
Photographed: February 13, 2007

Union Hill Mine: Secured top of mine shaft.
Photographed: February 13, 2007

Union Hill Mine: Toe of East Bennett Road embankment showing mine waste rock throughout – looking northwest.

Photographed: February 13, 2007

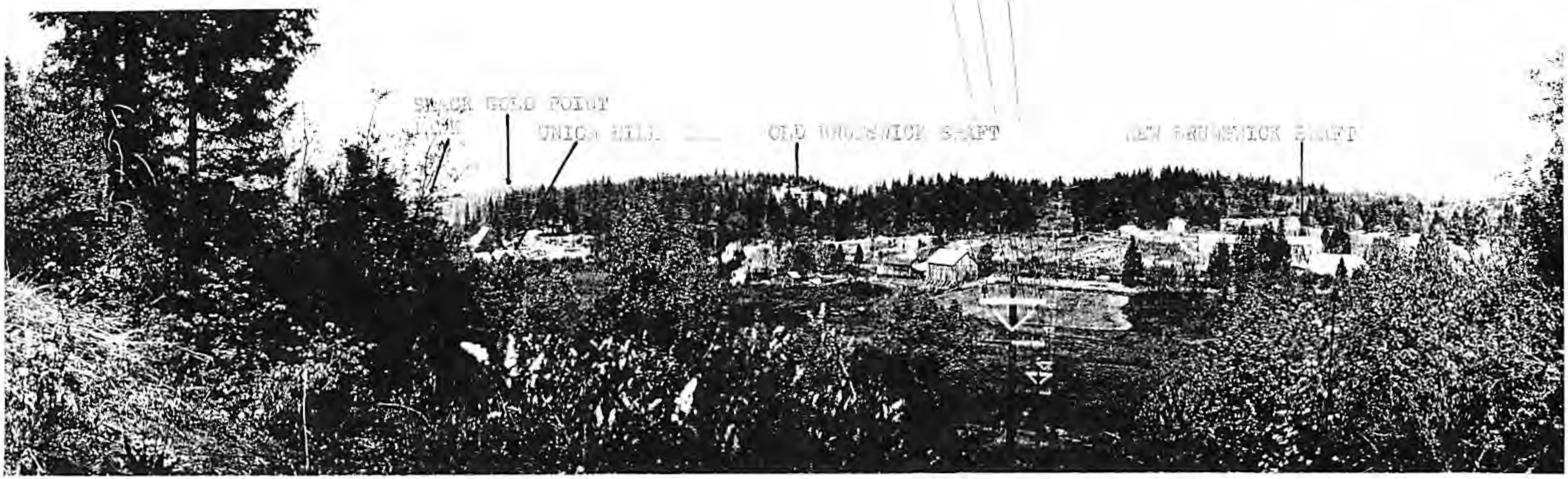
Union Hill Mine: Toe of East Bennett Road embankment showing mine waste rock and recent debris – looking northeast.

Photographed: February 13, 2007

Union Hill Mine: Discarded appliance at toe of East Bennett Road embankment.
Photographed: February 13, 2007

Appendix C. Historical Research Documentation

(Aerial photographs, fire insurance maps, historical topographical maps, etc.)



UNION HILL PROPERTY OF THE IDAHO MARYLAND MINES CO.
Looking north.

Nevada County Historical Photo Album 2000
The Union and Nevada County Historical Soc.


Union Hill Mine, Grass Valley.


Empire Mine office, Grass Valley.


Mountaineer Mine, Nevada City.


Lower Crumbacher Mine, Washington, abo

The Idaho-Maryland mine just east of Grass Valley is seen when it was in operation. At left is the steel headframe over the Idaho shaft, and the large building at the opposite side of the photo is the old 20-stamp mill. Building top center is the new mill which was capable of handling 700 tons every 24 hours. The Idaho No. 2 shaft was to the left of the main Idaho headframe and the Brunswick mine was top right and over the hill about a mile. Below is the Brunswick shaft and 20-stamp mill. This mill was used to process ore from the Idaho until the mine made enough money to build the big new mill.

Idaho-Maryland Mine

New Brunswick Mine & Mill Grass Valley, California February 1948

For more information, send questions and comments to info@emgold.com

This page was created on Wed Feb 7, 2007 at 2:57:57 PM Pacific Time.

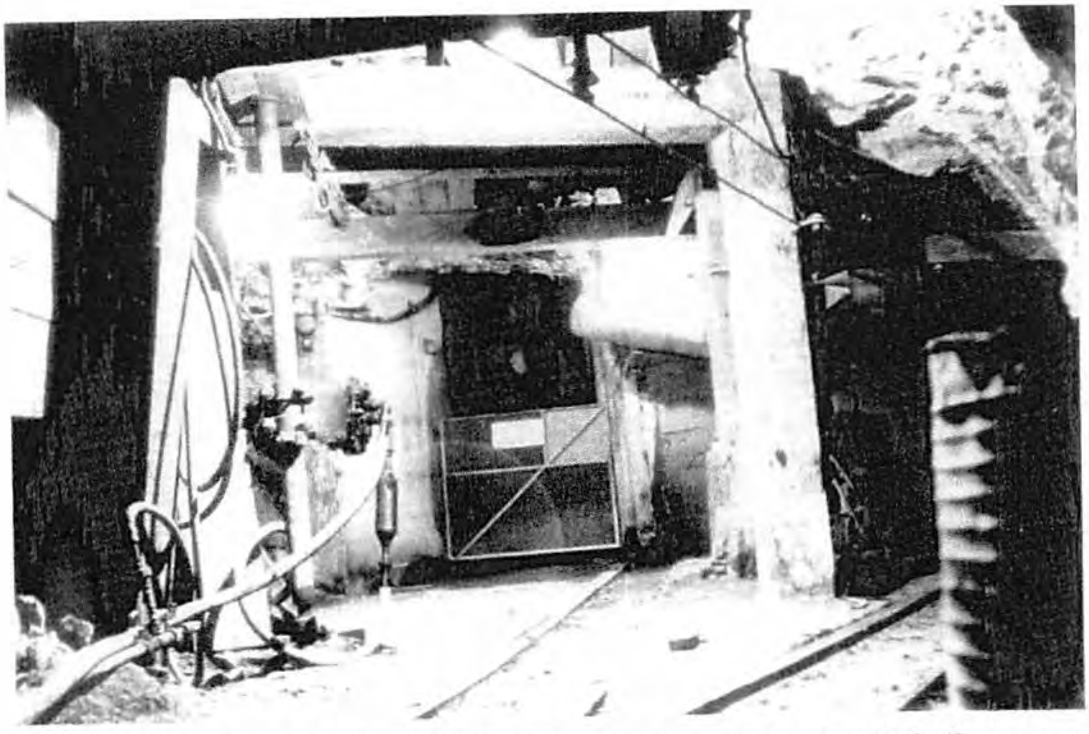
The Union Hill mine, showing mill and waste dumps.

New Brunswick headframe, dry building and shop buildings, 1930.

New Brunswick mine, showing mill, headframe, and truck haulage ramp at far right.

(Above) New Brunswick mine in March 1956. (Below) Same view in 2004.

The Idaho No. 2 "Round Hole" shaft.



Round Hole station on the 1000-foot level, adjacent to the Mitchell crosscut.

Drill core sections of serpentine taken during the sinking of the Idaho No. 2 "Round Hole" shaft at the Idaho Maryland mine.

Diamond driller Carl Hawke (left) and his helper, Albert Krasevag.

Gold Districts of CA
Bulletin 193
7th Printing 1998 (1st '63)

Photo 25. New Brunswick Mine, Grass Valley District. This is a 1955 view of the Nevada County mine, which was a member of the Idaho-Maryland group. *Photo by D. W. Carlson.*

which extended north from Colfax. A few historic mine structures are still standing, but most of the extensive surface plants of the major mines have been dismantled. The old power house at the North Star mine and its 32-foot Pelton wheel are part of a Nevada County historical display.

Geology. An elongated body of granodiorite is in the central portion of the district (fig. 8). This body is five miles long in a north-south direction and ½ to two miles wide. It is intrusive into older metamorphic rocks and itself is cut by various dike rocks. Immediately east and west of the intrusion are dark green-

Photo 26. Scotia Mine, Grass Valley District. This scene shows the Nevada County mine in the 1940s. *Photo by Olaf P. Jenkins*

UNITED STATES AMERICA)
to (
JAMES K. BYRNE.)

Book 1 PATENTS, page 81.

UNION HILL QUARTZ MINE.

---oo0oo---

CONVEYS: Lot No. 59 embracing a portion of the Southeast quarter of Section 25 and the Northeast quarter of Sec. 36-16-8 in Grass Valley M.D. Nevada Co., Cal. Containing 23.11 acres

Beginning at a stake in mound of stones marked U.M.Co. No. 4; thence S. 43° E 13 chains to stake marked U.M.Co. No. 5; thence S. 52° E 12 chains 7 links to stake marked U.M.Co. No. 6 thence S 69° 45' E 9 chs 21 lks to a stake marked U.M.Co. No. 7 thence S. 29° 20' E West 1 ch 51 lks to a point in Matteson Reservoir; thence S 60°40' E 9 chs 9 lks to a stake marked U.M Co No.9; thence N. 29° 20' E 3 chs s lks to post marked U M Co No 10 on southeasterly boundary of the claim from which corner common to Secs 25 & 36 - 16 - 8 E and Secs 30 & 31 - 16 - 9 E bears N 9° E at the distance of 17 chs 40 lks 6 chs & 6 lks to a stake marked U M & Co No. 11; thence N 60° 40' W 9 chs & 9 lks to a stake marked U M Co No 12; thence S 29° 20' W 1 ch 51 lks to a stake marked U M Co No 13; thence N 60° 40' W 9 chs and 10 lks to a stake marked I M Co No 14 from which the N E Cor of the Union Hill Q M Quartz mill bears south 73° 45' W a distance of 1 ch and 7 lks; thence from said stake marked U M Co No 14 N 30° 5' E 3 chs and 53 lks to a sake marked U M Co No 15; thence N 58° 40' W 2 chs to a stake marked U M Co No 16; thence N 82° 40' W 3 chs 56 lks to small pine tree marked U M Co. No 17; thence N 49° 50' W 18 chs 50 lks to a stake marked U M Co No 3; thence S 41° 10' W 3 chs 3 lks to a post marked U M Co. No. 1 from which a deep shaft on the west side of the hoisting works bldg bears S 48° 50' E at the distance of 21 chs 21 lks; thence from said post No S 41° 10' W 1 ch 51 lks to the place of beginning containing 23.11 acres

UNITED STATES AMERICA
to
ELLA M. ROSE

Book 2 PATENTS, 601.
MORNING DEW QUARTZ MINE.

---oo0oo---

CONVEYS The Morning Dew Q. M. Claim designated by the surveyor general as Lot No. 130 embracing a portion of Sec 25 - 16 - 8 Grass Valley Mng Dist Nevada Co Cal.

Beginning at the south corner of the claim post in rock mound marked M.D.Q.M. No. 1, also marked L.Q. No. 5; thence

First Course: N 68° W 442 tenths feet or 6 chs 67 lks to post in rock mound marked L Q M No. 4; being the corner of Lucky Q M. from which the entrance to the Morning Dew Tunnel bears North 30° E 1 ch 25 lks distance 1500 ft or 22 chs 73 lks to the west corner of the claim post in rock mound marked M D Q M No 2

2nd Course: N 41° 10' E 317.5 ft or 4 chs 81 lks to the northwest end of the lode line a post in rooj mound marked MDQM LL 2 from whddh the entrance to Smiths tunnel bears S 50° E 5 chs distant 635 ft or 9 chs 62 lks to N corner of the claim post marked M D Q M No 3 in rock mound on dump of old tunnel; thence

3rd Course: S 66° 45' E 1489.62 ft or 22 chs 57 lks to E corner of the claim a post marked M D Q M. No 4 in earth mound from which the original location corner bears north 41° 10' E 52 lks dist the south corner post of the Centennial Q M bears S 37° E 14 chs 60 lks dist; the corner post of the J. M. English Q M marked J.M.E. Q.M. No. 8 bears S 41° E 14 chs 90 lks dist and the South corner of the Gold Point Q M. bears N 29° W 8 chs 28 lks dist

4th Course: S 41° 10' West 3 chs 43 lks to corner of the Union Hill Q M. 283.14 ft or 4 chs 29 lks to southeast end of lode line post marked M D Q M L L 1 6 chs 46 lks to N W end of lode line of Union Hill Q M 7 chs 97 lks to corner of Union Hill Q M also post marked L Q M No. 6 in Lucky Mine being a corner of the Lucky Q M from which witness corner to the quarter section corner between secs 25 and 36 - 16 - 8 bears S 16° W 7 chs 32 lks dist 606 tenths ft or 9 chs 10 lks to said south corner of the claim, the place of beginning. Containing 20.07 acres.

UNITED STATES AMERICA
to
ELLA M. ROSE.

Book 2 Patents, Page 606.
CAMBRIDGE QUARTZ MINE.

---oo0oo---

Conveys The Cambridge Q M designated by the Sur Gen as Lot No 128 embracing a portion of Sec 36 - 16 - 8 E Grass Valley Mng Dist Nevada Co Cal. (Mag Var. 17° E)

Beginning at the North corner of the claim post marked C Q M No. 1 L Q M No 1 being also east corner of the Lucky Q M from which a point for the quarter sec cor between Secs 25 & 36 - 16-8 47 lks east of witness corner bears N [illegible] 64° 50' W 13 chs 19 lks dist thence

1st Course: S 37° 30' W 324.7 ft to west corner of claim, post marked C Q No. 2

2nd Course S 39° 30' E 1258 ft to a corner of claim post marked C Q M No 3; thence

3rd course: N 37° 30' E 600 ft to post marked C Q M No 4;

4th Course N 52° 15' W 1226.3 ft to north cor of claim the place of beginning, said lot containing

UNITED STATES AMERICA
to
ELLA M ROSE

Book 2 P 609 Patents.
LUCKY QUARTZ MINE.

---oo0oo---

Conveys Lucky Quartz Mine Lot No. 129 embracing a portion of Secs 25 and 36 - 16-8 Grass Valley Mng Dist Nevada Co Cal.

Beginning at corner No. post marked L Q M No. 1 C Q No 1, the same being the xxxxxxx north corner of the Cambridge Q M from which black oak tree 36 in dia marked L Q M No. 1 B T bears N 46° 15' W 1 ch 83 lks dist. thence

First Course: S 37° 30' ~~E~~ West 225 ft to S end center of claim post marked L Q M LL No 1 C Q Mcxxx L L No 1 the same being the north end center of the said Cambridge Q M from which old shaft bears N 43° 45' W 48 lks dist, old shaft bears N 43° 45' W 5 chs 98 lks dist 4 chs 92 lks to west corner of said Cambridge Q M post marked C Q M No 2, 525 ft to corner No 2 post marked L Q M 2 thence

2nd course: N 43° 45' W 16 chs 29 lks intersect line between secs 25 & 36 -- 16-8 from which quarter section corn between said secs bears N 88°25' E 4 chs 17 lks dist 1500 ft to corner No 3 post marked L Q M No 3 thence

3rd course: N 37° 30' E 300 ft to north end center of claim xxxxxxxx post marked L Q M L L 2 350.5 ft to corner No 4 post marked L Q M No 4; situated on the south side line of the Morning Dew Q M thence

4th course: S 68° E along south side line of said Morning Dew Q M 440.2 ft to corner No 5 post marked L Q M No 5 M D Q M No 1, the same being the south corner of said Morning Dew Q M thence

5th Course: N 41° 10' E 74.6 ft to corner No 6 marked L Q M. No 6 the same being corner No. 4 of the Union Hill Q M.

6th Course: S 43° E 617.1 ft to corner No 7 post marked L Q M No 7 situated on the line between secs 25 & 36; thence 7th course along said sec line S 88° 25' W 68.6 ft to corner No 8 post marked L Q M No 8 from which point for said quarter sec corner 47 lks east of witness corner between said sections bears S 88° 25' W 6 chs 97 lks; thence

Eighth course: S 41° E 506.2 ft to corner No. 1 the place of beginning containing 18.25 acres

Also the right forever to mine under said premises and extrac and remove all mineral bearing ore thereunder and the right to use and construct through said strip of land and beneath the surface thereof such cuts, tunnels, drifts, drains and levels as to the parties of the second part, their heirs or assigns may from time to time choose from the Union Hill ledge to the Cambridge ledge and from any other lodes in said premises or in any premises owned by the parties of the second part or which may be owned or worked in connection with the Union Hill, Lucky, and Mountain Dew Quartz Mines, or either of them. All of such work to be done in such a manner as not to injure the surface of said premises; also the right forever to have, use and enjoy a right of way over said strip of land from the mouth of the __________ tunnel on a straight line from said tunnel to the Union Hill Q.M. for the purpose of operating said tunnel.

---oo0oo --

By deed recorded in Book 78 of Deeds, page 189, the same grantors granted to J.C. & Edward Coleman and G. D. McLean, the mineral rights under the Union Hill Q.M.

By deed recorded in Book 92 of Deeds, page 406, the same grantors granted to E. C. Creller a right of way for a pipe line to the Brunswick Mine over the N.E. 1/4 of Sec. 36 Tp. 16 N.R. 8

By deed recorded in Book 93 of Deeds, page 339, the same grantors granted to R. E. Jeffery the right to the minerals under the Gold Blossom Q.M. Approved Survey No. 3697; also the right to use so much of the surface of the land embraced in said Gold Blossom Q.M. the Lucky & Cambridge, and the strip of land between the Cambridge and the Union Hill as lies within the grantors enclosure west of the line drawn northerly from the S.E. lode post of the said Gold Blossom Q.M. passing 100 ft east of the mourth of the Dorsey & Duval Tunnel to the southerly line of the Union Hill Q.M. for necessary dumpage, actual mining buildings, wood and timber yard etc.

---ooOoo---

MR. SEARLS:

The foregoing abstract shows what lands the Mattesons own and what lands and mineral rights they have deeded. I do not know how to draw a deed that will cover what the Brunswick people want. It will probably be necessary for you to have Mallen come up. I looked up this matter sometime ago you remember, and we went over these same records together when Mallen was with us, and the foregoing is the result of my investigations. I know of no other land that Matteson has acquired or conveyed, other than herein stated:

O'NEILL.

CALIFORNIA STATE MINING BUREAU
FERRY BUILDING, SAN FRANCISCO

FLETCHER HAMILTON State Mineralogist

San Francisco December, 1918

Mines and Mineral Resources

OF

NEVADA COUNTY

CHAPTERS OF STATE MINERALOGIST'S REPORT
BIENNIAL PERIOD 1917-1918

CALIFORNIA STATE PRINTING OFFICE
SACRAMENTO
1919

Blue Jay Mine. Owners, Geo. Bonney and M. H. Baugh, Nevada City.

Location: Washington District, Sec. 2, T. 17 N., R. 11 E., 5 miles east of Washington. Elevation 4250′.
Bibliography: Cal. State Min. Bur. Rept. XIII, page 236.

The Blue Jay mine is located on the steep divide which separates Cañon Creek from the South Fork of Yuba River. From the South Yuba, 3000′ above sea level, there is a rapid ascent until the summit of the divide is reached at an elevation of 5000′, less than a mile north of the river. The Blue Jay vein outcrops on the south side of the ridge at an elevation of 4250 feet. The vein, which strikes N. 20° W. and dips 65° E., has an average width of 4′, and has been developed by means of a tunnel and winze, reaching a depth of about 300′ below the outcrop. A 5-stamp mill was operated on this property at one time, but at present the mine is idle.

Boss. (See under Copper.)

Boston Ravine. (See North Star Mines Company.)

Bowery. (See Alcalde Gold Mines Company.)

Bowery Lodge. (See North Star Mines Company.)

Brunswick Mine. Owner, Brunswick Consolidated Gold Mining Company, 519 California street, San Francisco.

Location: Grass Valley Mining District, Secs. 25 and 36, T. 16 N., R. 8 E., 2 miles east of Grass Valley. Elevation 2600′.
Bibliography: Cal. State Min. Bur. Repts. VIII, page 431; X, page 381; XI, page 274; XIII, page 237.

The Brunswick mine in the last few years has developed into one of the dividend-paying mines of the Grass Valley district. The property consists of an irregular-shaped claim containing 27 acres and covering 2900′ along the strike of the lode; together with 320 acres of patented agricultural land, known as the Matteson ranch. The vein producing in 1914 belongs to the famous Idaho-Maryland vein system, but occurs in the amphibolite schist instead of along the serpentine contact as does the Idaho-Maryland vein.

The mine was located in early days, but in 1888 had only been worked to a depth of 300 feet. By 1896 the three-compartment shaft had reached a depth of 700′, and later it was continued to the 1250′ level and extensive lateral development work was undertaken. The 1250′ level was driven southeast on the vein for a distance of 2000′, and has recently been connected with the new vertical shaft, at a depth of 875′ below the collar. This new shaft cuts the vein at a depth of 975′, and the total depth is now 1347 feet. On the 1250′ level a new ore shoot was opened 1200 ft. east of the old inclined shaft; a raise was put up in ore a distance of 400′, and drifts were run east and west therefrom. This pay shoot which was 500′ in length has been stoped to a point 450′

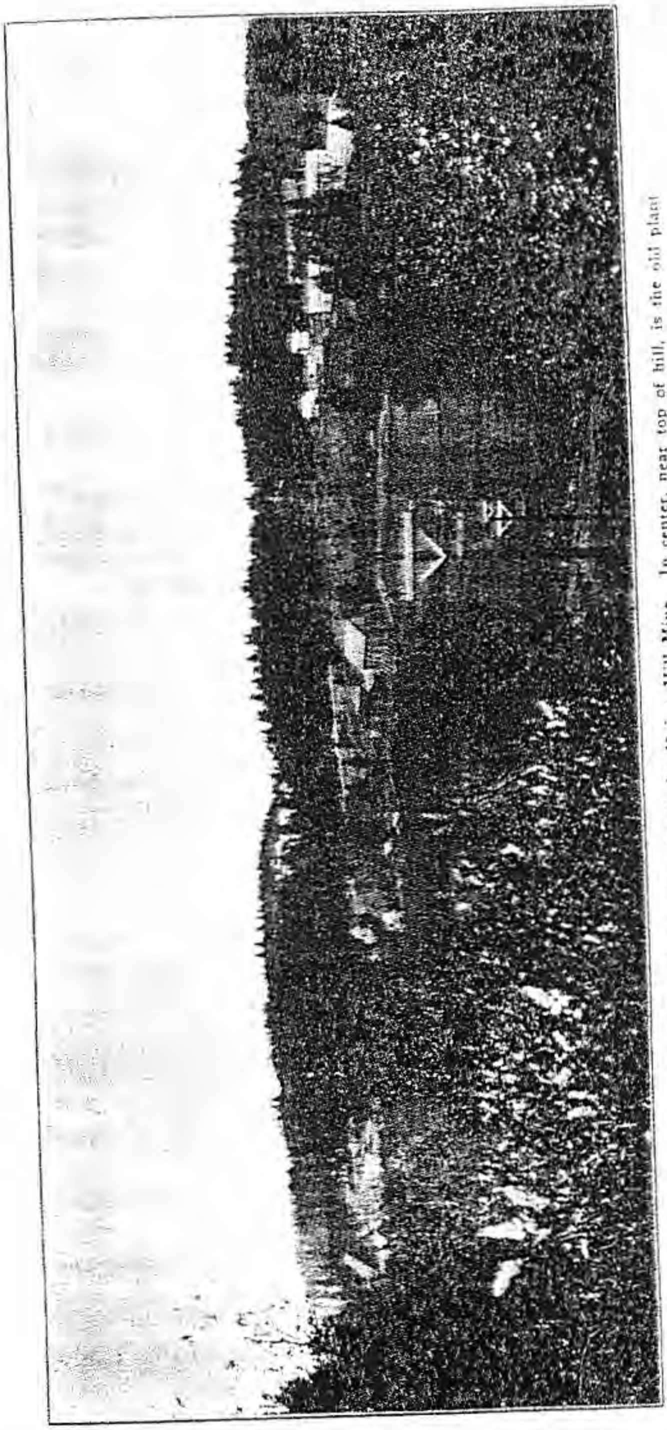


Photo No. 16. On left, the hoist and mill of the Union Hill Mine. In center, near top of hill, is the old plant of the Brunswick Mine, and on the right is the new Brunswick plant.

above the 1250′ level, at which place an intersection of two veins occurred causing an enrichment. In 1914 the ore from this shoot was being lowered to the 1250′ level, trammed to the shaft, hoisted to the surface, trammed to ore-bins, reloaded into cars, trammed to the old mill and finally shoveled into the rock breakers. At the new shaft, which is located within a few feet of the Nevada County Narrow Gauge Railroad, a new hoist and Ingersoll-Rand compressor, both electrically operated, have recently been installed, together with machine and carpenter shops and other necessary buildings. In 1915, a steel head-frame and a complete 20-stamp mill and cyanide plant were installed, and the method of handling and treating the ore have thereby been greatly improved and the operating costs materially reduced.

The strike of the Brunswick vein is N. 50° W., and the dip varies from 40°, in the upper levels, to 70° SW. below the 700′ level. As a rule the walls of the vein, which are from a few inches to five feet apart, are well defined. The filling between the walls is in places solid quartz, in other parts it is composed of altered schist and stringers of quartz. This material carries free gold, pyrite, galena, and some chalcopyrite. Ore of this character from the east pay shoot is said to have averaged $20 per ton.

[Since the above was written, operations were carried on continuously throughout 1916 and 1917. The general manager's report for 1916 showed that 2185 feet of underground work was done that year; and total production for the year was $196,521. The new 20-stamp mill went into commission in October, 1915. In January, 1917, there were about 30,000 tons of ore blocked out. In 1917, according to the general manager's report only 1896 feet of underground development was done, the temporary result of which was a lower total cost per ton. Just below the floor of the drift on the 900 ft. level, the vein split and the ore below the split was much lower grade than above. This zone of impoverishment had not been bottomed at 1347 feet, so its ultimate depth is uncertain. Both grade and quantity of ore are said to have decreased between the 1100 and 1300 ft. levels. About 10,000 tons of ore were produced from the levels above 900 feet, and no new ore was developed from these levels, which were considered exhausted. Very little ore was developed on the 1200 and 1300 ft. levels. A total of 30,805 tons crushed in 1917 gave an average yield of $5.92 a ton. At the same time there were advances in cost of casualty insurance, of all supplies except timber, and in wages. Overhead costs remained the same, with smaller tonnage, and provision had to be made for impounding tailings. Two-thirds of the tonnage was crushed in the new mill, extraction there being 90.8%. Ore from the upper levels carried

1.62% of concentrate worth $34 a ton; in ore from the lower levels the concentrate formed 2.01% and was worth $58 a ton.

Work in 1918 began with a very small ore reserve of low grade, and costs kept soaring. Shaft sinking had to be stopped at 1347 feet because the hoist and head-frame had reached their capacity, according to Mr. Turner. The mine was closed for the duration of the war in June, 1918. The company owns considerable unexplored ground under the Matteson Ranch, which is said to contain the extension of the Brunswick vein. Therefore, lateral exploration and sinking both offer promising possibilities which can best be exploited when conditions have returned to normal. The case of the Brunswick is typical of a number of properties, and the causes operating there can be seen at work today in the very best mines of the district. High costs and lack of labor result in curtailment of development work. Ore reserves become depleted and grade of ore sent to the mill is lowered by the inclusion of more and more poor rock in order to keep up tonnage. For a short time there may be a deceptive lowering of cost because of lack of development work. But the secret of successfully mining the narrow veins of the district lies in keeping up a good-sized reserve by adhering to a definite program of development. Under present conditions this can be done only by the richest companies. The detailed costs as reported by the general manager for 1917 were:

	Per ton
GENERAL EXPENSE.	
Administration, salaries	$0.2824
New York office expense	.0245
Mine expense	.0624
Taxes	.0914
Fire insurance	.0221
Casualty insurance	.1741
Interest	.0097
Total general expense	$0.6666
MINING.	
Labor	$2.7422
Power	.5480
Supplies	.8523
Pump labor	.1694
Pump supplies	.0052
Total	$4.3171
MILLING.	
Labor	$0.3142
Power	.1634
Supplies	.1147
Bullion, freight, refining	.0189
Concentrates, freight and treatment	.2991
Total	$0.9103
NEW SHAFT.	
Labor	$0.1198
Power	.0191
Supplies	.0246
Total	$0.1635

REPAIRS.	
(Repairs to mill, telephone line, pumps, and buildings)	$0.0692
IMPROVEMENTS.	
Mine equipment	$0.1197
Tailings, dam	.0121
Mine phone installation	.0005
Foreman's dwelling supplies	.0006
Total	$0.1329

The total of costs normally chargeable to the one year's operation, according to the data furnished, is thus $6.26 per ton. Besides this there was a considerable outlay for new property.—*C. A. Logan.*]

Buckeye Claim. Owner, Cold Springs Quartz and Gravel Mining Company, Nevada City. Under option to A. Hoge, Nevada City.

Location: Nevada City District, Sec. 4, T. 16 N., R. 9 E., 2 miles northeast of Nevada City.
Bibliography: Cal. State Min. Bur. Rept. XIII, page 237.

The Buckeye quartz claim, together with the Cold Springs gravel properties which are owned by the same parties, total 1000 acres.

The Buckeye vein, outcropping in the Calaveras slates about 500′ east of the granodiorite contact, strikes nearly north and dips 45° to 60° east. A tunnel was driven northward from the bank of Willow Valley Creek, a distance of 500′ on the vein, and two ore shoots were stoped 120′ to the surface. An inclined shaft was also put down on the vein to a depth of 210′, and drifts were run 150′ north and 300′ south. The vein varies in width from 1′ to 4′ and can be traced for a distance of 1500′ on the surface until it disappears under the andesite to the north. The property was idle when visited.

Buckeye Extension. (See Fountain Head Mining Company.)

Buena Vista Claim. Owner, S. P. Dorsey, Grass Valley.

Location: Grass Valley District, Secs. 2 and 11, T. 15 N., R. 8 E., 2½ miles south of Grass Valley. Elevation 2300′.

This claim adjoins the Allison Ranch mine on the south and covers about 1500′ along a vein belonging to the Omaha-Allison Ranch vein system. The vein dips to the west and has been traced at intervals for several hundred feet by shallow shafts and open cuts, the only work that has been done.

Bullion Consolidated Mine. Owners, Bullion Consolidated Gold Mining Company; John Martin and E. de Sabla, Alaska Commercial Building, San Francisco.

Location: Grass Valley District, Secs. 1 and 2, T. 15 N., R. 8 E., 2 miles south of Grass Valley. Elevation 2500′.
Bibliography: Cal. State Min. Bur. Rept. XIII, page 237.

The Bullion vein lies 3000′ east of the west-dipping Omaha-Allison Ranch vein, near the eastern contact of the granodiorite and has an

Union Mine. Bonded to Nevada County Mines Company; D. W. Shanks, Los Angeles; J. Nelson Nevins, Los Angeles.

Location: Nevada City Mining District, Sec. 16, T. 16 N., R. 9 E., 3 miles east of Nevada City.
Bibliography: U. S. Geol. Survey 17th Ann Rept., pt. II, page 197, 1896. U. S. Geol. Survey Folios 18 and 29, Smartsville and Nevada City.

The Union mine was taken under bond by the Nevada County Mines Company, organized by Los Angeles people, in September, 1915. A gasoline engine has been installed to operate the pump and unwatering of the 225′ shaft has begun.

The Union vein is located about a mile east of Canada Hill, on the north side of Little Deer Creek. It is the most westerly of the Banner Hill complex. Development consists of an incline shaft and a tunnel from the creek. At a depth of 200′ on the incline the vein is said to cross without any change in its general character, from diorite into argillite. The dip is 34° E. and the width is reported to be from 1 to 4 feet. The mine was worked rather extensively from 1863 to 1867, yielding some rich ore, but mostly low-grade. Very little work has been done since.

Union Hill Mine. Owner, Gold Point Consolidated Mines, Inc.,* Crocker Building, San Francisco; F. W. McNear, president.

Location: Grass Valley Mining District, Secs. 25 and 26, T. 16 N., R. 8 E., 2 miles east of Grass Valley. Elevation 2700′.
Bigliography: Cal. State Min. Bur. Register of Nevada County Mines. U. S. Geol. Survey Folio 29, Grass Valley Special.

The Union Hill vein was one of the first to be discovered and worked in the Grass Valley district. In 1854 ore from the Union Hill, Cambridge-Lucky, and Greek veins was being worked in arrastras. In

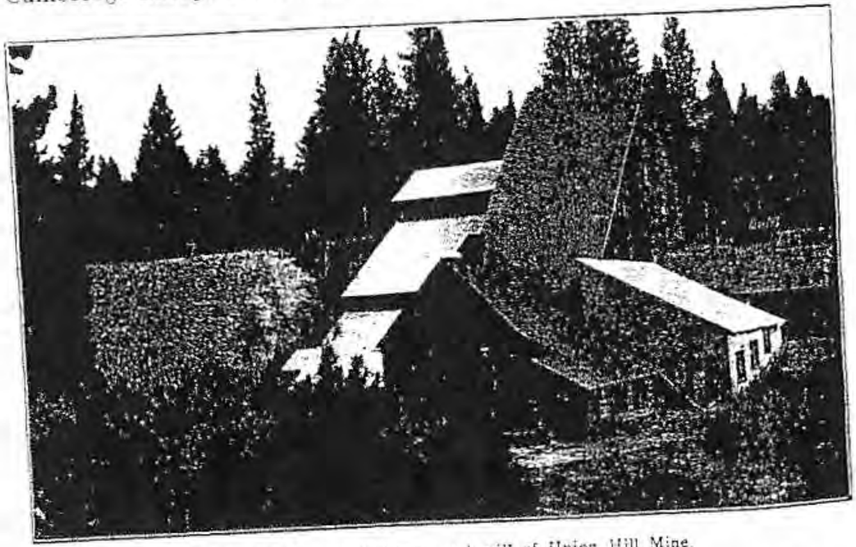


Photo No. 36. Shaft house and mill of Union Hill Mine.

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*Since the above was written this property has passed into the possession of the Idaho-Maryland Mines Company, Hobart Bldg., San Francisco.

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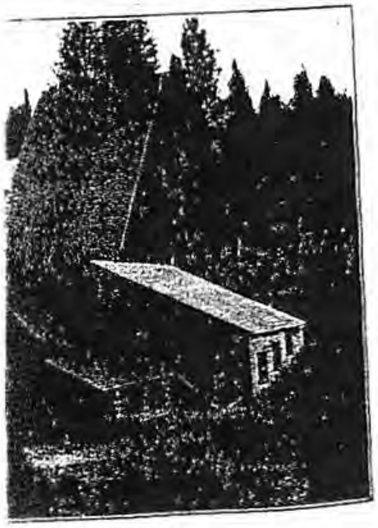

ill of Union Hill Mine.

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1865 a mill and hoist were erected and the mine was worked at a profit until 1870, when it was closed, after having attained a depth of 300 feet. Ore from the Cambridge-Lucky vein during this period is said to have averaged $20 per ton. After remaining idle for a period of over 30 years, the mine was reopened and the shaft was sunk to a depth of 600 feet. In order to straighten the shaft it was put down in the foot-wall of the Union Hill vein and at the 600′ level it was necessary to crosscut 150′ south before the vein was encountered. A drift was then driven a few hundred feet east on the vein and a small body of ore was stoped between the 600′ and 300′ levels. The main crosscut was then continued beyond the Union Hill ledge and 500′ south of the shaft the Tungsten vein was intersected. A drift was driven 1000′ west on this vein and from its end a crosscut was driven into the foot-wall northwest, and at 300′ encountered the Greek vein, on which a drift was extended 300′ further west. The main crosscut was driven 800′ beyond the Tungsten vein and there struck the Cambridge-Lucky vein. A drift was driven 1500′ west on this ledge, which is said to have been 3′ in width, but the ore developed had an average value of only $5 per ton. The 200′ level has been driven 2400′ west and 600′ east and the 300′ level 1500′ west and 500′ east. From the 200′ level at a point about 900′ west of the shaft a crosscut was driven 700′ south where it intersected the Greek ledge and some good ore was stoped therefrom. On the 300′ level, 1000′ west of the shaft, a crosscut was driven 1300′ south, opening both the Greek and Lucky veins. The latter vein it was found had been worked to a depth greater than where the crosscut intersected it. After further mismanagement the mine was closed and reverted to the owners. The property was reopened in the fall of 1914 by a San Francisco company; the shaft was continued to a depth of 800′ and a 'back vein' was opened up. Ore from this vein is now being milled in a 20-stamp mill, the returns from which are said to be more than paying the expenses of development. The veins occur in amphibolitic schist.

The ore in the various veins is composed of quartz and altered wall-rock, carrying coarse and fine free gold, and 2% of sulphides, pyrite, galena and zinc-blende. In the Tungsten vein, there is a stringer of scheelite varying from 2″ to 7″ in width associated with the quartz, and free gold was found in the scheelite. The Union Hill veins are credited with a production variously estimated at from $500,000 to $750,000.

The mine is equipped with hoist, new Sullivan air compressor (24″ x 14½″ x 18″), driven by 200-horsepower motor; Cornish pump driven by a 12′ water wheel under 600′ head, and a 20-stamp mill driven by a 50-horsepower motor.

The development work done in the last few years has evidently been confined to a 'barren zone' such as has been encountered in every mine in the Grass Valley district. In the Empire mine such a zone was encountered at the 1300′ and extended to the 2100′ level, from which area practically no ore was recovered. Systematic development will in all probability develop other orebodies.

Valentine Group. Owner, F. W. Bradley, Crocker Building, San Francisco.

Location: Washington Mining District, Sec. 5, T. 17 N., and Sec. 32, T. 18 N., R. 11 E., 2 miles southwest to Washington City (N. C. N. G. R. R.). Elevation 4000′–4500′.
Bibliography: U. S. Geol. Survey, W. Lindgren, Prof. Paper 73, pages 139–141. U. S. Geol. Survey Folio 66, Colfax.

The Valentine property consists of 2 locations: the Valentine No. 1 and Valentine No. 2, a total of 40 acres, covering 3000′ along the lode. The property is situated on the south slope of the ridge which runs from Washington to Gaston, dividing Poorman and Canyon creeks. There is good timber on the property. Very little work has been done on these claims.

Vulcan and Grey Eagle Group. Owner, L. F. Tuttle, 350 Russ Building, San Francisco.

Location: Rough and Ready Mining District, Sec. 6, T. 15 N., R. 8 E., 4 miles southwest of Grass Valley, by fair road. Elevation 2000′.
Bibliography: U. S. Geol. Survey, W. Lindgren, Prof. Paper 73, pages 121–125. U. S. Geol. Survey Folio 18, Smartsville.

This property embraces 2 patented claims: the Vulcan and Grey Eagle, having a total area of 40 acres and a length along the lodge of 1500′. The surface is a rolling plateau. There are other claims located, but they are said to be open, as no assessment work has been done.

The deposit is made up of a quartz vein and stringers, supposed to be a southern extension of the West Point vein system. It varies from a few inches to 1′ in width and strikes north. Developed by shallow prospecting only. The ore is free milling and contains pyrite. Country rock is gabbro-diorite and amphibolite.

Adjoining properties are the Kenosha, West Point and Normandie.

Washington Mine (German). Owner, Washington Mining Company. Bonded by Von Schroeder Investment Company, 743 Capp street, San Francisco; Baron Von Schroeder, president, San Rafael; H. Von Cleve, secretary.

Location: Washington Mining District, Sec. 9, T. 17 N., R. 11 E., 22½ miles southwest to Nevada City (N. C. N. G. R. R.), by road. Elevation 2800′.
Bibliography: Cal. State Min. Bur. Rept. XII, page 244. U. S. Geol. Survey, W. Lindgren, Prof. Paper 73, pages 139–141. U. S. Geol. Survey Folio 66, Colfax.

The Washington property includes the following claims: Dal, Dee, Don, Becker, Baron fraction, Ocean Star, German mill site, German and German S. Extension. There is a total area of about 480 acres of timber and mineral ground, which covers a length along the lode of 1 mile. This property has been held by the present owners for the past 25 years, but was last worked 18 years ago.

distance of 40 to 50 feet from the foot-wall is said to carry 1½% of copper. The main sulphide body carries 50% sulphur, but very little copper. Mr. Schroeder is of the opinion that similar sulphide bodies will be developed on this property. The mine was closed in 1908, and all the equipment with the exception of an 80-horsepower boiler was removed.

Spence Mineral Company. (See Under Copper.)

TUNGSTEN.

Union Hill Mine. (See also under Gold.) The Tungsten vein was found in a crosscut driven 500 feet south from the 600-foot level of the Union Hill Shaft. Considerable drifting and stoping has been done on this vein, a large part of the ore mined and milled in the past three years having been worked for its scheelite content. On the 600-foot level the Tungsten vein strikes N. 55° W. and dips 70° SE. The vein is 6 feet wide between slate walls and the ore occurs in seams from one-half inch to 16 inches wide, with the scheelite tending to follow the foot-wall. The vein carries sulphides and some free gold is associated with the scheelite. On the 800-foot level this vein unites with another. It strikes N. 45° W. and dips 65° S.E. The vein is 16″ wide and the scheelite still tends to follow the foot-wall.

The scheelite ore was crushed to 8-mesh in 5 stamps of the mill. The pulp passed over a large size Deister Simplex Sand Concentrator on which coarse and fine scheelite was caught. The coarse tailing passed to a hopper and thence to 5 stamps with 20-mesh screen, being concentrated on another Deister table. The tailing from this table is concentrated on a third of similar type. This last concentrate carried about 12% scheelite and most of the pyrite. It was sweet roasted to oxidize the pyrite and free the gold and was brought back for retreatment to save the gold and scheelite separately. The slimes from the ten stamps were passed over plates, then into Deister precipitating cones and finally over a Deister Simplex Slime Concentrator.

The Union Hill mine was one of those affected by the miners' strike in June, 1919, and is said to have been closed indefinitely early in July.

R.C. Turner
"Report on the
Brunswick Mine"
1919

APPENDIX "A"

List of Equipment

MINE PUMP

1 - 6" x 16" Dow, Triplex, Double plunger, Station Pump, with capacity of 650 gallons against 900 ft. head, driven by 2 - 100 H. P. Westinghouse, 440 Volt, Induction Motors, to which it is geared by Silent, Chain Drive.

1 - 9" x 10", Aldrich, Vertical, Triplex Plunger Pump, direct geared to 1 - 40 H. P. Westinghouse, 440 Volt, Induction Motor.

2 - 6" x 12", Aldrich, Vertical, Quintuplex, Plunger Pumps,. One of the above pumps is direct geared to 2 - 40 H.P. Westinghouse 440 Volt, Induction Motors, and the other to 3 - 30 H.P., Westinghouse, 440 Volt, Induction Motors.

1 - Alberger, 4" Horizontal, 3 Stage, Type "5", Turbine Pump, with a capacity of 300 gallons against 250 ft. head, direct connected to a 35 H.P., General Electric, 440 Volt, Induction Motor, with a speed of 1800 r.p.m.

1 - Byron Jackson, 2" x 10", Vertical, 3 Stage, Centrifugal, Sinking Pump, direct connected to a 35 H. P. Westinghouse, Vertical, 440 Volt, Induction Motor.

1 - Byron Jackson 4" - Vertical, 3 Stage, Centrifugal, Sinking Pump, direct connected to a Westinghouse, Vertical, 60 H.P., 440 Volt, Induction Motor.

1 - Small Deane, Horizontal, Boiler Feed Piston Pump, with a capacity of 75 gallons per minute.

1 - Dow, Steam, Sinking Pump with a capacity of 150 gallons per minute.

GENERAL MINING EQUIPMENT

1 - 5" x8" Duplex Cylinder Steam Hoist, with 9" x 16" Reel and 500 ft. 5/8" Steel Cable.

1 - 6" x 12" Duplex Cylinder Steam Hoist, with 19" x 28" Reel, and 500 ft. 5/8" steel cable.

1 - 26" x 32" Ore Bucket.

2 - 30" x 36" " "

1 - 30" x 52" Baling Bucket.

2 - 54" Sheave Wheels.

2 - Mine Cages for 4' x 5' Shaft Compartment.

1 - Cross Head " " " " "

3 - Skips for Incline Shaft - 16 cu. ft. capacity.

2 - Trucks " " " " " " "

3 - Timber Trucks.

24- 16 cu. ft. Mine Cars.

5 - Ingersoll, Leyner Drills.

2 - Ingersoll, Rand, Jackhammer Drills.

3 - " " Chipper "

12- 12 A Waugh, Hammer

5 - " Dreadnaught Drills

Assorted lot, Drill Columns, Column Bars, Drill Hose, Drill Steel, Picks, Hammers and general mining tools.

Several miles Steel Track, Air Pipe, etc.

2 - 19" x 18" Ore Buckets.

1 - Geared Hand Winch.

1 - Concrete Mixer, mounted, with Gasoline Engine to drive it.

1 - Ford, Converted Truck, considerably worn, but serviceable.

1 - 1917 Paige, Detroit, 6 Cylinder, Touring Car, in good condition.

1 - 12' x 16' Galv. Iron Oil House.

1 - 11' x 16' " " Transformer House at Old Shaft.

3 - Type H, 75 K. W. Gen. Electric Transformers, 2000,4000 to 115-230-440 Volts.

3 - 75 K. W. Westinghouse Transformers 2300-460 Volts.

1 - Double Throw, 3 Blade - Knife Switch.

1 - Type P, Form G-3, Gen. Electric, 5,5,15, Time Limit Relay.

1 - 19' x 32' - Galv. Iron Change Room, at Old Shaft, with Drying Furnace and Racks for Clothing.

1 - 16' x 24' Galv. Iron Transformer House at New Shaft.

3 - Type S, 100 K.V.A., Westinghouse Transformers, 2200 - 1980 to 440 - 220 Volts.

3 - Type O. D. 50 K.V.A. Westinghouse Transformers, 4000-3800-3600-3400 to 440-220 Volts.

1 - 3 Blade, Single Throw, Knife Switch.

1 - 20' x 48' - Galv. Iron Change Room, with Furnace and Drying Racks, at New Shaft.

1 - 8' x 14' Concrete Powder Magazine.

1 - 12' x 19' Galv. Iron R.R.Station and Store House.

1 - Freight Truck for Mine Track.

1 - 12' x 19' - 2 Room Frame Building (poor condition)

1 - 19' x 36', Galv. Iron Garage near Old Shaft.

1 - 18' x 28' 3 Room Frame Office Building, equipped with Desks, Safe, etc.

1 - 22' x 34½' Frame Barn

1 - 26' x 40' - 2 Story Frame Boarding House (Now used for assay office).

1 - 38' x 32' - 4 Room Frame Dwelling (Foreman's Residence)

1 - 18' x 23' Frame Building, South of Old Hoist.

1 - 2 Story Frame Hoist Building, containing:
1 - 36" Pelton Wheel running Machine Shop
1 8' " " (not in use)
1 6' " " geared to hoist with friction drive
1 Double Reel Friction Hoist with 14" x 48" Reels and 3000 ft. 7/8" Steel Cable.
1 - 36" x 11' Vertical Air Receiver - probabdy in good condition.
1 - 14" x 12" Rix Duplex Compressor, Electric Driven.
1 - 13" x 16" " " " " "
1 - 75 H.P. Gen.Electric, 440 Volt, Induction Motor, driving Compressor.
1 - 100 H.P. Gen.Electric, 440 Volt, Induction Motor, driving Compressor.
1 Emery Grinder
1 24" Circular Wedge Saw
1 Drill Press, power driven
1 18" x 14' Lathe
1 32' x 61' Galv. Iron Carpenter Shop
1 3' Band Saw, driven by 1 - 3½ H.P.Gen.Electric 440 Volt, Induction Motor
1 23' x 30' Galv. Iron Garage

1 - 32 x 67' Galv. Iron Hoist Building, containing:

1 Double Reel, Electric Geared Hoist, with 17" x 5' Reels, driven by 1 - 100 H.P. Gen.Electric,440 Volt, Variable Speed, Induction Motor.
3200' - 1" Steel Cable.
1 Type "P" Form K 14, 300 Volt, 600 H.P. Gen.Electric, Oil Switch.
1 21¼" x 13¼" x 18, Class P, Ingersoll Rand Compressor, direct connected to
1 320 H.P. Westinghouse, 440 Volt, Synchronous motor.
1 Type S. K. , - 5 K.W., 125 Volt, Westinghouse, D. C. Generator.
1 Switch Board, fully equipped, for Synchronous Motor
1 Gen.Electric, Form K 30, 80 Volt, 600 Amp., Oil Break Switch.
1 52" x 16' Horizontal Air Receiver (poor condition)

1 - 23' x 98' Galv. Iron Machine and Blacksmith Shop, containing:

1 #470, Leyner Drill Sharpener
1 Converted Rock Drill, Air Hammer, mounted.
1 Small Drill Press
1 Forge and Anvil

1 Complete lot Blacksmith Tools
1 Superior, Power, Drill Press
1 Power Grindstone 3" x 36", driven by 1 - 16" Pelton Wheel
1 Power Hack Saw
1 Emery Grinder
1 Bolt Cutter
1 Pipe Threading Machine
1 20" x 1[illegible]' - 3 Step, Lodge, Shipley Lathe

1 Galv. Iron - New Mill Building, containing:

2 Sets Grizzly Bars
1 10" x 16" Blake Crusher
2 Ore Bin Gates
4 Suspended Challenge Ore Feeders
1 30 H.P. Gen. Electric, 440 Volt, Induction Motor
1 15 H.P., Gen. Electric, 440 Volt, Induction Motor
1 75 H. P., Gen. Electric, 440 Volt Induction Motor.
20 1250 lb. Battery Stamps, with Mortars set on concrete blocks.
4 Sets Copper Plates, with 300 sq. ft. Plate surface.
4 Amalgam Traps
4 Johnston Vanners
1 Empire, Clean-up Pan
1 Safe
3 Automatic Tailings Samplers
1 1000# Platform Scale
1 Platform Bullion Scale

1 Frame - Old Mill Building, containing:

4 sets short Grizzly Bars
1 9" x 15" Blake Rock Breaker
20 - [illegible]50 lb. Battery Stamps, with 4 Mortars, set on Concrete Blocks
1 4' x 12' Copper Plate Tables
4 6' Johnston Vanners
4 Suspended, Challenge Ore Feeders
1 Safe
1 Platform Bullion Scale
1 Empire Grinding Pan
1 40 H.P. Westinghouse, 440 Volt. Induction Motor
3 30 K. W. Gen. Electric Line Transformers - 4000 to 244 - 488 Volts

1 - 14' x 21' Galv. Iron Retort House, containing:

1 10" x 36" Horizontal Retort, bricked in
1 Brick, Bullion Melting Furnace

1 85 ft. Steel Head Frame over New Shaft
2 Lead Covered, Power Line Cables in Mine, one in each shaft.
2 Lead Covered, Telephone Cables in Mine, one in each shaft.
9 Telephones.

Inventory for 1940

BRUNSWICK WAREHOUSE

IDAHO MARYLAND MINES CORPORATION

CLASSIFICATION OF SUPPLIES

CODE NUMBERS

Taken by: E. J. Plant &
[illegible] Mitchel

January 1, 1940

BRUNSWICK WAREHOUSE

GASOLINE & OILS

Gasoline

Ethyl	4-010
Hi-Octane - Regular	4-020
Butane	4-030
Aviation 80 Octane	4-040
Aviation 87 Octane	4-050
Kerosene	4-060

OILS

Kendall F - S.A.E. 60	4-075
S.A.E. 10	4-108
S.A.E. 20	4-109
S.A.E. 30	4-110
S.A.E. 40	4-111
S.A.E. 60	4-113
Grease #2 Cup	4-114
Red Engine	4/119
Diesel Fuel Oil (Chg'd direct)	
Rock Drill Oil (Standard)	4-204
Rock Drill Oil (Sta-Put #360)	4-205
Absorption Oil DL 21	4-206
Bitumuls Road Oil	4-207

Tires & Tubes

750/17		4-300
975/020	Tires	4-301
900/20		4-302
825/20		4-303
650/16		4-304
600/16		4-305
975/020	Tubes	4-331
900/020		4-332
750/17		4-333
650/16		4-334
600/16		4-335

Prestone Anti-Freeze	4-400

BRUNSWICK WAREHOUSE

MILLING SUPPLIES

Marcy Mill Parts	5-200
Discharge Liners	5-201
Shell Liners	5-202
Liner Bolts	5-203
Shaft Pinion Gears	5-204
Clamp Bars	5-205
#86 Marcy Steel Grates	5-206
Spirals, high carp plates	5-207

	Mill Balls	5-225
	~~2"~~	5-226
	2½"	5-227
	3"	5-228
	~~4"~~	5-229
/C 552	5"	5-230
/C 571	Pebbles	5-235
	Crucibles #275 23927 for D.F. Furnace	5-240

Reagents & Supplies	5-250
Caustic Soda	5-251
Copper Sulphate	5-252
Cresylic Acid	5-253
Cyanide	5-254
Lime, 10-mesh slaked	5-259
Lime, Hydrated	5-261
Quicksilver-Mercury	5-263
Reagent 301	5-265
Starch (Tapioca)	5-267
Zinc Dust	5-269
Hyposulphate	5-275
Pine Oil	5-277
Potassium Isproxyl Xanthate Z-9	5-278
Potassium Butyl Xanthate Z-8	5-279
Sulphuric Acid	5-280

✓

idea that stocks of diabase have been faulted along the vein fracture with sufficient displacements to overlap dissimilar rocks. This interpretation necessitates a displacement on the vein of several hundred feet.

EUREKA-IDAHO-MARYLAND VEIN

EUREKA MINE

The Eureka-Idaho-Maryland vein was discovered in 1851, and in 1864 a vertical shaft 100 feet deep found the great Eureka-Idaho ore shoot (fig. 64). The mine was actively worked until 1873. In 1877, when the ore shoot had been mined to the property line of the adjacent Idaho claim, the mine was closed. Workings had reached a depth of 1,200 feet, but no good ore was found below 600 feet. The Eureka mine is credited with a total production of $5,700,000.[79]

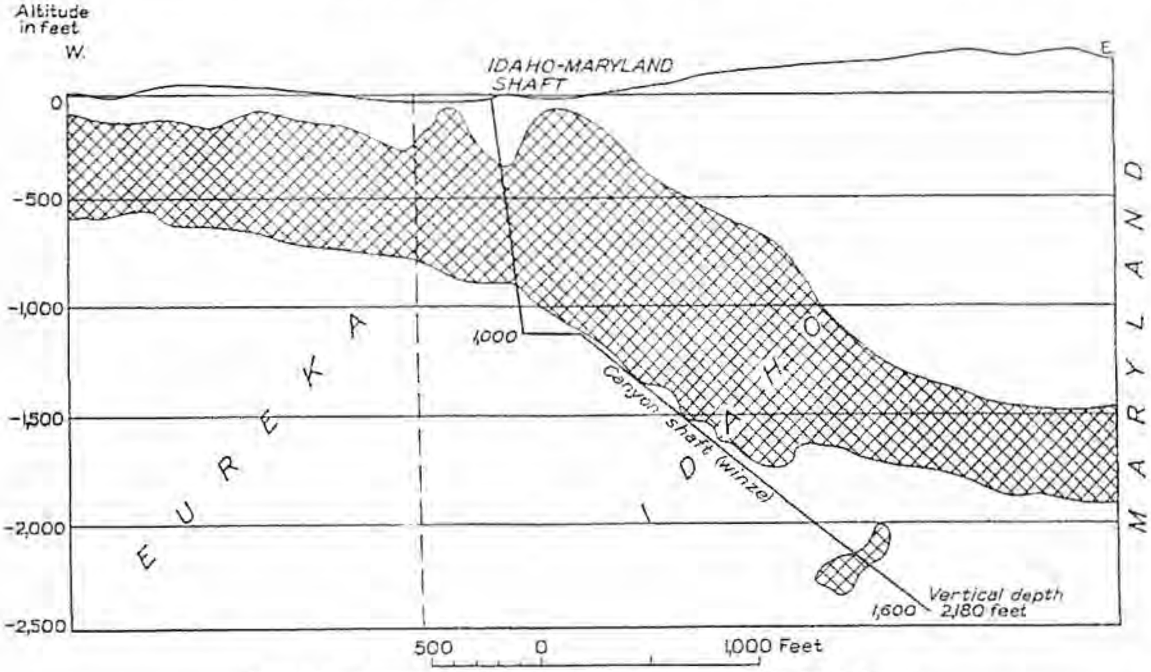

FIGURE 64.—Approximate outline of the Eureka-Idaho ore shoot. (After Lindgren.)

IDAHO-MARYLAND MINE

History and production.—The Idaho mine was located in 1865, and in 1867, at a depth of 300 feet, the eastward continuation of the Eureka ore shoot was found. Since 1867 the mine has been operated by five companies and has prospered under the first and last, or present company. The brief historical and geologic sketch here given is compiled from reports by Lindgren,[80] MacBoyle [81] (the present operator), and Logan.[82] No information about the geology of the present workings was obtained.

The first period of mining extended from 1867, when the Idaho Quartz Mining Co., with Edward Coleman as president was organized, until January 1893. During this time over $11,000,000 in gold was produced and $5,000,000 paid in dividends. The ore came from the Eureka-Idaho shoot (fig. 64), which averaged 2½ feet in width and yielded 1 ounce to the ton in gold. The shoot was worked through a shaft inclined at an angle of 70°, which extended to the 1,000-foot level and an inclined winze raking to the east, called the Canyon shaft, that bottomed on the 1,600-foot level, at a vertical depth of 2,180 feet. In 1893, in consequence of a lawsuit between the Idaho and Maryland Cos. over the eastward continuation of the Eureka-Idaho shoot, the Maryland Co. acquired the Idaho Quartz Mining Co. upon payment of $85,000.

The second period was that of operation by the Maryland Co. under management of S. P. Dorsey, extending from February 1893 until 1901, during which $1,250,000 in gold was produced. A winze was sunk from the 1,600- to the 1,900-foot level, but in 1894 a fire destroyed the hoist and the mine was flooded and workings below the 1,600-foot level were not reclaimed. In 1901, partly because of the bad condition of the workings, the mine was closed.

It remained idle until 1903, when it was bonded to the Idaho-Maryland Development Co., which worked it until 1914. This company succeeded only in reopening it to the 1,000-foot level, and the $300,000 in gold it produced came mainly from old stopes and pillars left behind by the earlier operators.

The fourth period extended from 1918 to 1925, when the mine was operated by the Metals Exploration Co., financed by H. P. Whitney. At a cost greatly exceeding the $500,000 in gold that was produced, the main shaft was extended downward 1,000 feet to the 2,100-

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[79] Lindgren, Waldemar, op. cit., p. 224.

[80] Lindgren, Waldemar, op. cit., pp. 224–229.

[81] MacBoyle, Errol, Mines and mineral resources of Nevada County, pp. 185–191, California State Mining Bureau, 1919.

[82] Logan, C. A., Nevada County: California Dept. Nat. Resources, Div. Mines, State Mineralogist Rept., vol. 26, pp. 115–118, 1930.

t level at a vertical depth of 2,000 feet, drifts on the 00- and 2,100-foot levels were driven from the main aft and other drifts from the Dorsey winze, and a new nze was sunk 850 feet below the 2,000-foot level. iling to find a new ore shoot, the company suspended rk in 1925.

Work was shortly thereafter resumed by the Idaho-aryland Mines Co., under the management of Errol acBoyle. New ore was found, and, for the first time the present century, the mine entered a period of osperity. Production for the years 1930, 1931, and 33, quoted from Mineral Resources and the Minerals earbook, is shown in the following table:

Production of the Idaho Quartz Mining Co., 1868–1903

[After MacBoyle]

Year	Ore mined (tons)	Production	Dividends
68	763	$45, 534	----------
69	9, 489	308, 208	$170, 500
70	9, 782	189, 963	37, 200
71	11, 133	395, 355	232, 500
	----------	400, 465	162, 750
	28, 825	1, 024, 591	682, 000
	28, 401	664, 811	317, 750
75	28, 103	495, 569	172, 050
76	29, 720	562, 274	255, 750
77	29, 250	530, 143	240, 250
78	33, 833	596, 850	263, 500
79	32, 370	499, 379	168, 950
80	11, 611	226, 078	127, 100
81	27, 540	642, 538	271, 250
82	27, 540	568, 572	263, 500
83	28, 572	364, 599	[1] 34, 500
84	31, 143	561, 895	271, 250
85	30, 518	370, 197	99, 200
86	29, 244	547, 569	263, 500
87	26, 686	492, 638	235, 600
88	26, 664	603, 694	325, 500
89	21, 448	407, 385	178, 250
90	20, 321	268, 904	52, 700
91	16, 759	314, 037	10, 250
92	16, 500	248, 270	57, 450
93 [2]	----------	40, 904	[3] 23, 783
	567, 029	11, 470, 573	5, 008, 433

New equipment.
January only.
Balance on hand.

Average value per ton, $20.23.

roduction of Idaho mine under ownership of the Maryland Co. and management of S. P. Dorsey, 1893–1901

[After MacBoyle]

Year:	Production
1893 [1]	$258, 220
1894	193, 182
1895	247, 600
1896	197, 239
1897	147, 646
1898	93, 242
1899	68, 344
1900	31, 503
1901	9, 040
	1, 246, 020

11 months, February to December.

Total production of the Idaho-Maryland mine, 1868–1932

Period	Operating company	Production
1868–1893	Idaho Quartz Mining Co	[1] $11, 470, 573
1893–1901	Maryland Co	[1] 1, 246, 020
1904–1914	Idaho-Maryland Development Co	[1] 311, 613
1919–1925	Metals Exploration Co	[2] 560, 000
1926–1932	Idaho-Maryland Mines Co	[3] 2, 350, 000
		15, 938, 206

[1] MacBoyle, Errol, op. cit., pp. 187–188.
[2] Logan, C. A., op. cit., p. 115.
[3] Estimated from published figures for parts of the period.

Production of the Idaho-Maryland mine, 1930, 1931, and 1933

Year	Ore mined (tons)	Production	Value per ton (gold at $20.67+ an ounce)	Gold (ounce per ton)
1930	19, 452	$241, 059	$12. 40	0. 60
1931	40, 005	574, 573	12. 77	. 61
1933	68, 233	866, 245	12. 69	. 61

Geology.—The Eureka-Idaho-Maryland vein strikes N. 77° W. and has an average dip of 70° SW., ranging between 50° and 80°. It was marked by strong surface croppings on the western or Eureka end, but it could not be followed on the surface east of the present Idaho-Maryland shaft. As shown in Lindgren's section through the Maryland shaft (fig. 65), the hanging wall is composed of diabase and gabbro, and the footwall is serpentine. All the rocks are highly altered and contain much ankerite. Mariposite commonly occurs in the serpentine.

The famous Eureka-Idaho ore shoot (fig. 64) had a pitch length of almost 1 mile and a breadth of 500 to 1,000 feet. The width of the vein within the ore shoot averaged 2½ feet, but in places it was as much as 8 feet. The average gold content of the ore has been estimated at 1 ounce to the ton. Between 1 and 2 percent of the ore was composed of sulphides, of which pyrite was most abundant. Lesser amounts of galena, chalcopyrite, and sphalerite were present. The sulphides yielded between 5 and 20 ounces to the ton in gold. Most of the gold, however, was free, and much specimen ore has come from this famous ore shoot.

There is little available geologic information about the present workings which are to the east of the Canyon shaft. In 1933 ore 16 feet wide was reported on the 1,200-foot level,[83] and the increasing production is witness to successful development work.

It is to be hoped that the geologic staff of the company will be permitted to publish the results of their studies pursued actively since 1931, for the Idaho-Maryland mine holds the key to the complex geology of the serpentine belt. The extent of faulting on the

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[83] Eng. and Min. Jour., vol. 134, p. 86, 1933.

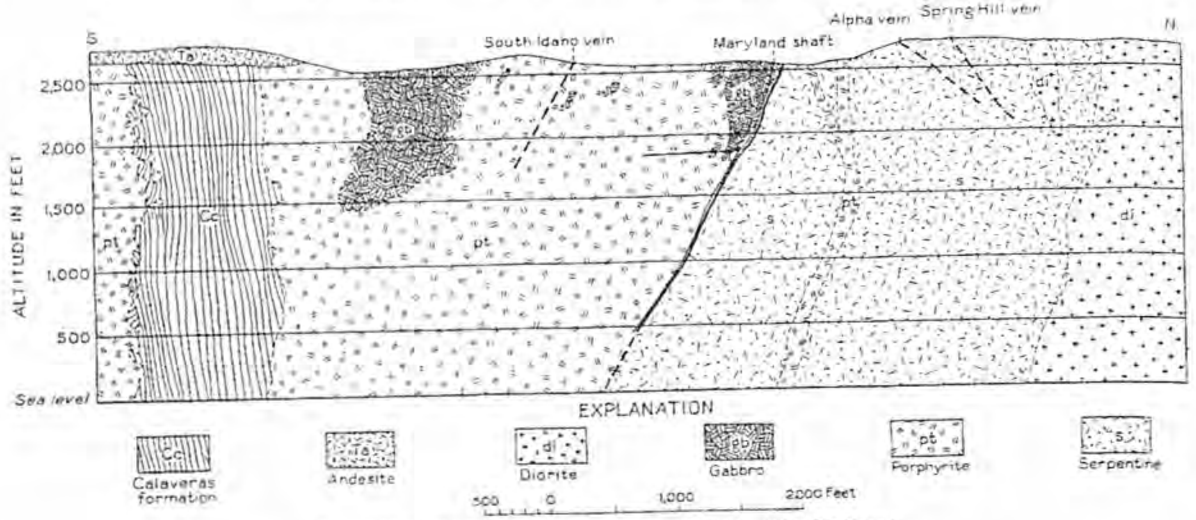

FIGURE 65.—Section through the Maryland shaft, 1894. (After Lindgren.)

Idaho-Maryland vein, the age relations of the serpentine and granodiorite vein fractures, the succession of the serpentine-gabbro-diorite instrusions, and the distribution and age relations of the reported tellurides are a few of the general problems whose solution lies in that mine.

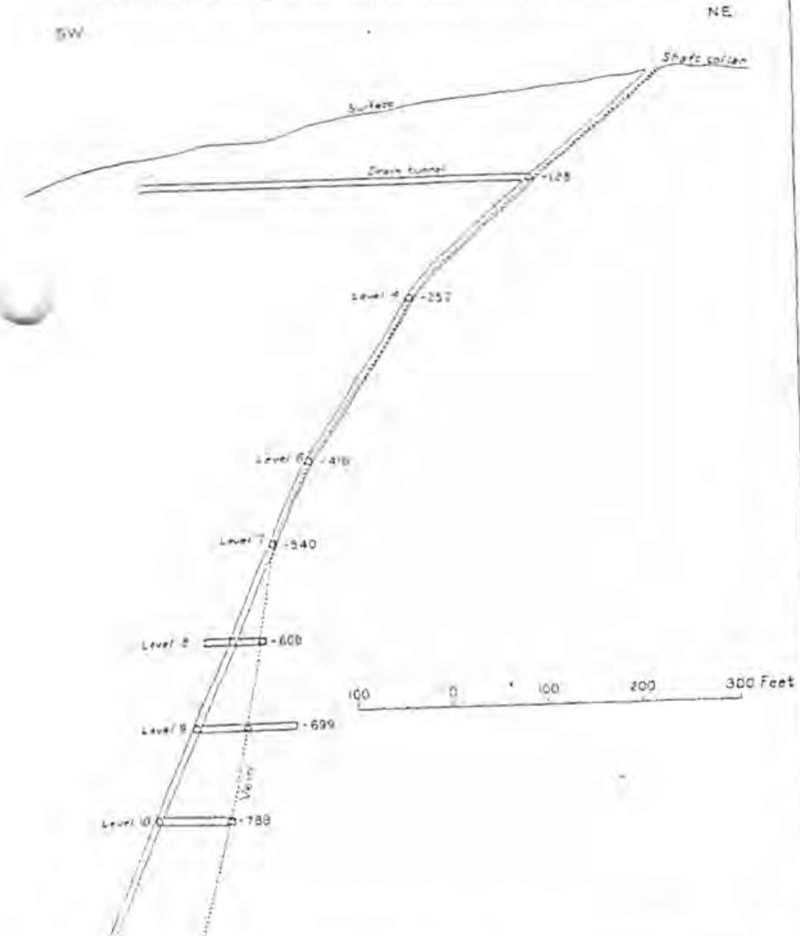

FIGURE 66.—Generalized section through the inclined shaft of the Brunswick mine Based upon a mine map by E. C. Uren.

BRUNSWICK MINE

The Brunswick is southeast of the Idaho-Maryland, in the area of amphibolite schist. It was located early, but by 1888 it was only 300 feet deep. When Lindgren studied the mine in 1894 an inclined shaft following the vein bottomed at 700 feet. The inclined shaft was later extended to the 1,250-foot level, and in 1915 a vertical shaft about 3,000 feet southeast of the old inclined shaft was put into service. In 1918 shaft sinking stopped at a depth of 1,347 feet. The 1,250-foot level of the old shaft connects with the 900-foot level of the vertical shaft. The mine was profitably operated for a few years before the World War, but in 1917 the scarcity of labor slowed up development work, and in 1918, because of high labor costs and depleted ore reserves, work was suspended for the duration of the war.[84] The mine was unwatered in 1922 and was operated in 1923, 1925, and 1926. In 1927 it was again closed. In 1933 the Idaho-Maryland Co., which had meanwhile acquired control, began pumping preparatory to putting it in production. The mine workings in 1924 are shown in plate 39.

The Brunswick vein belongs to the Idaho-Maryland vein group. It strikes N. 50° W. and dips southwest. As shown in figure 66, the dip steepens from 45° at the surface to 70° below level 7. As the mine was not accessible in 1930 and 1931, the following geologic notes are taken from Lindgren's and MacBoyle's reports. In describing the character of the Brunswick vein on level 7 of the inclined shaft, Lindgren [85] says:

> The vein is contained in a chloritic schist derived by dynamometamorphic processes from a porphyrite breccia and intersects the strike of the schist at an acute angle. There are usually two well-defined walls, 2 to 4 feet apart. The space between the walls is only locally wholly filled with massive milky quartz, being generally occupied by soft chloritic schists, extensively altered by hydrothermal processes; the schists are either parallel to the walls or, as is frequently the case, broken and irregular; they contain streaks and ramified veins of massive quartz (fig-

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[84] Logan, C. A., Additional notes in MacBoyle's 1919 report, op. cit., p. 127.

[85] Lindgren, Waldemar, op. cit., p. 230.

67), which sometimes increases in thickness and occupies the whole space between the walls. East of the shaft (on the No. 7 level) the vein closes down to a mere seam. Free gold is rarely visible in the quartz, and the sulphurets, which generally are rich, consist of pyrite, chalcopyrite, and galena.

The stoped areas are shown on the mine map (pl. 39). The largest ore shoot occurs in the eastern half of the vein, where it has been mined from the 400- to the 1,200-foot level, through a vertical range of about 600 feet. Ore from this shoot is said to have averaged 1 ounce to the ton in gold. There are several vein splits in which stopes have been opened on both foot wall and hanging wall. From the semicircular trend of the drift on the 400-foot level and the converging raises above that level, as shown on mine maps, it appears that the vein flattens and reverses its dip, forming a domelike structure whose axis plunges to the southeast. Similar structures occur on the New Rocky Bar, Pennsylvania, and New York Hill veins.

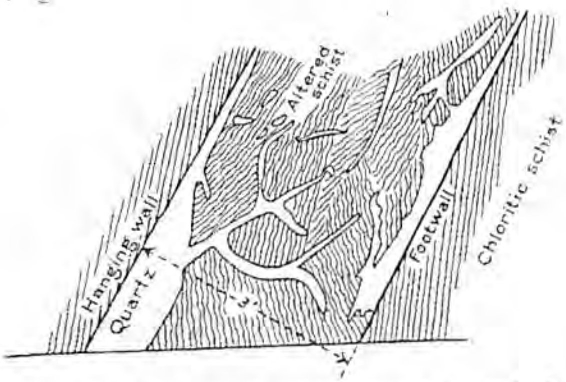

FIGURE 67.—Sketch section of the Brunswick vein on the 700-foot level. (After Lindgren.)

In 1917 ores from the upper levels at the south end of the vein contained 1.6 percent of sulphides, averaging 1.64 ounces of gold to the ton, and ore from the lower levels contained 2.0 percent of sulphides, averaging 2.80 ounces of gold to the ton.[56] The sulphide content of the veins is much lower than the average for the district.

UNION HILL MINE

The Union Hill vein, on the north bank of South Wolf Creek south of the Brunswick inclined shaft, was worked in 1854, and the ore reduced in an arrastre. Between 1865 and 1870, when it bottomed at the third level, the mine was profitable and is reported to have yielded $250,000 up to that time. At the beginning of this century the mine was reopened, and a new shaft, beginning in the footwall of the Union Hill vein on the 300-foot level, was sunk to a depth of 600 feet. Mining was continued with occasional interruptions until 1911, when operations were suspended. In 1914 the mine was again opened and mining continued until 1918. In 1930–31 the property was idle and inaccessible. At the present time it is controlled by the Idaho-Maryland Mines Co.

The mine lies in the area of amphibolite schist, described by Lindgren as a schistose porphyritic breccia.

The mine map (fig. 68) shows workings on several veins. Figure 69 is a generalized section through the Union Hill shaft. As it was constructed from a mine map and oral reports, the projection of the veins is largely hypothetical, but because even a rough and inexact sketch conveys a clearer structural concept than written description alone, it is here reproduced.

The named veins developed in the mine are the Union Hill, whose identity is well established to the 600-foot level at the shaft and to the 800-foot level west of the shaft; the Greek-Tungsten, which has been found on all levels; the Lucky-Cambridge, early worked through the Lucky and Cambridge shafts and intersected by crosscuts on the 600- and 1,200-foot levels; the Georgia vein, which appears possibly to be a footwall split from the Union Hill; and the Back and Gold Point veins, which are cut by footwall crosscuts on the 800-foot level.

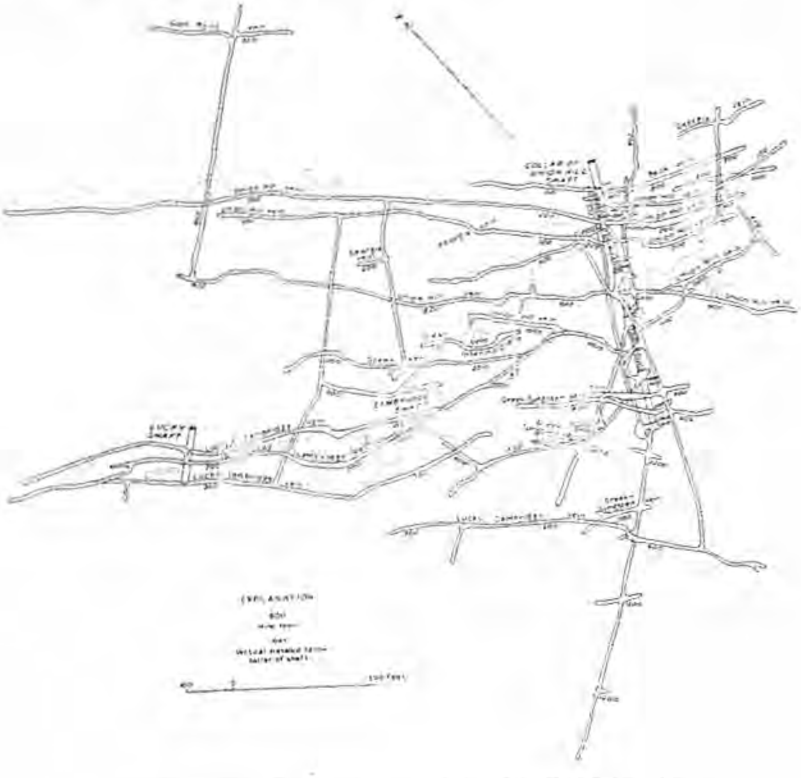

FIGURE 68.—Map showing workings in the Union Hill mine, 1919.

The Greek-Tungsten vein is of interest because of the scheelite it carries. According to MacBoyle,[57] the

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[56] Logan, C. A., op. cit., p. 127.

[57] MacBoyle, Errol, op. cit., p. 255.

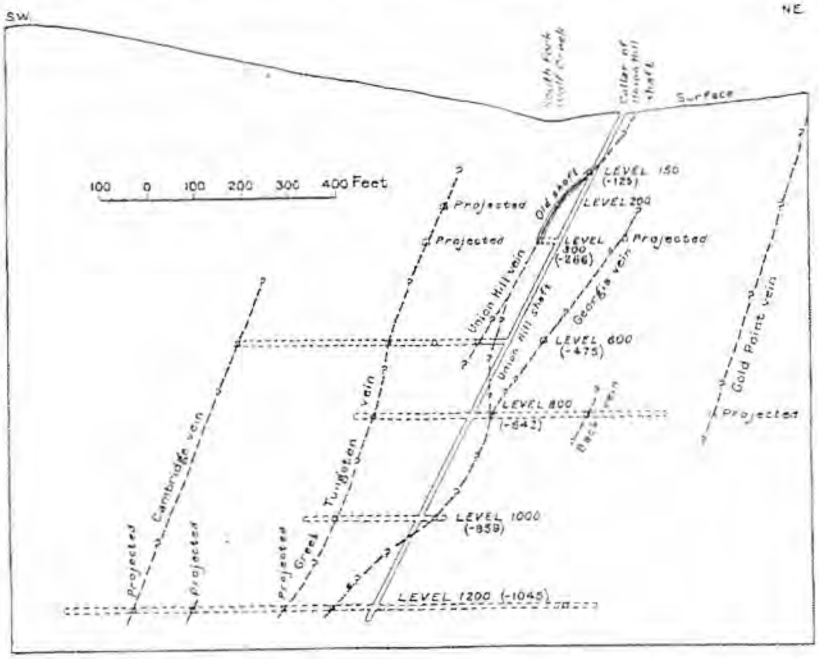

FIGURE 69.—Generalized section through the Union Hill shaft. As the mine was inaccessible at the time field work in the district was done, this section has been compiled from working maps and oral descriptions and is intended only to show the relative position of the veins.

scheelite stringer is 2 to 7 feet wide During the World War 8 tons of hand-picked scheelite, averaging 1½ percent WO_3, was mined.[88] A polished specimen of scheelite-bearing quartz from this vein and a thin section of the ore are shown in plate 12, *A* and *B*. MacBoyle credits the Union Hill mine, including the Lucky and Cambridge mines, with a total production of between $500,000 and $750,000.

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[88] Hess, F. L., unpublished notes.

ccurs in veins, which are opened by a

ated in the foothills of the Sierra
aymond, Madera County.

im was originally located for a cop-
ms, copper was mined in 1907. The
which evidently treated the oxidized
the deposit was as yet undeveloped,
of wolframite are said to have been

mite occurs as masses and large crys-
rock is an andalusite-mica schist in
bly crushed and altered. There are
ly vertical, quartz veins in the vicin-
which are heavily stained with cop-
ng vein, however, shows no signs of
4 to 16 inches wide, and is primarily
out at a depth of 40 feet; but as it
robably be picked up at depth. The
to 3 or 4 pounds in weight, and in
n accessory mineral.

6; 23, p. 271; Hess, F. L. 08; Laizure,
y 16, p. 568.

ated near the Silver Horde mine in
t north of Minarets, Madera County.
0 feet, but is easily accessible.

duction from this deposit has been

n the form of wolframite, occurs near
deposit of the Silver Horde Mine.
hic area of slate and volcanics.
p. 305-306.

County

1 E., M.D. This property is located
d 3 miles southwest of Yellowjacket
ssible by a good road from Benton.
n of America, 811 West 7th Street,

vas a reported production from this
re no figures available, however, as
n 1939, there was a reported produc-
June 1940.

CA Journal of Mines + Geology
Vol 37 #2 1941 April

General Geology. The deposits mined are of the contact-metamorphic type. A mass of limestone and tactite forms the core of a north-plunging asymmetric anticline which has been intruded on the west limb by granite. At the surface the granite is in contact with schist, but at depth the granite cuts the limestone and tactite beds. The outcrop of the limestone-tactite zone is about 1,200 feet long. There has been a large amount of faulting in the fold. An altered rhyolite dike and several diabase dikes cut the orebody. Scheelite is the ore mineral. Garnet, amphibole, diopside, calcite, epidote, quartz, sulphides, and chlorite are the remaining constituents of the tactite. The scheelite is disseminated through the ore; and though some large crystals are found, the greater part of the scheelite is microscopic in size. The ore averages about 0.5 percent WO_3.

Mine and Plant. The mine is developed by four adits and a glory hole from which much of the ore has been taken. There is also one other glory hole which is in the footwall of the ore. There is no more than 10,000 tons of proven ore developed.

Bibliography. California State Division of Mines 13, no. 35; Hess and Larsen 22, pp. 276-277; Lemmon, D. M. 40b, pp. 587-590.

Nevada County*

Empire and North Star Mines

Location. T. 16 N., R. 8 E., M.D. These mines are in the Grass Valley district, Nevada County.

Owner. Empire-Star Mines Company.

Production History. These mines have had a huge gold production, but no tungsten has been produced.

General Geology. Scheelite occurs in minor amounts in the quartz gangue of the gold ores in both the Empire and Pennsylvania veins. It is sparingly and spasmodically disseminated through the veins from surface to deepest levels; but there is apparently no ore of commercial grade, so far as the scheelite is concerned.

Bibliography. Boalich and Castello 18, p. 12; Eakle, A. S. 14, p. 176. Nobs, F. W., unpublished note on 1917 mineral production questionnaire.

Union Hill Mine

Location. Secs. 25, 26, T. 16 N., R. 8 E., M.D., a few miles southeast of Grass Valley, about a quarter of a mile from the Nevada County Narrow-Gauge Railroad.

Owner. Idaho-Maryland Mines Corporation, San Francisco.

Production History. Scheelite concentrates were produced in 1915, 1916, and 1917. Gold was the main product, and scheelite was recovered only during the boom years of the World War. The mine has not now a separate existence, but the vein is being worked for its gold ores through the New Brunswick shaft of the Idaho-Maryland group, which adjoins the property on the east.

General Geology. The scheelite occurred in a quartz vein associated with pyrite, free gold, and minor amounts of galena, and sphalerite. The vein is a fissure type in dark-green, altered volcanic

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* See also, page 224.

rock, locally known as porphyrite. The deposit is generally considered to be of high-temperature origin. The scheelite is massive and occurs along fissures developed in the quartz. It is therefore later than the quartz gangue of the vein.

Mine and Plant. The mine was developed through a shaft to a depth of 1,200 feet. The New Brunswick mine has cross-cut to the vein on their 1,300-foot level, and is working the vein below that level at the present time. The mill consisted of a 5-stamp mill. The ore was roasted to change the pyrite to a soft brown iron oxide, and the scheelite was then separated on Wilfley tables.

Bibliography. Boalich and Castello 18, p. 13; California State Division of Mines 13, no. 31; no. 211; Fink, C. G. 16, p. 688; Hess, F. L. 21, p. 938; McDonald, P. B. 16.

Four Brothers Mine San Bernardino County

Location. Sec. 3, T. 6 N., R. 4 W., S.B. This mine is located 3½ miles east of the Mojave River in the Oro Grande Range, northeast of Victorville, San Bernardino County.

Owner. (1916) Joseph Scheerer et al., of Victorville.

Production History. This mine was a gold producer, and no tungsten production was ever reported. In 1916, three claims on the south side were being developed for tungsten. The property is now idle.

General Geology. The country rock is diorite, which is intrusive into limestone. The contact is several miles to the south. Quartz veins cut the granite and have been reported to carry small amounts of tungsten. The limestone is coarsely crystalline and nearly pure. No contact-metamorphic zone has been discovered. It is highly improbable that any large tungsten deposits will be found in the district.

Bibliography. Cloudman, Merrill, and Huguenin 19, pp. 815, 849.

Guadalupe Tungsten Mine

Location. This mine is located about 4 miles from the town of Manvel, San Bernardino County.

Production History. No production has been made from this mine, although the ore has been reported to carry 60 percent WO_3.

Bibliography. Forstner, Hopkins, Naramore, and Eddy 06, p. 355.

Shadow Mountain Deposits

Location. The Shadow Mountains are located about 20 miles northwest of Adelanto, in the Mojave Desert. Tungsten claims have been located on the southern, western, and northern slopes of these mountains. A good road connects the deposits on the northern slope with the main highway from Adelanto to Kramer Junction. The other deposits are also accessible by road.

Ownership. The deposits on the northern slope are owned by Shadow Mountain Tungsten, Incorporated; Just Associates, 715 Commercial Exchange Building, Los Angeles, California. Nicholas Baxter,

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of San Bernardino, and tl
near Havilah) are the own

Production History. A
these deposits, but no figure

General Geology. The
of a dark biotite granite, wh
limestones. The limestone i
calcite marble. There is a
ore. The ore is reported to

Mine and Plant. The d
Company has been extensiv
erected, but it proved unpro
The deposit is now idle. The
by a lack of water.

United Tungsten Copper Mines

Location. T. 2 N., R. 3
located in the old Morongo d
Bernardino Mountains, near tl
miles southeast of Victorville,

Owner. United Tungsten
Street, New York City.

Production History. The
1918, but the amount is not repo

General Geology. The or
metamorphic deposit. The coun
diorite intruded into a previo
both the granodiorite and the li
stone beds are in no places mo
known orebodies are very small.
are quartz, a gray mica, epidote,
with accessory apatite, titanite, p
The richest ore appears in soft
oxidized and in which the mine
scheelite is generally coarsely crys

Bibliography. Boalich and Caste
Mines 13, no. 183; Hess and Larsen 22
and Sampson 30, p. 295.

Gold Standard Group San Die

Location. Sec. 12, T. 15 S., R
Deer Park district, near Descanso,

Production History. A small
in 1925. The property is now idle.

General Geology. The ore occu

Bibliography. Tucker, W. B. 25, p.

n of manganese ore 4 ft. wide and
Some other small outcrops have not
and no sinking has been done on the
s have indicated from "65% to 73%
n content possible for the definitely
2% plus for hausmannite, 63.6% for
anging wall as "granite" and footwall

. 14 N., R. 8 E., in Wolf district. In
xide ore said to carry over 50% man-

RAL PAINT

ne is in sec. 4, T. 15 N., R. 7 E., a mile
Norman L. Wimmler and Orrin P.
from the owner, U. S. Smelting, Refin-

near Indian Springs, Nevada County
d Wimmler, operators

sly been described as a copper prospect
ne upon it, which disclosed a body of
present work however (August, 1940)
iron oxide from the gossan capping, for
rade oxide are selected at different spots

mining 10 tons of ore daily by hand from
ble compressor furnishes air for drilling
th dynamite. Large pieces are broken by
d the ore is hauled by trucks directly to
Williams Company. It is calcined and
red" paint. After being calcined, the

CA Journal of Mines + Geology V. 37 #3 July 1944

product is mainly Fe_2O_3. A sample from 20 ft. of channeling showed 3.6% silica, 0.19% sulphur and 11.61% ignition loss. There is a small amount of gold present, not sufficient to justify work, according to Peterson's sampling. The working season is about 3 months.

SAND AND GRAVEL

Grass Valley Rock & Sand Company. D. V. Brown, manager. Sand and gravel are dug from Greenhorn Creek 7½ miles from Grass Valley on leased land. A "high line" with a ½ cu. yd. bucket and double drum hoist is used for digging. From 1 to 4 men are employed. Most of the output is sold in Grass Valley.

TUNGSTEN

Scheelite has been noted at a number of mines in the Grass Valley district, but only one deposit has been commercially developed. During the previous world war, one of the quartz veins being worked in the *Union Hill Mine* was found to contain scheelite. It was worked from 1916 to June, 1919 when the mine was closed. The Tungsten vein, as it was called, was found in a crosscut driven 500 ft. south from the 600-ft. level of the Union Hill shaft. The vein was 6 ft. wide and the ore was found in seams from ½ inch to 16 inches wide. This vein strikes N. 55° W. and dips 70° SE. On the 800-ft. level it unites with another vein which strikes N. 45° W. and dips 65° SE. In both, the scheelite followed the footwall. Part of the stamps and Deister concentrators in the gold mill on the property were utilized to crush and concentrate the scheelite ore. Part of the concentrate which contained pyrite was roasted to release the gold and permit its separation from the scheelite.

Bibl: Mines and Mineral Resources of Nevada County, 1919; p. 263.

Scheelite has been noted at various depths in the gold vein of the *Empire Mine* and especially on the 3000-ft. level. The amounts are too small to warrant recovery.

In the mill at the *Lava Cap Mine* (1940) a line of heavy concentrate, stated by Delbert Schiffner to be scheelite, was noted on a concentrating table which receives tailings from a jig. No effort was being made to save this because of the small amount and the difficulty of separating it from the sulphide.

Pioneer Mine (Mitchell Ranch Mine). On the 170-ft. level of this mine, 2 miles east of Grass Valley, the quartz vein was found to contain irregular bunches of reddish-brown scheelite. This vein is from a seam to 2 ft. in width and carries some pyrite, chalcopyrite and galena, in addition to the scheelite and variable assays for gold. Only a limited amount of work was done at this property and no special attention was paid to the scheelite.

Bibl: R. XXVI, 1930, p. 127.

Scheelite occurs in samples of quartz ore taken by Fred M. Miller, mining engineer, Grass Valley, from one of the dumps at the Amador Consolidated Mine, east of the Norámbagua Mine and near the south end of the district. No production of scheelite has ever been made from the property.

The wide distribution of scheelite indicated by the above short notes suggest that it may be much commoner than realized in the gold quartz ores of the Grass Valley region.

Engineering & Mining Jour
9-1936 Pg. 1 of 4

IDAHO-MARYLAND sinks 5-ft. circular vertical opening 1,125 ft deep with novel machine that is supported and operated from within the hole. . . . Core is removed in sections up to many tons in weight

Shaft Boring
Found Inexpensive And Safe

J. B. Newsom
Mining Engineer
Grass Valley, Calif.

THE CORE BARREL, 15 ft. in length, which is attached to the lower end of the vertical driving shaft. Forty-two feet of overburden was mined in the usual way and supported with timber as seen here. The rest of the shaft was bored with this machine

VERTICAL SHAFTS in the United States have heretofore been sunk by blasting and mucking. The blasting leaves uneven, shattered walls which must usually be supported. Even though the walls will stand, shaft lining is needed to furnish supports for the cage guides, pipes, and power conduits. The lining is generally timber, and as timber can be most easily framed into rectangles, rectangular shaft openings are the rule. The timber reduces the size of the cage floor. For example, if the Idaho Maryland company had put down No. 2 shaft by blasting and mucking, the cage area would have been about 30 per cent of the total shaft area. Besides a low percentage of useful area, an ordinary shaft is subject to fire hazard and to timber-maintenance charges. It is also poor for ventilation because the timber ribs cause eddies which greatly reduce the speed of the air currents.

A bored shaft does not have these disadvantages. Inasmuch as the walls are smooth, circular, and not shattered by blasting, lining is not required in most ground. Guides and columns can be fastened directly to the rock walls by stud bolts. The cage area is 79 per cent of the total shaft area. When steel cage guides are used, such a shaft has the further advantages of being fireproof and free from timber-maintenance charges. Also, being circular, with smooth sides, it is much better for ventilation. Preliminary figures indicated that a bored shaft would be less expensive and that the sinking operation would be considerably safer. Increased sinking speed was also indicated.

To prove these various points, the Idaho Maryland Mines Corporation recently bored and equipped a circular shaft 5 ft. in diameter and 1,125 ft. deep at Grass Valley, Calif. The site chosen for the work had the following advantages:

It offered many types of ground: an abrasive gabbro; swelling ground; gouge, blocky serpentine; and firm serpentine. The site was away from the main surface plant, so experiments did not interfere with other work. The shaft passed near mine workings at the 500-ft., 750-ft., and 1,100-ft. levels. An air and timber shaft was needed at the site chosen.

I had used a large-diameter core drill, and had trouble with the drill rods whipping in the hole. Connecting and disconnecting the rods had consumed much time. Also, drill rods are expensive, a string a thousand feet long costing several thousand dollars. These various difficulties had led me to design a drill which could be lowered into the drill hole on the end of a cable, eliminating the rods. This drill consisted of a cabin containing a motor, the driving mech-

ENGINEERING & MINING JOURNAL
9-1936 Pg 2 of 4

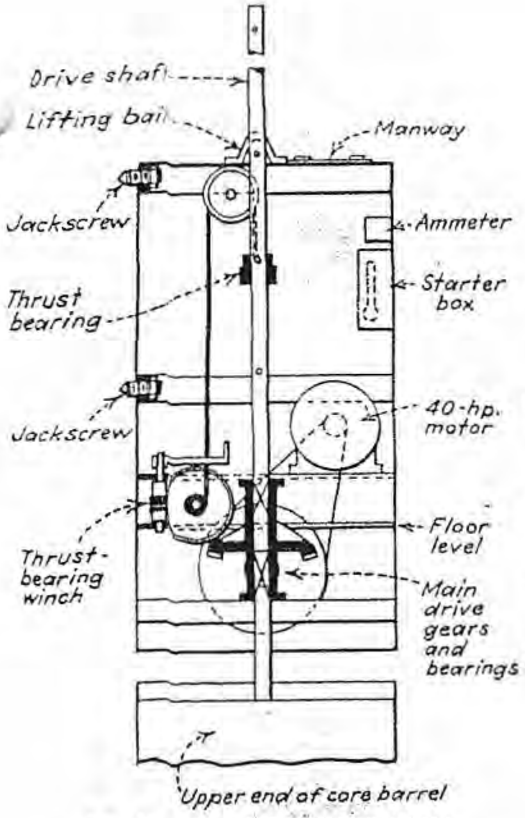
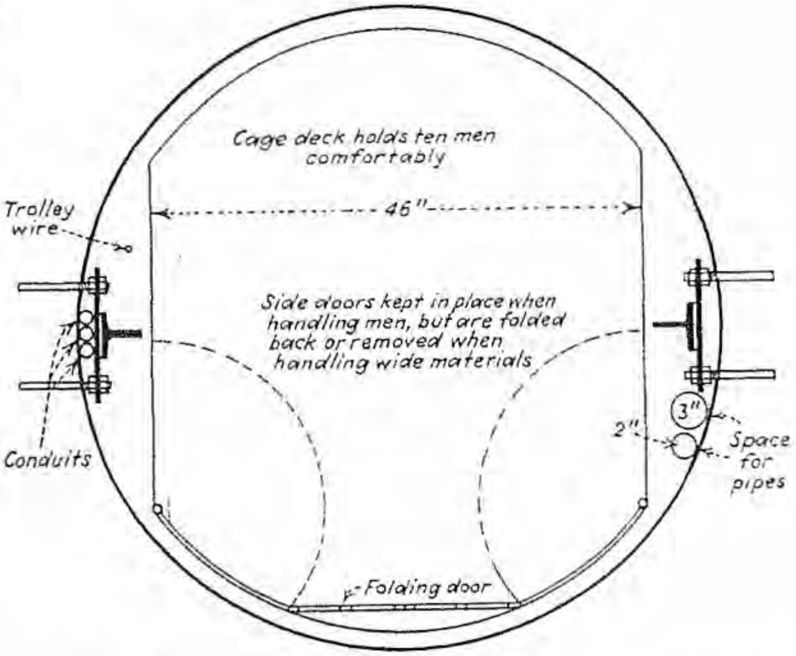
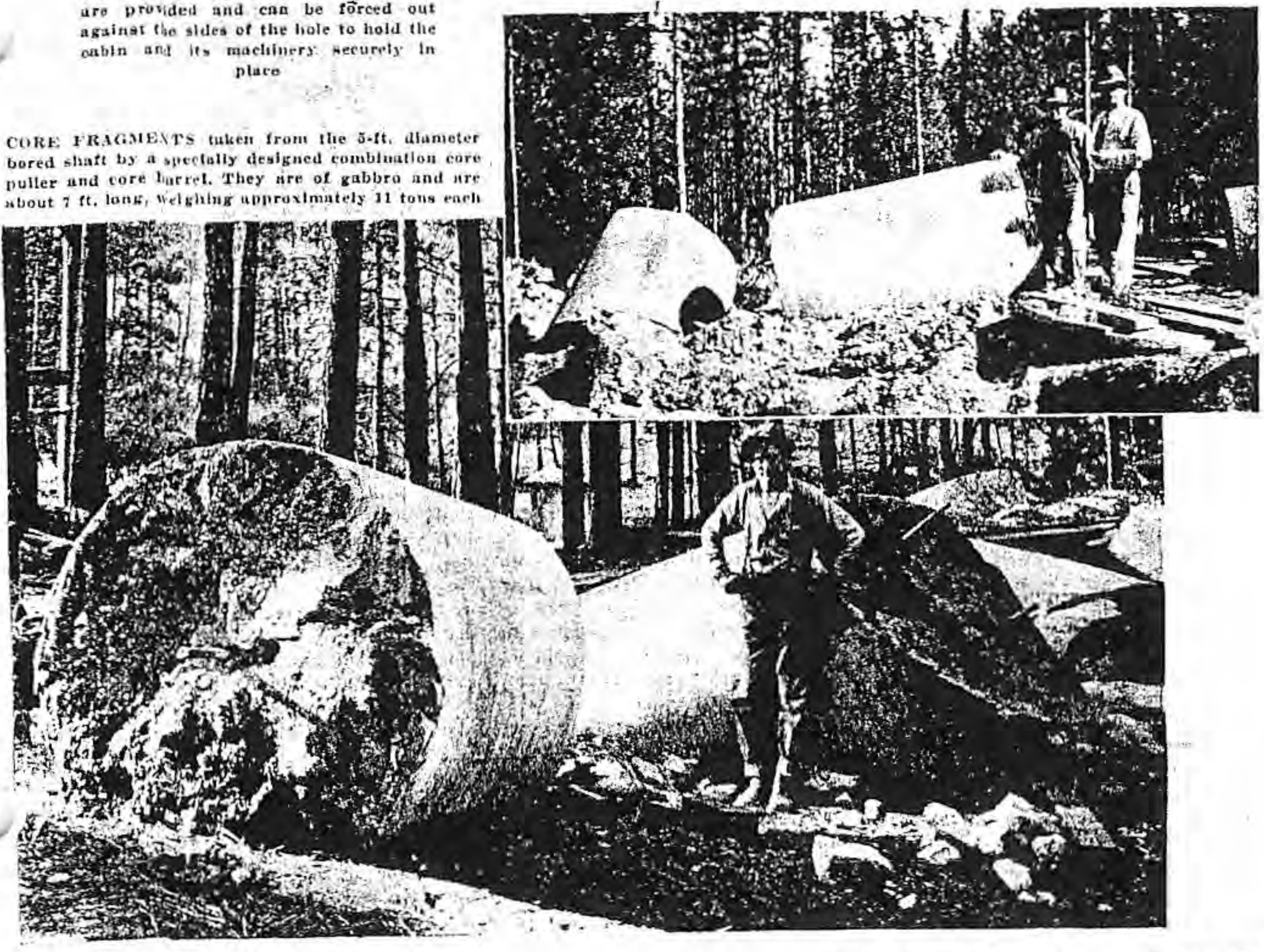


Fig. 1. . . . THE SHAFT DRILL MECHANISM in generalized cross-section. Note the jackscrews. Six of these are provided and can be forced out against the sides of the hole to hold the cabin and its machinery securely in place

Fig. 2. . . . COMPLETED SHAFT CROSS-SECTION, in outline. The cage deck, 46 in. wide, will hold ten men comfortably. In the space between the sides of the cage and the circular wall are the guides, pipes, and conduits supported directly by the rock



CORE FRAGMENTS taken from the 5-ft. diameter bored shaft by a specially designed combination core puller and core barrel. They are of gabbro and are about 7 ft. long, weighing approximately 11 tons each



9-1936 Pg. 3 of 4

anism and controls, and a seat for the operator. The cabin was supplied with six screw jacks which could be forced out to fasten it securely in place against the sides of the drill hole. The operator stayed in the cabin all the time during the drilling operation. He was protected by a roof of ½-in. steel plate.

The drive unit was a constant-speed 40-hp. motor, which transmitted power through a chain drive and conical gears to a vertical splined shaft which extended up through the center of the cabin. A movable thrust bearing was fixed on this splined shaft, and the operator had a control mechanism by which he could raise or lower this vertical bearing, controlling the weight on the cutting shoe. In addition to the vertical feed control, an ammeter in the cabin indicated how much friction the drill was developing. The motor was protected by overload and no-voltage releases.

A core barrel 15 ft. long was attached to the lower end of the splined shaft. Detachable cutting shoes were fixed to the bottom edge of this barrel. In practice, these shoes failed, and were replaced by a solid cutting ring riveted in place

The first work done brought out the following points:

1. The machine would cut rock at the rate of about a foot an hour.

2. A crew of skilled operators was vitally necessary to successful operation. Inasmuch as this was a new development in mining, skilled operators were not available, and men had to be trained for the work. Later developments indicated that inexperience was one of the main reasons for the slow progress at the beginning of the job.

3. In hard rock the machine would not deviate from a straight line. This proved annoying, as we had thought we could turn the hole by drilling to one side, so had not taken pains to plumb the machine accurately at first. The hole was finally straightened by blasting out one side of the bottom and re-collaring the drill.

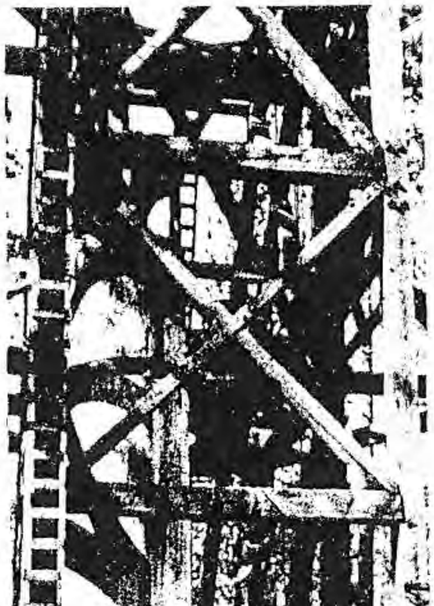
4. It was easy enough to break off cores, but not so easy to bring them to the surface in large pieces. Inasmuch as one of the main economies expected was the elimination of mucking, this seemed a serious drawback. This difficulty of bringing up large pieces was overcome later.

5. The sides of the hole would stand well without support in most ground.

6. If the men knew what they were about the method was safe, but with unskilled men it was extremely hazardous.

7. The basic design of the machine was right but it was under-powered and the auxiliary equipment had to be developed.

To describe the many discouraging delays encountered or the mistakes made before faith in the process seemed justified is not worth while. In the first three and a half months of drilling three shifts per day half of the time, a shift and a half the rest of the time, only 44.6 ft. of shaft was drilled. At the end of this period better progress was made, the shaft advancing 84.8 ft. in the next two months. The operating cost being about $1,500 a month, this was more encouraging as to cost, but still not fast enough as to sinking rate to be of real value.



DRIVE HEAD and core barrel hoisted above the shaft collar and suspended in the headframe. Detachable cutting shoes were originally fixed at the bottom edge of the barrel. They failed, however, and were replaced by a solid cutting ring riveted in place

By the time the second period was finished, the shaft had been deepened to the limit of the hoisting equipment, so new surface tackle and a new hoist were installed. During the next three months, the shaft was deepened 249 ft., or an average of 83 ft. a month. At this point, very heavy ground was encountered which had to be supported with reinforced concrete. Seventy-four feet of this was drilled and cemented in two months.

By this time the shaft extended 506 ft. below the collar, and after sinking another 40 ft. to provide a sump, operations were stopped to cut the 515 level station through from other workings.

When drilling was resumed, 162 ft. were sunk in 34 days, a rate of 147.5 ft. a month. During this last drilling period we found that the hole had again deviated from the vertical in the heavy ground. This could be understood, because during that work the bottom of the hole often widened beyond the bottom of the drill shoe. To straighten it, enough of the shaft wall was moiled out so that the machine could be set vertically again. This moiling took ten days.

The succeeding months were devoted to technique and to answering important questions. This made the speed and cost records suffer, but many problems were solved.

The last time the direction of the hole was turned, mainly to see if it could be done easily, the cost of the lost time was $9.85.

In bad ground cores would sometimes fall apart so completely that a band could not be placed around them to pull them to the surface, and they had to be mucked out. A combination core puller and core barrel which was designed to solve this problem at first caused trouble, as the pulling dogs were on springs which it took nearly a month to learn to adjust easily. However, when this was mastered the device proved satisfactory and better than average sinking speed was made in spite of the fact that lack of hoist capacity prevented pulling long cores.

Trouble with rope spin during hoisting and lowering was also eliminated and methods were developed for handling the electric power cable and signal wire easily. During the last sinking period air conditions became troublesome. A small air hose lowered to the bottom of the shaft solved this difficulty.

The crew consisted of two men per shift, a drill runner in the hole and a helper on the surface. The helper ran the hoist. There were three shifts a day this making six regular men. The operation was supervised by a foreman who, necessarily, was an experienced drill runner. Drill runners were paid $5.25, helpers $4.40 per shift, and, in addition, a dollar a foot sunk was divided among the drillers and helpers.

As a safety precaution, the shaft walls were tapped from top to bottom once a week. In addition, safety hoods of ½-in. plate were mounted on the hoist lines just over the men, so they were almost never exposed to danger from falling objects. No hoisting was ever done over a man. Although the rope safety factors were high, men were not allowed to ride on heavy loads, such as the drilling machine or a core.

The drilling cycle was as follows: (1) Put the drill in the hole and line it up. (2) Drill till the core is cut to a full depth. (3) Remove the drill from the hole and set it back out of the way

148

9-1936 pg. 4 of 4

(4) Bail out the water and cuttings. (5) Break off the core. (6) Attach the core hoisting tackle. (7) Hoist and dump the core. (8) Bail out the water and cuttings which were in the drill kerf during operation (4). (9) Inspect the bottom of the hole and remove any broken pieces which would interfere with drilling the next core.

The combination core barrel and core puller not only cut the core but also lifted it out of the hole, greatly reducing the time consumed by operations (4) to (7) above.

As mentioned, swelling ground was supported with reinforced concrete. The method was to dig out the bad ground until there was a cavity four or more inches deep, to place reinforcing bars in this cavity on about 12-in. centers, sticking the ends of the bars into holes drilled in the sides of the cavity, and then to fill it with concrete. The concrete was poured behind a steel form consisting of a single rolled plate 4 ft. high and rolled to 5 ft. diameter, but with the edges overlapping and fitted with expansion bolts. The form could be contracted to a diameter of 4 ft. 6 in. or expanded to a diameter of about 5 ft. 2 in. Twenty-four hour cement, mixed three to one with river sand, was used. A leaner mix proved unsatisfactory, as it was slow setting and the sand washed out of it in a few places. The concrete was taken down the shaft in galvanized pails.

This method was simple and satisfactory. Some of the concrete has been in place over a year (June, 1936), and shaft inspections have not discovered any weaknesses in the concrete or the rock next to it. Reinforcing may not be necessary, as apparently the main thing is to seal the air away from the walls. It may be that time and reinforcing could have been saved by using gunite, but this was not tried.

In summarizing the results of the sinking operations, these points seem worthy of attention:

The method is inexpensive. When it is considered that a single man was used underground, that almost no powder was used, and that nearly 150 ft. were sunk in a thirty-day period, the economy will be apparent.

In the hands of skilled operators, the method is safe. Inasmuch as powder is seldom used, rock is not hoisted over men, and the hoist lines are equipped with heavy safety hoods, the usual hazards of shaft sinking are greatly reduced. Our record is a single broken leg and a few minor scratches.

The method has by no means reached its ultimate speed. A little over 10 ft. was the best day's record. The best continuous record was 21 ft. in three days. It is likely that in the future 7 ft. a day will be considered slow progress.

Larger shafts seem entirely feasible. Since a ten-man cage or a 7-ton skip can be used in a 5-ft. diameter round opening, it may be better to drill several 5-ft. holes than to drill a single larger one. Several small holes would make a better operating shaft, because they would be easier to support, independent in case of accidents, fireproof, and separated for ventilation. Several holes drilled simultaneously would cost little more than a single one, as one helper could serve several drillers, and no additional supervision or equipment would be required.

With proper handling equipment, stations are unnecessary to the sinking operations. Besides the drill and accessories, little equipment is needed except a hoist and a strong headframe or a derrick.

To keep the number of men on the payroll fairly constant, the crosscuts to stations were not all started at once. The guides were installed a few at a time and were run below each station as soon as blasting was completed. They are 4x4-in. x½-in. structural tees, welded together at the joints, with the joints ground smooth. The rails are welded to brackets, which in turn hang on stud bolts anchored to the sides of the shaft. The brackets are 8 ft. apart vertically, and are set out from the walls far enough so there is room for 1¼-in. diameter electrical conduits behind them.

Guides were installed from a working platform the full size of the hole, with a horizontal straight-edge above the platform to assist in orientation. Templets were cut in the floor, so if the platform could be moved up and down on the guides they were certain to be in place. Plumb bobs operated from the surface were used to orient the working platform. Guides were lowered in strings 200 ft. long, the joints being welded on the surface as they were lowered. The work went rapidly, all operations for a hundred feet of shaft taking about three shifts.

The cage floor plan is shown in an illustration. It is a single-deck cage, but is built so that two auxiliary decks can be hung below the main deck. It is equipped with safety dogs of the conventional type but with much smaller teeth than would be used for wooden rails. The safety dogs were drop-tested with the cage empty and also with a ton of weight added.

A trolley wire runs beside one of the guides, and a trolley on the cage transmits current for the bell knocker and an electric light inside of it. Thus, the cage tender need not reach outside to signal the hoist man.

A leveling contact which flashes a light when the cage floor is leveled at a station is being installed. It is hoped this will assist in spotting the cage regardless of cable stretch under varying loads. When the guide-rail installation has been completed so the extra handling tackle at the collar can be cleared away, the shaft will be protected against overwinding by power cut-out and automatic brake-setting devices.

Reinforced-concrete floors, sides, and tops are being put in at the stations. It is planned to put a 2-in. water pipe down the shaft to provide water for the drills, for drinking, and for use in case of fire.

Vol. 30, No. 2
2004

Journals Search Partners Informati
Previous Table of contents Ne

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Table of contents
Search Builder
List journal issues
Home
Printer-friendly format
Cite this electronic article

The "Poor Man's Mill": A Rich Vernacular Legacy

Thad M. Van Bueren

Arrastras are ancient ore milling devices that could be cheaply built of local materials and operated with nearly any available source of power. Most were built and operated by small concerns in the American West. Those vernacular devices offer rich clues about cultural traditions, the adaptation of technology, and the niches carved out by small operators. In a broader comparative context, arrastras also provide insights into choices of milling technologies. That interpretive potential is illustrated with a small Italian mining operation in California.

Introduction

Arrastras are simple circular drag mills of ancient origin. They were popular throughout the Mediterranean region since Phoenician times and were introduced in the New World by the Spanish, following discoveries of plentiful gold and silver in Mexico and western South America.[1] The term *arrastre* or *arrastra* translates as "dragging along the ground" in Spanish and is defined as "a crude machine formerly used for ore crushing."[2] Although some limited use of this simple technology occurred in the western United States before American annexation, it was not until the period immediately following the California Gold Rush that arrastras came into wider use.

Arrastras have significant research interest for several reasons. Their most obvious value springs from the fact that many were built in place with nothing more than a rough mental concept. While some prefabricated versions were made, most arrastras were hand-built vernacular devices. For that reason, they often survive in place and can be "read" as sensitive indicators of cultural traditions, technology transmission and adaptation, and the nature and scale of mining ventures. Site-built arrastras are the epitome of an appropriate technology, inseparably situated and necessarily understood in their cultural and physical settings.

Any effort to interpret the arrastra technology in the American gold and silver mining industry also must consider the niches arrastras filled and why. Arrastras played a persistent but marginal role in the American West, whereas they dominated the Mexican gold and silver mining industry. Those differences invite comparisons of the stamp milling and arrastra technologies as a way to gain access to the cultural, economic, and scientific reasons behind technology choices. Although stamp mills were favored by heavily capitalized American mining companies, arrastras were most often employed by small operators relegated to the fringes of the industry. Nevertheless, arrastras were used not only for prospecting but also for reprocessing stamp mill tailings and improving the recovery of gold in large industrial stamp mills. Their success in those latter roles has intriguing implications for theories of economic rationality and the evolution of global capitalism.

Both themes are explored as a way to situate the interpretation of arrastras in the American West. By way of illustration, recent investigations at Antonio Canone's mine near Amador City, California, are used to explore the rich interpretive potential of mining sites that contain arrastra features.

A Primer on Arrastra Design and Operation

Despite a great deal of variability in design and materials, arrastras share certain essential features. They consist of a circular basin around which heavy drag stones are circulated to first crush ore and then amalgamate the gold and silver in the resulting pulp (Figure 1). The floors and drag stones were typically made of hard rock, although some machines manufactured in the 20th century had iron basins and drags.[3] Most commonly, the perimeter walls were made of rock or wood; however, formed concrete and metal sidewalls were also used in some late-19th and early-20th-century examples. The milling basins typically ranged from 3 feet to more than 20 feet in diameter with depths commonly from 1 to 4 feet or more. The floor of the arrastra was sometimes dished (concave) to help keep the ore in the path of the rotating drag stones. Flooring stones were tightly packed, and interstices were usually chinked with clay or mortar to help prevent the loss of precious metal.[4] Larger stones were generally preferred as a way to minimize the number of joints.

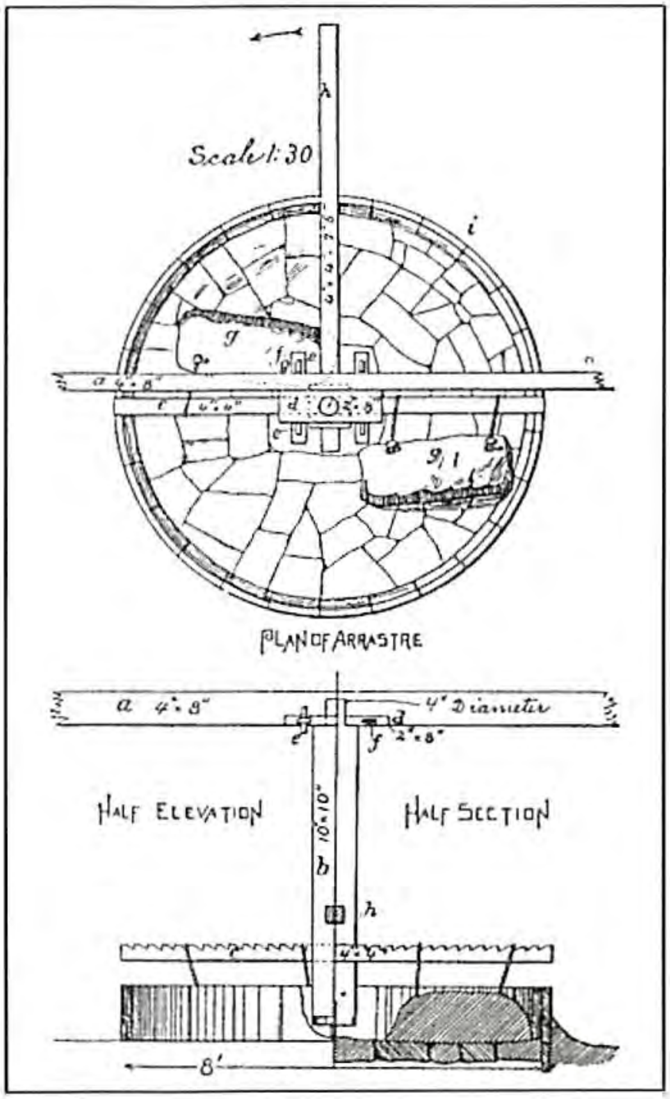

Figure 1. *Fundamentals of arrastra construction.* From *Mining and Scientific Press* 52 (1886): 237.

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Drag stones were pulled around the basin by heavy timber or metal arms that pivoted on a central post or axle. The axle was usually held stationary by a heavy armature extending beyond the outer walls of the mill basin. Some arrastras featured central posts that were self-anchored by virtue of deep burial of the post base in the floor of the mill basin. Drag stones were secured to the rotating arms with chains or ropes attached to bolts secured on the tops of the stones. Care was taken when hanging drag stones to ensure the leading edge would ride up on top of the ore. The orientation and proscribed arcs of the drags were selected to continuously move the pulp or "charge" into the path of following drags. Individual drag stones might weigh anywhere from 200 to 1,000 pounds or more, depending on the size of the mill.

Hard stones such as granite, quartzite, diorite, and diabase were preferred for arrastra floors and drag stones because they lasted longer than softer rocks and thus entailed less maintenance. However, it was also important to choose rock that retained some "tooth" or roughness since stones that became too smooth were less effective.[5] Drag stones and floors had to be replaced regularly. At the Commodore Mine in northern California, the state mineralogist reported that drag stones lasted a mere six weeks of steady use "and cost about $5 apiece. A new bottom costs $40, and lasts about six months."[6] Arrastra floors were periodically removed to recover the amalgamated gold and silver that collected in the flooring interstices. For that reason, floors are almost never preserved in archaeological examples of this milling technology.

The drive mechanisms for arrastras varied widely. The most rudimentary models transferred power directly to the central axle. Examples of such direct-drive systems include mills driven by animals that walked in a circle around the outer perimeter of the mill basin and horizontal waterwheels. Other power sources, including overshot and undershot waterwheels, steam and gasoline engines, and even electricity, usually transferred power to the axle through gears, belts, chains, cogged hurdy wheels, or other devices, taking advantage of mechanical reduction to achieve desired rotational speeds. An example of a belt-driven system powered by water is shown in Figure 2. It was used at the Georgia Mine near Independence, California, around 1896. Several mines in Siskiyou County, California, employed cogged wooden hurdy wheels driven by water. Those drive mechanisms had the advantage that they could be cheaply built and easily repaired. The remains of one example from Shackleford Creek below Mugginsville in Quartz Valley are shown in Figure 3. It was powered by an overshot waterwheel. The Commodore Mine, mentioned earlier, also used wooden hurdy wheels to power a double arrastra using a central undershot waterwheel.

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Figure 2. *Belt-driven arrastra at Georgia Mine near Independence, California, ca. 1896.*
Courtesy of State Museum Resource Center, California State Parks, Sacramento.

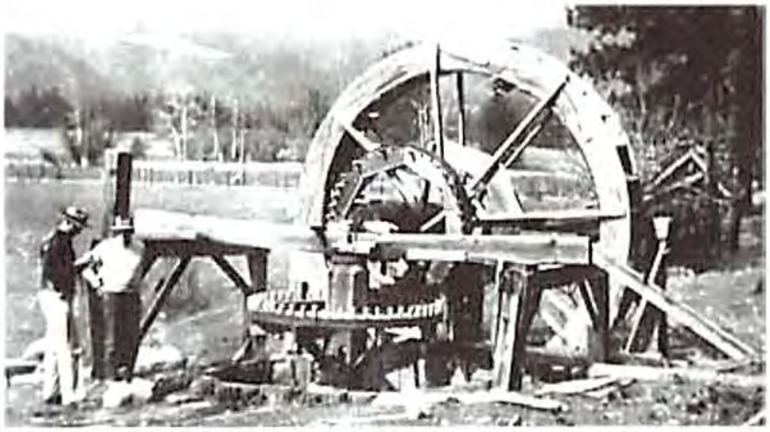

Figure 3. *The remains of an arrastra near Shackleford Creek in Siskiyou County, California, illustrating the use of a cogged wooden hurdy wheel.* Courtesy of California History Section, California State Library, Sacramento.

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Arrastras were more efficient than other ore-milling technologies because they could be employed for several phases of ore processing without transferring the batch. Both ore grinding and amalgamation could be conducted in such devices. The operation of an arrastra typically began with some initial break-in of the newly constructed machine, however. An article in an 1899 *Engineering and Mining Journal* states, "after an arrastra is built it should be run for several days on barren quartz or sand until the running is comparatively smooth, and the cracks in the floor have been well filled up."[7]

After the breaking-in period, an ore charge was placed in the basin, broken into small fist-sized chunks. Water was added to maintain the proper consistency for efficient grinding. The correct consistency was similar to thin mortar.[8] After about eight hours of grinding, mercury was introduced and the rotation speed was slowed. The mercury was often sprinkled directly over the surface of the pulp by pressing it through cloth, breaking it into small globules.[9] Periodically, the pulp was tested by panning to determine whether the mercury had taken up all the free gold in the charge. An oversupply of mercury ensured the recovery of all free gold but meant that some quicksilver was lost. As a result, arrastras could contain hazardous wastes.

Following successful amalgamation, the pulp was discharged through a scupper (outlet) in the wall of the arrastra. The amalgam was recovered from the pulp in a sluice, long tom, cradle, or by panning.[10] Gold and silver were then recovered by heating the amalgam. Using a retort, mercury vapor was collected for reuse.

Arrastras could be built and operated with little capital, a fact that made them particularly attractive to independent miners who worked for themselves. When built of local materials, the chief investment was the labor involved in constructing and operating the mill and the cost of mercury and retorting equipment. Site-built arrastras were also readily customized to fit the scale and conditions of intended work. They could even be operated by a single miner working alone. Perhaps more significantly, arrastras were efficient gold savers. With those advantages, it is appropriate to look at how they were employed in North American hard-rock gold and silver mining.

Historical Trends and Economic Niches

Arrastras were first used in North American mines in the 1500s and were still employed as late as the 1940s.[11] The earliest applications of the technology took place in the southwest during Spanish occupation of that region. Those activities, while historically significant, were limited when compared to the huge number of arrastras employed in the wake of the California Gold Rush of 1848. Hard rock mining was of course not the initial focus of most California argonauts. Placer gold held their attention at first because those deposits were

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easy to work and required only simple tools and little expertise. As the most promising placers were rapidly claimed, some miners began to concentrate on the quartz ledges and cemented gravels that were the source of the placer deposits.

Mining those hard rock deposits required greater experience and more elaborate equipment, both of which were in relatively short supply during the early 1850s. The large Mexican and Chilean mining contingent can probably be credited with the greatest initial success at quartz mining. Faced with discrimination and restrictive laws such as the Foreign Miner's Tax of 1850, many Hispanic miners turned to hard rock mining, a pastime familiar in the places from which they originated. They made extensive use of arrastras, a technology of longstanding tradition in their culture. Many thousands of arrastras were probably used in that early period according to W. H. Storms, although no reliable data are available.[12]

Others tried whatever hard-rock milling techniques they could purchase, fabricate, or piece together in the early 1850s. Some copied and adapted the arrastra technology, perhaps in part because imported equipment was initially hard to acquire. Small operators particularly liked arrastras because they could be developed on a shoestring. That technology transfer to other ethnic groups resulted in some novel adaptations. For example, J. Boot's 1853 watercolor shows small pine trees in the arrastra basins, perhaps used to mix mercury into the crushed ore slurry (Figure 4).

Figure 4. *J. Boot watercolor of equine-powered arrastras in California, dated 1853. Small conifers in the mill basins were probably used to help mix mercury into the ground pulp or sweep out the amalgamated slurry*. Courtesy of Bancroft Library, University of California, Berkeley.

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Arrastras were also incorporated into milling operations that used other types of equipment. A great deal of experimentation occurred with milling machinery imported from northern Europe and the American southeast. The first stamp mill in California, reportedly developed in Amador City in 1851, employed stamps for crushing and arrastras for completing the amalgamation process.[13] The practice of combining the two technologies continued throughout the late-19th century. By 1853 it is alleged that at least 20 "quartz companies were being 'floated' in London alone" with 10 million dollars in capital.[14] Others were presumably financed without foreign capital. Yet most of those early, heavily capitalized quartz mills failed due to inexperience and the use of fancy machines that performed poorly. As a result, a general wave of bankruptcies ensued, and investment interest waned temporarily.

As hard-rock gold production recovered momentum in the late 1850s and 1860s, production strategies evolved dramatically. Smaller operators who made the most extensive use of arrastras were pushed to the fringes of the gold mining industry by large mechanized stamp-milling plants, built by heavily capitalized quartz-mining concerns. A burgeoning San Francisco foundry industry developed and aggressively marketed an "improved stamp mill" to the local industry.[15] Venture capital also increased from eastern and English capitalists. Those large companies modeled their operations on other fabulously profitable industries, employing elaborate arrays of machinery and large crews of wage laborers.

As the late-19th-century mining engineer Almarin Paul observed, arrastras were

> almost wholly superceded when our people became eager to earn money more rapidly, and grew ambitious to conduct matters on a grander scale. ... The English conceived the idea, so prevalent at the present time in California, that ponderous and expensive machinery, with its attendant expenses, would be correspondingly profitable. The fever ran high, they invested largely, and the result was ... failure in a great majority of the mining enterprises.[16]

It is difficult to know just how many arrastras were used in the American West during the late-19th and early-20th centuries because many were employed in small operations that often escaped general notice. The estimate mentioned earlier that thousands of arrastras were used in the early days of California mining appears generally reasonable, since some areas like Arrastra Canyon in Riverside County had more than 125 in just one district.[17] Those small enterprises were often in remote areas, and many were never documented with a recorded claim. Archaeological surveys thus may be the only way to ascertain the full scope and character of arrastra use through time.

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While arrastras associated with prospecting and other small-scale endeavors remain poorly documented, their use in larger milling operations is better known. An 1866 survey of portions of Mariposa and Tuolumne counties in California provides some of the earliest systematic insights into the specialized role arrastras came to play in large, heavily capitalized American mines.[18] Only 2 out of 71 surveyed mills used arrastras for grinding, yet fully one-quarter of them (n=18) employed the ancient technology as amalgamation machines. Half of the mills that employed arrastras for amalgamation used them as the only device serving that function; the other half used the arrastras in conjunction with copper plates. In all, the surveyed mills used 570 stamps and 27 arrastras.

The number of stamp mills and arrastras employed in the larger milling operations of several western states was enumerated in the 7 January 1871 issue of the *Mining and Scientific Press* (Table 1). Only 3.7% of the milling machines in use at that time were reportedly arrastras. However, a note in that article mentions California had "several hundred, of which [only] 132 are reported" and that the number used in Arizona was an approximation. Based on the earlier survey, most of those arrastras were probably used for amalgamation. The nearly equal number of stamps and arrastras in Arizona implies the latter devices were likely used for both ore crushing and amalgamation.

Table 1. Relative Abundance of Arrastras and Stamp Mills in the West in 1871[19]

State	Mines	No. of Milling Devices		Power Source		
		Stamps	Arrastras	Water	Steam	Both
Arizona	9	111	±100	no data	no data	no data
California	421	4,503	132*	198	206	17
Idaho	30	344	4	no data	no data	no data
Montana	42	629	6	no data	35	no data
Nevada	156	2,139	27	19	125	12
Oregon	15	62	19	no data	no data	no data
TOTALS	674	7,788	288	218	366	29

*However, "several hundred" are mentioned in the text of the source article.

By 1896, there were at least 119 arrastras in use in California, although that figure is again a nominal estimate that reflects only larger milling operations (Table 2). Their use had increased marginally, with arrastras by then employed in 30% of all gold milling operations in the state.[20] Among those identified arrastras, 46% were powered by water, 10% were powered by steam, 9% were powered by horses or mules, 1% was operated with a gasoline engine, and the motive power used for the rest was not specified in the annual report of the state mineralogist.

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Table 2. Arrastras Reported in California in the Late-19th Century[21]

County	Number		Power Sources in 1896			
	1870	1896	Animal	Water	Steam	Unknown
Amador	0	0				
Butte	7	7		3	2	2
Calaveras	5	4				4
Eldorado	3	0				
Fresno	6	0				
Inyo	4	19	1	12	2	
Kern	8	15	7	2	4	2
Klamath	1	0				
Lassen	0	3		1		2
Los Angeles	2	0				
Madera	0	12	1	1	1	9
Mariposa	30	5		2		3
Mono	0	2		2		
Nevada	8	2		1		1
Placer	0	1		1		
Plumas	13	12		3		9
Riverside	0	2				2
San Bernardino	10	0				
San Diego	0	3				3*
Shasta	2	5		4	1	
Sierra	17	0				
Siskiyou	2	13		11		2
Trinity	1	10		9	1	
Tulare	0	1	1			
Tuolumne	13	2		1		1
Ventura	0	1				1
TOTALS	132	119	10	53	11	41

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*One of these was powered by a gasoline engine.

Greater use of arrastras in large industrial stamp mills at the turn of the century underscored their proven capabilities as good gold savers. In fact, the *Mining and Scientific Press* went so far as to state, "with free gold an arrastra will beat the best mill ever built, in results. Amalgamation is more satisfactorily accomplished in an arrastra than in the finest quartz mill."[22] Their reputation as gold savers is also highlighted by the fact that they were successfully used in a number of cases to reprocess tailings of less efficient gold-milling technologies.[23] Figure 5 depicts one example where more than a half dozen arrastras were used to reprocess tailings from the 60-stamp Sierra Butte Mine in Yuba County, California, in 1891. In that kind of application, lower yields were balanced against substantially shorter processing times because crushing had already taken place.

Figure 5. *One of at least six arrastras used to reprocess tailings from the Sierra Butte Mine on the Yuba River in California, 1891. The direct-drive horizontal waterwheel is suspended on the outside of the mill basin. It could be operated by one man and a boy on a continuous basis according to the* Mining and Scientific Press 53, *no. 8 (22 Aug. 1891): 120.* Courtesy Bancroft Library, University of California, Berkeley.

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Arrastras were used persistently into the 1930s, with some still in use in the late 1940s and 1950s.[24] Anecdotal evidence suggests arrastras may have been used most heavily during periods of regional and national economic depression. That impression, however, is a working hypothesis that should be subject to scrutiny as inventory data become more widely available. Noteworthy economic depressions affected the western United States in the early 1870s, 1890s, and 1930s. During those periods, regional unemployment was high, and the arrastra technology provided a means to eke out an existence by mining marginal ore deposits not claimed by larger concerns or by reworking tailings produced by less-efficient milling methods. The government's decision to raise the official price of gold by more than 65% in January 1934 provided an added incentive to try mining during the Great Depression.

Implications of Technology Choices

Since the arrastra technology was widely known in the American mining industry and had many attractive characteristics, why was it relegated to the sidelines? Was that pattern replicated elsewhere? Answers to those questions have important implications for interpreting the social and economic contexts of arrastra use as well as for understanding the factors that influenced choices of technology. Those topics also inform understandings of the evolution of the capitalist world system.

It is often suggested that the main reason the stamp mill was favored over the arrastra had to do with the speed with which profits could be extracted from ore. As just one example, an 1899 mining journal states that arrastras were poor choices "where great quantities of ore are to be worked."[25] Yet, that perennial argument overlooks the simple fact that production quotas could be met with either technology by using an appropriate number of milling devices of the desired capacity. If technology choices were strictly rational, they should be based on the relative productivity of competing methods. It is thus instructive to compare the efficiency of the arrastra technology with stamping mills as a way to place technology choices in context.

Capitalism is often assumed to be a system where profits are maximized through efficient production. Yet a number of facts suggest productivity was actually not the primary reason stamp mills were chosen over arrastras in the late-19th century. Those production costs in the hard-rock mining industry can be broadly divided into investments in infrastructure (facilities, equipment, water supply, timbering mine shafts, etc.) and operating costs (labor, energy, expendable supplies, etc.).

Turning first to the costs of basic infrastructure, the initial investment to build an arrastra was typically a fraction of the cost of setting up a stamp mill. Although some prefabricated arrastras were employed, arrastra construction generally avoided the high costs of acquiring and transporting heavy equipment. The cost of building two arrastras driven by a single waterwheel at the Commodore Mine in Siskiyou County, California, was $700.[26] That double mill had a five-ton per day capacity. However, the average for most

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arrastras was estimated by mining engineer C. M. Laizure at $300 or less per mill.[27]

In contrast, a survey of 421 California active stamp mills in 1870 suggests the average cost of machinery in those mills ran more than $1,400 per stamp. Mining engineer Rossiter Raymond estimated the range was typically between $1,500 and $2,000 per stamp in the mid 1870s.[28] The average capacity of the stamps in those mills was one and one-half tons per day, according to Raymond's survey of 130 mills in 13 California counties. Those averages apparently did not include related infrastructure such as buildings, roads, and ditches, which would have been similar for any mining endeavor. Professor David Christy estimated the costs of getting a 20-stamp mill established in California in 1868 at about $50,000 with all necessary infrastructure included.[29]

If the goal was to achieve comparable milling capacity, stamp mills were thus at least seven times more expensive to set up than arrastras. From the examples just discussed, it was possible to build a five-ton per day capacity with the arrastra technology for $700 (or less), while a comparable capacity would require more than three stamps, averaging $4,500 or more to install. Those higher costs for stamp mills effectively limited their use to operations with heavy capitalization, and arrastras remained the most affordable choice for small operators who worked for themselves.

The per-ton costs to process ore in arrastras were also generally cheaper than in stamp mills, although actual operating costs were highly variable depending on the geological matrix, type of power, fluctuations in labor costs, and other factors. In 1892 the California state mineralogist observed, "the cost of milling in arrastras under proper conditions is 6 to 8 cents per ton; by stamps this would be 25 to 40 cents per ton."[30] Those figures are probably understated. Laizure provided a more realistic estimate of the cost of using a double arrastra driven by waterpower. He states those costs "are estimated to vary from $1.25 to $2 a ton," a figure likely predicated on the aforementioned Commodore Mine.[31] The Commodore used 30 miner's inches of water to process a five-ton charge in the 1890s. By way of comparison, the 60-stamp mill at the Oneida Mine in Amador County, California, processed ore at a cost of $2.50 per ton in 1872; the 20-stamp mill at the Pittsburgh Mine in Nevada County processed ore at a cost of $2.25 per ton in 1873.[32]

The cheaper operating costs of arrastras are also implied by their successful use in reprocessing the tailings of less-efficient methods, already discussed. Their use for such low-grade ores suggests arrastras were not only efficient but also had the ability to capture precious metals lost in stamping operations. Nevertheless, period literature promoted the mistaken idea that arrastras were not "suitable for very low grade ores, as its operations are too slow to make such ores yield profit."[33] That belief is perpetuated without critical reappraisal today.[34]

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Perhaps more significant than the lower costs of building and operating arrastras was their reputation as superior gold and silver savers. Gold recovery from late-19th-century stamp mills probably never surpassed 75% of the available metal, and some mining engineers such as Laizure and A. Paul claimed it was typically closer to one-third.[35] This was primarily due to two factors. First, the violence of the stamping method often led to "sliming" of ores and "flouring" of the mercury into such a fine powder that amalgamated gold and silver would not properly settle out.[36] As a result, the precious metals were washed away or otherwise discarded. Arrastras used a less violent method that recovered a higher proportion of the free gold. That is why they were used as an aid in the amalgamation process in large industrial stamp-milling operations as well as for reprocessing discarded stamp-mill tailings.

The second impediment to gold amalgamation was caused by the presence of sulphides, also called "sulphurets" in period literature. Many ores were coated with these substances, inhibiting proper amalgamation. Titus F. Cronise noted in 1868,

> ... when auriferous sulpherets are present, sufficiently rich in gold to make its extraction an object, they are frequently subjected to a further process of pulverization and amalgamation. This is effected by grinding them in a flow of water and mercury in an arrastra, chili mill, or in some of the many patent cast iron pans or grinding mills of recent invention.[37]

Arrastras were able to remove some of the sulphides coating the gold and silver through abrasion, whereas the pulverizing action of stamps was generally ineffective. By brightening the surfaces of the metal particles, arrastras improved amalgamation and permitted more of the precious metal in the ore to be recovered. Other processes such as chlorination and treatment with cyanide eventually eclipsed the use of arrastras for such dirty ores.

Arrastras were thus generally much cheaper to build and operate than stamp mills and comparable or perhaps even superior gold savers in the days before stamp milling was augmented with other treatment processes. Their marginalization in the American mining industry during the late-19th century was thus not about productivity. It was more realistically about cultural preferences. Those preferences stand out when the American pattern is compared with the Mexican gold and silver mining industry of the same period. In 1886 it was reported that in Mexico "thousands are in use today, and no one can deny that the Mexicans know how to work ore as well as any metallurgists in the world."[38] Those Mexican operations typically used arrastras for crushing and amalgamation, a pattern that apparently continued into the first decade of the 20th century. For example, a mill with more than a dozen mule-driven arrastras in Guanajauto, Mexico, is illustrated in a 7 March 1903 issue of the *Mining and Scientific Press* with the note that "there are no arrastra establishments operated in the United States on so large a scale.[39] Two other mills in northwestern Mexico had impressive arrays of arrastras that were powered by water during the first decade of the 20th century.[40]

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The American pattern resulted in large part from industry dominance by

American investors of northern European extraction as well as by the English. Stamp mills appealed to those capitalists for many reasons. First, stamp mills evolved from northern European precedents and were culturally familiar. Elaborate machinery was also esteemed, in part because it had proven so profitable in other industrial applications. Stamp mills symbolized the triumph of American technical ingenuity. As products of American industry, they were portrayed in the mining literature of the period as potent symbols of progress, speed, and modernity, regardless of their economic merits. That advertising succeeded splendidly.

In sharp contrast, the same literature is replete with disparaging references to arrastras, which were regularly called "primitive," the "poor man's mill," "rude," and even "slow and stupid."[41] Those terms conveyed the idea that arrastras were old, cumbersome, and outmoded, although grudging praise was sometimes interspersed in the very same sources. The strong association of arrastras with both native-born and immigrant Hispanic people meant that such devices, like those cultural groups, were the subjects of widespread discrimination and disdain in the American West. Hand-built arrastras became synonymous with marginality.

Modern cognitive science has shown that people respond to the way issues are framed, rather than to the way facts are presented.[42] That finding points to the importance of understanding how products and technologies are manipulated as symbols. While arrastras were quite competitive with stamp mills, the language that influenced choices of milling technologies in American culture was dominated by terms that promoted stamp mills with glowing assignations while disparaging arrastras. That framing, not rational economic choices, appears largely responsible for the dominance of stamp mills and marginalization of arrastras in the American West. Nevertheless, the proven capabilities and advantages of the arrastra led to its continuing use in exploration, amalgamation, and reprocessing. In large, heavily capitalized mills, manufactured steel arrastras were sometimes employed, effectively transforming arrastras into modern machines on a par with other symbols of progress and industry.

Design Evolution

Arrastras were used by people culturally familiar with their designs as well as others who learned about the technology by observation, word of mouth, or information provided in period literature. Hand-built examples can thus reveal much about tradition and innovation. Specific historical associations can shed light on the persistence of traditional designs, when innovations were adopted, by whom, and for what reasons. Some of the most obvious innovations are briefly considered before turning to a case study.

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A fundamental innovation used in the American West between 1848 and the 1950s involves the types of motive power employed in the operation of arrastras. Animal power was the most common traditional form of energy used by Mediterranean peoples due to the general aridity of that region, although waterpower was also probably employed. In larger operations, water and steam power came to dominate American applications of the arrastra technology. Whether that pattern was equally prevalent in smaller mining enterprises is something archaeology is in a unique position to inform. Later in time, arrastras powered with gasoline engines and electrical motors were known, although they were probably the exception.

Another innovation that was adopted, mainly after the turn of the century, was the use of poured-concrete perimeter walls as well as floors made of stones set in concrete or mortar. At least two archaeological examples have been examined by the author in Calaveras County, California, and another was built in the late 1930s at the Kinder Mine on Willow Creek in Monterey County, California. The Kinder mill was built in 1937 and operated into the mid-1950s using steam power (Figure 6).[43] The Calaveras examples include an unrecorded mine south of Indian Creek and site CA-CAL-1065H just east of the town of Murphys.

Figure 6. *A concrete arrastra at the Kinder Mine on Willow Creek in Monterey County, California. It was built in 1937 and continued limited operations into the mid-1950s using steam power*. From the Ventana Wilderness Society website <http://www.ventanawild.org/news/fe01/kinder.html>.

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A number of prefabricated steel machines based on the arrastra concept were also marketed in the late-19th century. At least 10 different brands of "pan" grinders and amalgamators of that sort were available by 1871. A. Paul later advertised another as an "Americanized Arrastra" (Figure 7).[44] Paul's design probably dates to the late-19th century. They were most widely used in the Comstock mines where huge arrays were installed to process ores with "sulphurets."[45] The earliest use of iron arrastras in gold mining may be one installed in 1864 at the Malvina Mine on Maxwell Creek near Coulterville, California.[46] The only discovered patent for an iron arrastra is one developed by Alexis Janin on 16 August 1892 for use in the amalgamation of silver ore.[47]

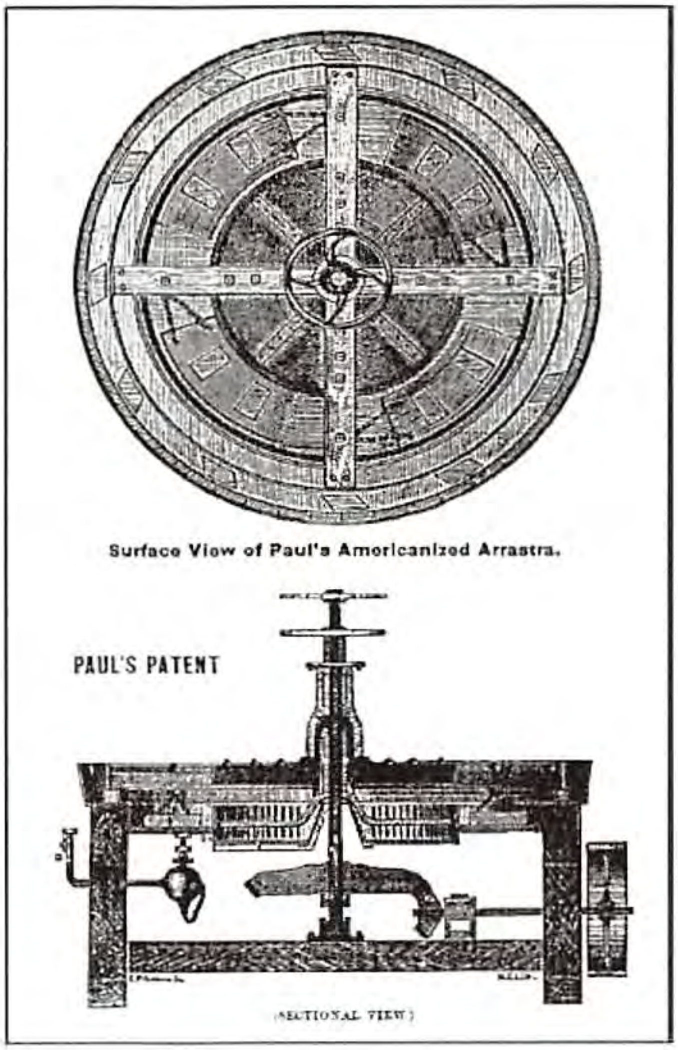

Figure 7. *Almarin Paul's manufactured steel arrastra.* Courtesy of the Bancroft Library, University of California, Berkeley.

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Manufactured steel arrastras were not just a validation of the general utility of the technology; they also effectively placed it on the same footing as other "modern" industrial gold- and silver-milling methods such as stamp mills. Prefabricated arrastras eliminated one of the chief benefits of the technology—namely, that they could be cheaply made of local materials on site. That shortcoming was offset by the fact that such machines were portable, allowing reuse.

Considering Arrastras in Context: The Case of the Canone Mine

Although the broad outlines of arrastra use in the American West have been sketched, major lacunae in that knowledge are indicated. Those gaps are an outgrowth of the fact that most arrastras were hand built by small operators who often left few records and were rarely noticed in period statistics. Archaeological research, when combined with those limited records, may thus significantly expand understandings of the niches carved out by such miners and how they fit into the industry at large. That interpretive potential is explored here, using as an example a small mining operation near Amador City, California.

The Canone Mine was determined eligible for the National Register of Historic Places for the design and research value of its two surviving arrastra mills and its associated mining landscape. That finding was based on an investigation carried out for a highway realignment project subject to Section 106 of the National Historic Preservation Act.[48] The mine was built and operated by Italian immigrants between 1882 and 1895. Recorded as CA-AMA-363/H, the mine is located in the western foothills of the Sierra Nevada Mountains.

The Canone Mine is situated about a mile west of "the richest part of the Mother Lode belt," a 10-mile stretch in Amador County (Figure 8).[49] Amador City is located just a mile upstream from the mine along the perennial Amador Creek. The creek comprised one of the very earliest placer discoveries in California, and the first stamp-milling operation in the state was reportedly established in Amador City by 1851.[50] The total output from mines near Amador City is estimated at more than 33 million dollars. That production was derived largely from the Keystone Mine, a venture that consolidated several adjoining claims in the town.

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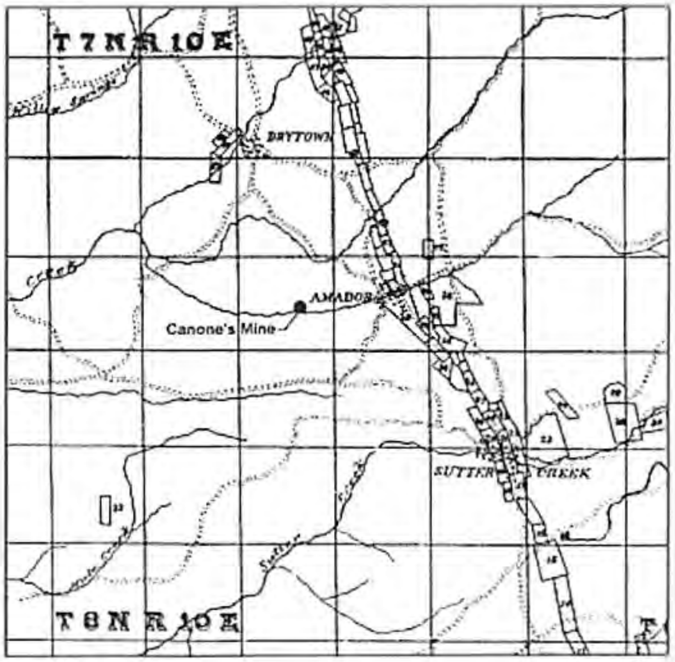

Figure 8. *Mining claims in the Amador City vicinity, 1900*. Map by author.

No hard rock mining was apparently attempted near the Canone Mine until Guiseppe Turre (later known as Torre) purchased the surrounding lands in 1880. By May 1882, Turre completed a ditch on the north side of Amador Creek using a water claim and the headworks of the old Milton Ditch sold to him by the prior landowner.[51] The intake for the Milton Ditch was located just below several large-scale stamp mill sites in the town, a fact that was probably significant for the Canone Mine.

One arrastra was present on Turre's property by 1882. Turre probably used proceeds from a $400 mortgage to develop three additional arrastras the following year. He then quickly deeded the mining rights on the north side of Amador Creek to another Italian immigrant named Antonio Canone for $3,400 in 1883. The purchase price was financed by Turre. The deed specified that Canone was to receive the following£

> All that certain water ditch which takes its waters from the Amador Creek, at about the southwestern limits of the Amador City town site, thence running down in a westerly side of said Amador Creek through the premises of the party of the first part (Guiseppe Turre), below the lower arrastra and known as the Turre Ditch with the privileges of about four hundred inches of water flowing in said Amador Creek, together with all flumes and aqueducts of said water

> ditch. Also four arrastras, with wheels and machinery therewith connected of all kinds and description with the privilege of erecting one or two more arrastras below said above described ditch, and on the land of the party of the first part, west of said Amador Creek and with the convenient space of land for working of said arrastras and taking out of the quarries the usual bolders [sic] and rocks necessary for said arrastras.[52]

It is unclear why Turre sold his newly constructed milling equipment and ditch to another Italian immigrant. Amador County attracted many Italians who often sponsored others from their places of origin in a pattern of chain migration. The real reason, however, may have been that Turre deemed returns from the venture unsatisfactory. Whatever his motivation, Turre retained fee title to the land, developed a farm on the opposite side of the creek, and later perfected a nonmineral patent that encompassed the Canone Mine on 1 May 1884.[53]

Insights into Canone's life offer general clues about his mining operation. He was born in 1855 and emigrated from Italy in the early 1880s, perhaps attracted to the area because so many other Italians were already settled there. Canone was naturalized on 4 August 1886 and registered to vote the same day, but he remained illiterate and never married. The remains of two dwellings adjacent to his arrastras imply he lived at the mine. That practice would have deterred thieves and held down his living expenses.

Little is known about the mine from documentary sources, a fact probably quite common for minor operations of that kind.[54] The county kept track of mining payrolls, but Canone's operation is not listed in that ledger. That could imply he worked alone. More significantly, neither Turre nor Canone ever filed a quartz-mining claim. Whether that is a product of Canone's illiteracy or an indication of the marginality of the mine is not completely certain. The latter scenario seems most likely, given the absence of any contiguous claims and the geology of the locality.

Despite that marginality, some limited returns are suggested. The scale of the mining carried out on the slopes above the two surviving arrastras suggests some value must have been returned to motivate that effort (Figure 9). It is also clear Canone experienced some modest initial success because he retired his $3,400 loan to Turre within three years. That pattern apparently did not last. Although he continued to work the mine for more than a dozen years, it was eventually repossessed because Canone failed to repay a loan. As a result, the mine was sold back to Joe (Guiseppe) Torre at public auction on 9 July 1895 for a mere $60 to satisfy a judgment made against Canone in the Township 4 Justice Court.[55] That low value implies the equipment present at the site had little residual value.

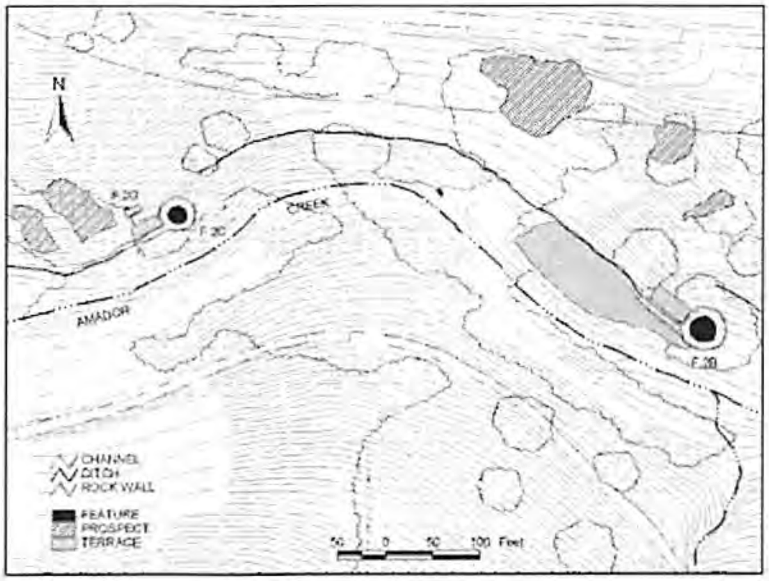

Figure 9. *Core area of the Canone mining complex.* Map by author.

Canone's declining financial circumstances strongly suggest the real source of the gold he recovered was his ditch. There are good reasons to believe tailings from the fabulously productive mines upstream contained appreciable quantities of discarded gold. First, inefficient recovery was characteristic of most early stamp milling activities. Second, ores from Amador City were known to contain "sulpherets," a fact that initially impeded gold recovery.[56] Finally, tailings in Amador Creek were later reprocessed in 1940 with a cyanide mill that recovered $5 of gold per ton.[57] Yet, the significant effort Canone expended mining the slopes above his mills suggests he may not have realized the value contributed by those upstream materials. Eventually, losses of gold from upstream milling operations probably fell off as gold recovery processes were improved at the Keystone Mine. That seems to provide a good explanation for the precipitous decline in Canone's fortunes, although other causes cannot be ruled out.

Archaeological remains of Canone's mining complex include two relatively intact arrastras of remarkably similar layout and construction. Their uniformity of design suggests a clearly articulated mental plan. No other examples of arrastras built by Italians have been identified in published literature. However, the arrastra technology was widespread in the Mediterranean region and likely familiar to both Turre and Canone. These surviving examples provide information that should be useful for future comparative studies.

Each mill is located adjacent to a mined hillside along Amador Creek. The mill basins in both features measure 10 feet in internal diameter with 5-foot thick outer walls. The walls are faced with local metamorphic rocks and filled with earth and rubble. Both arrastras are quite substantial, and large stones were purposely selected for the walls. Figure 10 shows feature 2B prior to excavation. A plan and cross-section of that feature are provided in Figures 11 and 12. A trench placed across feature 2B revealed that the massive walls extend fully twice as deep as the floor of the mill basin and are surrounded by a 3-foot-wide channel, the full depth of the arrastra wall. Traces of the central axle survived, and several drag stones were left inside the mill basin, despite removal of the mill floor at the time it was abandoned. Regrettably, no evidence of the "wheels and machinery" mentioned in the mine deed survived to inform interpretation.

Figure 10. *Feature 2B before excavation, facing north. Two large drag stones are visible within the mill basin as is an outer channel surrounding the mill (scale in feet).* Photo by author.

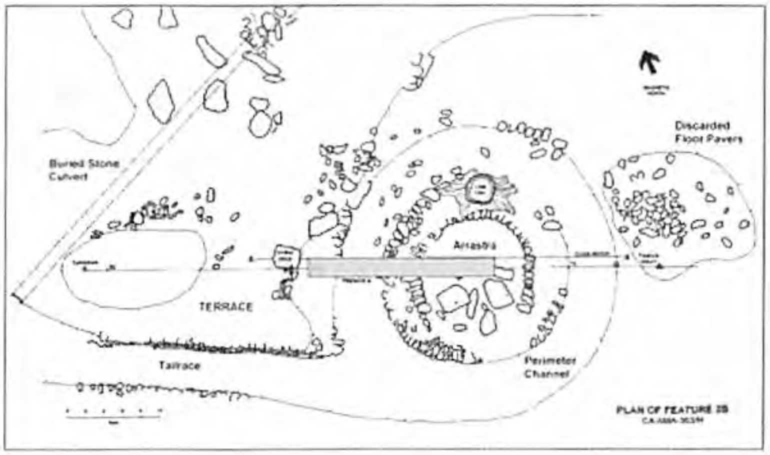

Figure 11. *Plan of feature 2B with key features labeled.* Drawing by author.

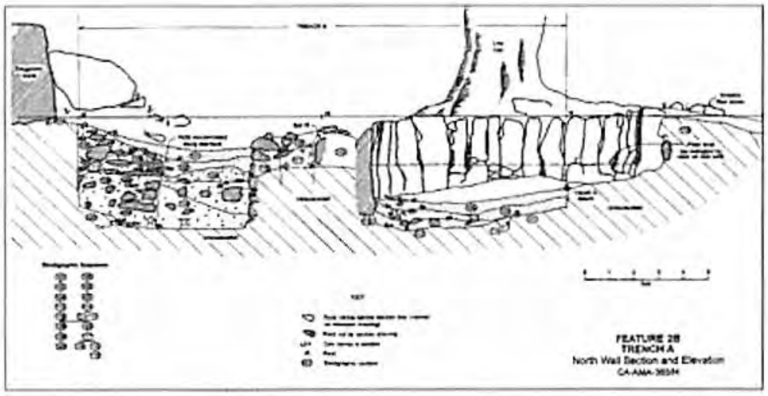

Figure 12. *Cross-section of feature 2B showing stratigraphic sequence.* Drawing by author.

Canone's arrastras were undoubtedly powered by water, based on the ample supply specified in the deed. However, the type of waterwheels used to power his arrastras was uncertain. The presence of a very large oak on the wall of feature 2B seemed to preclude a horizontal wheel, and an undershot wheel was not practical given the low head available. The only other feasible solution seemed to be an overshot waterwheel. That type of wheel could have been anchored to the large elevated rectangular terraces adjacent to both mill basins. Those terraces feature dry-laid rock walls of good workmanship with tailraces passing next to them. The available drop would have been sufficient for a wheel no larger than 8-foot diameter to operate over the tailrace with an axle supported on the top of the terrace. Drive belts or other devices would have been required to transfer power to the central axle and drag arms of the arrastras.

The terrace edges at features 2B and 2C contain no substantial stone reinforcement in the area where the axle for an overshot wheel would be expected. Instead, the main function of the terraces appears to have been to facilitate the transfer of ore into the mill basins. That use of the terraces as an active work space seems to be confirmed by the presence of a large drag stone blank left on the edge of the terrace closest to feature 2B. Bringing ore and drag stone blanks across the terrace would not have been practical if drive mechanisms also occupied that space.

Absent clear evidence that an overshot wheel was used, attention returned to verifying whether or not the oak on the wall of feature 2B was present at the time the feature was in use. That oak is an interior live oak (*Quercus wislizeni*) with a circumference at breast height of 12 feet, 5 inches. Mature trees of that species typically grow to 3 feet in diameter and live up to 200 years.[58] Their growth is subject to extreme variability depending on edaphic conditions. The oak incorporated in the feature 2B arrastra is quite close to Amador Creek and had optimal growing conditions. A core was taken from the tree in an effort to confirm its precise age. That bore penetrated 18 inches, half of the tree's nominal diameter, suggesting a minimal age of 96 years. The tree is likely marginally older than that because the trunk is irregular in shape, and the core did not hit the exact center of the tree. Even so, it appears quite likely the tree did not establish itself until after the mill was abandoned in 1895.

The channels surrounding both surviving arrastras at the Canone Mine lend significant support to the idea that these mills were powered with direct-drive horizontal waterwheels. The floor of the channel around feature 2B lacks evidence of compaction by draft animals, and animals are not mentioned in the mine deed. It is also striking that the channels around Canone's arrastras closely resemble the configuration of the horizontal waterwheels shown in Figure 5. Like their counterparts at the Sierra Butte Mine, the channels around Canone's mills are lined with rock walls on both sides. A concentration of machine-cut nails was also found near the outer edge of the channel surrounding feature 2B. Those nails are generally compatible with the known date of construction and could reflect either a wood lining installed to prevent scouring of the outer wall of the channel by water, or part of the wooden wheel left to rot in place.

Other aspects of the design of the arrastras at CA-AMA-363/H provide additional insight. Although the exact location of the scupper or outlet from the mill basin at feature 2B has not survived, the one at feature 2C is positioned close to the intersection of the tailrace and the channel around the arrastra. The mills are so uniform, it is likely the same design was replicated at feature 2B. The terrace at feature 2B is also interesting because a buried stone culvert passes under the elevated pad, providing a way to allow water to bypass that mill. The bypass implies the operation of the two mills could be synchronized, with a charge processed in one while the other was being reloaded. That mode of operation would have been particularly efficient for a single miner.

Soils from all three arrastras at CA-AMA-363/H were analyzed for residual concentrations of mercury and cyanide. Those results reveal mercury concentrations only marginally higher than background levels typical in soils of the region and cyanide levels equivalent to surrounding areas.[59] Only one sample from a poorly preserved arrastra at the far eastern end of the site (feature 2A) contained mercury in excess of the total threshold limit concentration of 20 mg/kg defined as hazardous by the state. Feature 2B produced less than 5 mg/kg and feature 2C produced 8.6 mg/kg. For comparison, background mercury is present in local soils in concentrations ranging from 0.10 to 0.17 mg/kg. Those findings suggest Canone used mercury frugally and recovered most of the quicksilver he employed during the amalgamation process.

The relatively well-preserved arrastra mills at CA-AMA-363/H are just one example of a small operation with clear associations, dating, and design details. Investigations at that site reveal some of the complexities entailed in interpreting the operations of such mills, which, although typically left in place, are often bereft of floors and drive mechanisms. Many other examples with verified associations and design details would be needed before it is possible to clarify larger patterns and answer basic questions such as whether or not certain configurations, materials, and modes of operation were characteristic of particular groups and periods.

The Canone Mine is an Italian version of an arrastra. As with other people of Mediterranean origin, the technology was culturally familiar to Italians, although it is uncertain if Turre had any direct mining experience before coming to America. The mills at CA-AMA-363/H are carefully planned and executed in a uniform pattern that suggests a strong traditional vernacular competence. Their layout took into account the need to site the mills and their waterwheels at elevations that took maximum advantage of the limited head available from a supply ditch. The buried stone culvert under the structure pad at feature 2B reflects intentional planning for synchronized use of water. Careful workmanship is evident through the site complex.

After relinquishing his claim to the mine on the Torre Ranch, Canone moved to Amador City, purchasing Lot 1 in Block 6 near the Bunker Hill Mine in 1900.[60] He acquired two adjoining lots over the course of the following decade, living modestly and never marrying.[61] Canone died intestate on 14

June 1925 of a self-inflicted gunshot wound. His three lots in Amador City and $462 in cash were distributed to his only surviving heir, Lena Caratto, a 21-year-old niece living in San Francisco.[62]

Conclusions

While the arrastra technology was widely known and in many respects superior to other gold and silver milling approaches, its use was largely confined in the American West to smaller operations that often went unreported. That obscurity, combined with the fact that most arrastras were vernacular constructions often employed by those at the bottom of the socioeconomic ladder, underscores the potential contributions archaeology can make. Comparative studies will depend on the thoughtful accumulation of data from these often poorly documented resources. The Canone Mine offers an example of how future studies might seek to interpret this "poor man's" technology in a broad historic context comprising the intersection of technology, vernacular competence, social and economic factors, and environmental conditions.

Acknowledgements

I am grateful to Patrick E. Martin, Judith Marvin, Ronald Reno, Judy Tordoff, and two anonymous reviewers for insights and suggestions pertaining to the interpretations offered in this article. However, I accept as my own any errors or interpretation presented here.

Notes

[1] P. J. Bakewell, *Silver Mining and Society in Colonial Mexico: Zacatecas 1546–1700* (Cambridge: Cambridge Univ. Press, 1971); E. A. H. Tays, "Mining in Mexico: Past and Prese *Engineering and Mining Journal* 86, no. 14 (1917): 665–67; and Otis E. Young Jr., *Western Mining: An Informal Account of Precious Metals Prospecting, Placering, Lode Mining, and Milling on the American Frontier from Spanish Times to 1893* (Norman: Univ. of Oklahoma Pr 1970), 69–72.

[2] *Webster's New Twentieth-Century Dictionary* (New York: Simon and Schuster, 1979), 103.

[3] Almarin B. Paul claimed to have patented a metal arrastra in an article, "The Americanized Arrastra for Working Gold and Silver Ores," Bancroft Library catalog no. F869.S3.7.P267, University of California, Berkeley, 1938. No corresponding patent has been discovered.

[4] Ed B. Preston, "California Gold Mill Practices," *California State Mining Bureau Bulletin* 6 (1895): 58.

[5] C. M. Laizure, "Elementary Placer Mining in California and Notes on the Milling of Gold Or *California Journal of Mines and Geology* 30 (1934): 269.

[6] California State Mining Bureau, *Eleventh Report of State Mineralogist*, Sacramento, Calif., 1892, 315.

[7] "The Arrastra and Its Use," *Mining and Engineering Journal* (23 Dec. 1899): 760.

[8] W. H. Storms, "How to Build an Arrastre," *Mining and Engineering Journal* (27 May 1911): 1054.

[9] "Arrastra," 799 (see n. 7).

[10] California State Mining Bureau, *Thirteenth Report of State Mineralogist*, Sacramento, Calif. 1896, 395; William V. Wells, "How We Get Gold in California by a Miner of the Year '49" (Golden, Colo.: Outbooks, 1981) [reprinted from *Harpers Magazine* (1860):18–19].

[11] See Young, *Western Mining* (n. 1) for the earliest mining evidence in Arizona and New Mex and Roger E. Kelly and Marsha C. S. Kelly, "Arrastras: Unique Western Historic Mining Sites, *Historical Archaeology* 17, no. 1 (1983) for examples from the 1940s.

[12] Storms, "How to Build," 1053 (see n. 8).

[13] Elisabeth L. Egenhoff. *The Elephant as They Saw It: A Collection of Contemporary Pictures and Statements on Gold Mining in California* (Sacramento: California Division of Mines and Geology, 1949), 116; and [Jesse D. Mason], *History of Amador County, California* (Oakland, Calif.: Thompson and West, 1881).

[14] Rodman W. Paul, *Mining Frontiers of the Far West, 1848–1880* (Albuquerque: Univ. of Ne Mexico Press, 2001), 31.

[15] Ronald H. Limbaugh, "Making Old Tools Work Better," *California History* 77, no. 4 (1998) 38–41.

[16] "The Mexican Arrastra," *Mining and Scientific Press* [reprinted in 1938], Bancroft Library catalog no. F869.S3.7.P267, University of California, Berkeley.

[17] The Riverside arrastras are believed by Storms (see n. 8) to date to the early period of hard r mining in California in the 1850s.

[18] Auguste Rémond, *Mining Statistics: No. 1. Tabular statement of the condition of the aurifer quartz mines and mills in that part of Mariposa and Tuolumne counties lying between the Merc and Stanislaus rivers, August–November 1865*, published by authority of the Legislature of California, Geological Survey of California (Philadelphia: Sherman & Co., 1866).

[19] Taken from data presented in "Quartz Mills of the Pacific Coast," *Mining and Scientific Pres* 22, no. 1 (7 Jan. 1871): 12.

[20] *Thirteenth Report* (see n. 10).

[21] Compiled from "Quartz Mills" (see n. 19) and the *Thirteenth Report* (see n. 10).

[22] "The Poor Man's Mill," *Mining and Scientific Press* 41, no. 23 (4 Dec. 1880): 360.

[23] Kelly and Kelly cite several examples of tailings reprocessing operations that may have beer conducted under contract with large, industrial mine operators in "Arrastras," 87 (see n. 11). Se also figure 5, an operation discussed in "The Arrastra," *Mining and Scientific Press* 53, no. 8 (2 Aug. 1891): 120.

[24] One example near Big Oak Flat in Tuolumne County, California, was still operating in 1948 according to Palmer C. Ashley, "Ancient Rastres," *Desert Magazine* 34, no. 1 (1971): 16–17; th Golden Quartz or Kinder Mine in San Luis Obispo County, California, still operated on a limite basis in the 1950s, according to the website of the Ventana Wilderness Society, *Double Cone Quarterly* 4, no. 3 (2001) < http://www.ventanawild.org/news/fe01/kinder.html > accessed 28 F 2005, in an article entitled "From Willow Creek to Cone Peak: The Life of William Kinder."

[25] " Arrastra," 760 (see n. 7).

[26] *Eleventh Report*, 315 (see n. 6).

[27] Laizure, "Elementary Placer Mining," 267–70 (see n. 5).

[28] The *Mining and Scientific Press* (see n. 19) surveyed 421 California mills in November 187 Rossiter W. Raymond provided an estimate of average erection costs for stamp mills of $1,500- $2,000 in *Silver and gold: an account of the mining and metallurgical industry of the United States, with reference chiefly to the precious metals* (New York: J. B. Ford and Co., 1873), 129.

[29] David Christy, "How Shall Our Foreign Commerce Be Sustained?" *Debrow's Review* 5, no. (1868): 138–46.

[30] *Eleventh Report*, 316 (see n. 6).

[31] Laizure, "Elementary Placer Mining," 270 (see n. 5).

[32] Costs for Oneida Mine are given by Henry Degroot, "The Mother Lode of California," *Overland Monthly and Out West Magazine* 9, no. 5 (1872): 410; costs for the Pittsburgh Mine a given by Raymond, *Silver and gold*, 129 (see n. 28).

[33] " Arrastra," 760 (see n. 7).

[34] Kelly and Kelly, "Arrastras," 86 (see n. 11), state that "in order to return economic values, arrastras usually required relatively high grade ore with low capital and overhead investments."

[35] Almarin B. Paul, "Rebellious Gold Ores," Bancroft Library catalog no. F869.S3.7.P267, University of California, Berkeley, 1938; and Laizure, "Elementary Placer Mining," 266 (see n.

[36] Paul, "Rebellious," 43 (see n. 35).

[37] Titus F. Cronise, *The Natural Wealth of California* (San Francisco, Calif.: H. H. Bancroft an Co., 1868), 556.

[38] "Working Gold and Silver Ores: Cheap Methods for Prospectors and Miners No. 1," *Mining and Scientific Press* 52, no. 15 (10 Apr. 1886). This article is based on the notes of E. C. Van Blarcom who spent years in the Mexican mines.

[39] *Mining and Scientific Press* 86, no. 10 (7 Mar. 1903): 145.

[40] Mark R. Lamb, "Hacienda Buburon, an Old Mexican Silver Mill," *Engineering and Mining Journal* 86, no. 14 (1908): 663–64; and Frank H. Probert, "Primitive Mexican Crushing and Dressing Plant," *Engineering and Mining Journal* 83, no. 14 (1907): 655–56.

[41] These terms were routinely applied in nearly all period descriptions. Two typical examples include "Poor Man's Mill," (see n. 22); and "Arrastra—'The Poor Man's Mill'," *Mining and Scientific Press and Pacific Electrical Review* 70, no. 14 (6 Apr. 1895): 209.

[42] See, for example, George Lakoff, *Women, Fire, and Dangerous Things: What Categories Reveal about the Mind* (Chicago: Univ. of Chicago Press, 1987). An excellent website, sponsor by the Cognitive Science Society, that provides sources and links to cognitive science and its findings about the way topics are framed with language is available at *CogWeb* <http://cogweb.ucla.edu/CogSci/>.

[43] See Ventana Wilderness Society (n. 24) < http://www.ventanawild.org/news/fe01/kinder.htn >.

[44] Rossiter W. Raymond describes two pans made by Knox and others made by Horn, Booth ar Company, Cox, Wheeler, Patton, Farrands, Hepburn and Peterson, Wheeler and Randall, and Varney in *Mines and Mining in the Rocky Mountains, the Inland Basin, and the Pacific Slope* (New York: J. B. Ford and Co., 1871); A. Paul's "Americanized Arrastra" is advertised in a collection of his essays, reprinted in 1938, but originally dating to the late-19th century (see n.

[45] John B. Mannix depicts an interior view of a Comstock silver mill with dozens of pan grinde and amalgamators in his book *Mines and Their Story* (London: Sidgwick and Jackson, 1913).

[46] Rémond, *Mining Statistics*, 4 (see n. 18).

[47] A. Janin, "Art of Amalgamating Silver Ore," U.S. Patent No. 481,031, patented 16 Aug. 189

[48] The investigation is reported by Thad M. Van Bueren, "Dragstones and Stockraising: Result Archaeological Test Excavations at CA-AMA-363/H and -364/H in Amador County, Californi report to California Department of Transportation, Sacramento, 1998, available from author.

[49] Rodman W. Paul and Elliott West, *Mining Frontiers of the Far West, 1848–1880* (Albuquerque: Univ. of New Mexico Press, 2001), 92.

[50] See n. 13.

[51] Amador County, *Mortgages* K:30–32, Amador County Archives, Jackson, Calif.

[52] Amador County, *Deeds* W:450–452, Amador County Archives, Jackson, Calif.

[53] U.S. Bureau of Land Management, Cash Entry Patent 2728, Sacramento, Calif.

[54] The following sources yielded no information on Canone's mine: *Mining and Scientific Pres The Engineering and Mining Journal*; biennial reports of the state mineralogist; *Register of Mi and Minerals, Amador County, California* (California State Mining Bureau 1903); Amador Co *Mining Claims, Index of Mining Claims*, and *Mine Labor*. Regrettably, no county assessment records, federal manuscript population census for 1890, or federal manuscript census of manufacturers and industries for 1890 have survived.

[55] Amador County, *Deeds* 15 :4–7 and *Certificate of Sale* A: 338, Amador County Archives, Jackson, Calif.

[56] Raymond, *Mines and Mining*, 33–36 (see n. 44).

[57] An article in the *Amador Ledger* (21 Nov. 1940) reported that Chester C. Torre was operatin cyanide plant to recover gold from tailings deposited in Amador Creek by the Keystone Mine some 70 years earlier. The tailings, mined using a hydraulic monitor, were being processed at a rate of one ton per hour with a recovery of $5.00/ton.

[58] These details are taken from a University of California, Davis, website, sponsored by the Integrated Hardwood Range Management Program, accessed 23 Jan. 2006, < http://danr.ucop.edu/ihrmp/interior.html >.

[59] Substances are defined as "California hazardous" for handling and disposal purposes based c the *California Code of Regulations (CCR)*, Title 22, Division 4.5, Chapter 11, Article 3, § 66261.24. Test results mentioned here are derived from a Geocon Preliminary Site Investigatio Report to Caltrans, dated 24 June 2002, California Dept. of Transportation, Stockton, Calif.

[60] Purchased for $150 from Mrs. David Rettaglietta in 1900 (Amador County, *Deeds* 19: 382, Amador County Archives, Jackson, Calif.).

[61] Amador County, *Deeds* 25: 314 and 32: 318, Amador County Archives, Jackson, Calif.

[62] His death is recorded in the Catholic parish burial records of the Immaculate Conception Church in Sutter Creek, California. The distribution of his estate is listed in Amador County, *Decrees of Distribution* 3: 124, Amador County Archives, Jackson, Calif.

2004 **Previous** **Table of contents** **Ne**

UNION HILL

MILL

On Union Hill, about two miles from Grass Valley, erected in July, 1860. Runs twenty stamps, having a fourteen inch engine with two boilers. Capacity, forty tons of quartz in twenty-four hours. This mill, one of the best in Nevada county, cost $21,000. Crushes rock for the owners of the Union Hill mine and mill, consisting of G. D. Roberts, William McCormick, J. H. Gashwilder, and T. Findley.

MINE

This hill is two miles east of Grass Valley, and is separated from Howard Hill, with which it is parallel, by Middle Wolf Creek. The Hill was made a matter of record January 30, 1851. The first and chief location on the eastern end of Union Hill ledge, was made by Dr. McMurtry, David Brooks, G. W. Woodward, and others, who afterward purchased several other claims. The company erected a Mexican arastra mill, and took out enough rock to defray all expenses. The mine was badly managed, as nearly all other mines were at that time. With heavy expenses and no experience in quartz mining, the company became involved. Judgments were obtained, executions were issued, and the mine was sold on April 6th, 1854, to Dr. Wm. McCormick, H. Hannah, and others. But little work was done on the mine beyond enough to hold it under the mining laws. Dr. McCormick, in 1865, became sole owner, selling interests the same year to Geo. D. Roberts, Thomas Findley and John Gashwilder, who are now the owners of the property. The latter part of 1865 the company put up hoisting and pumping works, and in the winter of 1866 sunk an inclined shaft one hundred and ten feet, and during the summer run drifts at that depth about seven hundred feet, two hundred feet west and five hundred feet east, the lode varying in width from one to six feet, averaging about two and one-half feet in width, the rock paying from $12 to $80 per ton by mill process. In June and July of the same year the company built a twenty-stamp mill, which was kept running during the day time, from August 1st, the mine not being sufficiently opened to run the mill day and night. In September last they started the incline and sunk eighty feet deeper, and the tunnels were run on the lode east and west about one hundred and fifty feet each way, the rock being richer and the ledge wider-averaging nearly three feet. The company, at this time, were making preparations to run the mill day and night. When the severe winter set in they were obliged, on account of water and some of the machinery giving way, to temporarily abandon the mine about February 1st, 1867, until spring. They have now resumed operations at the mine and will run a drain tunnel, connecting with the upper level, which will take off all surface water and save the mine from being filled with water another winter. The average pitch of the ledge, which runs in slate, is at an angle of fifty degrees. The lowest perpendicular depth attained has been about one hundred and thirty feet. The company own three thousand feet on the ledge, with all its dips, angles and variations; in addition to which they own three hundred square claims; and they also own Wolf creek, for mining purposes, the entire length of their claims. They have on their claims, besides the engine for running the mill, one 12-inch engine for pumping and an 8-inch engine for hoisting, and two pumps, one eight inch and the other fourteen inch, plunger and bucket. The machinery erected and attached to the mine cost about $40,000. The proceeds from this mine since starting the mill until work was suspended last winter, by water, were $74,413.41.

Near the summit of Union Hill, and running in a northwesterly and southeasterly direction, is the mine of the Grass Valley Consolidated Mining Company, now solely owned by Col. William O'Connor Sidney. This lode runs in hornblende, dipping westerly with an average inclination of about fifty degrees. The claim embraces twenty-five hundred feet on the vein, including, of course, all the dips, angles, and variations of the lode. This is an early location, and was known at different periods as the McGrann, and the Murphy and the Bulger ledge. Colonel Sidney purchased the mine in January, 1866, from George D. Roberts, who had bought it from the original owners. A number of years ago the ledge was superficially worked by its locators, paying from $13 to $36 per ton, the rock having been crushed at the Gold Hill, the Lady Franklin and Eaton & Son's mills. A tunnel was started about seven years since, and was run a distance of five hundred and twelve feet, where the vein, which was here narrow, was struck at a perpendicular depth of one hundred and twelve feet from the surface. In October of last year, an inclined shaft was started on the summit of the hill, at a distance of about five hundred feet northwesterly from the end of the tunnel. The incline is twelve feet by five in the clear, is splendidly timbered throughout, having a double track, and affording ample room for a large pump. The shaft pitches at an angle of fifty-five degrees, not varying in least in the inclination from the head to its present terminus, which is about one hundred and eighty-six feet from the surface. At the foot of the incline, where a splendid looking ledge was exposed, the water came in with discouraging rapidity, and having no pumping facilities, work was temporarily abandoned. That no time should be lost, the labor of cleaning out the old tunnel, referred to above, was commenced. The tunnel, as already stated, had reached a distance of five hundred and twelve feet, under the old ownership, when the owners, who, by the way, were poor men and unable to thoroughly work the mine, became discouraged. Under the present management work was recently resumed at the end of the tunnel, the needed repairs were made, and upon putting in the first set of timbers, the ledge, showing a width of ten inches and looking very well, was discovered. The vein has been followed in this drift about four hundred feet in a southeasterly direction, the lode increasing in width and improving in the character of the ore as the work has progressed. A drift, started by the original owners, had been run about one hundred and eighty feet in a northwesterly direction from the head of the tunnel, and along this drift are several "chutes," from which the crushings already spoken of were taken. The northwest drift has been connected with the incline shaft, leaving the vein exposed for a distance of about nine hundred feet. The lode for the entire distance will average about two feet and one-half in width, showing generally a good character of quartz, and in the southeast drift is presented an excellent quality of ore, strongly resembling the Eureka rock, and strengthening the long accepted belief among practical miners that this is really the Eureka vein. The rock in the southeast drift is liberally filled with fine sulphurests, a portion of which sulphurets will yield at the rate of $420 to the ton. The vertical depth of the present level will not average more than eighty feet. The work of sinking for another level, to a depth of one hundred and fifty feet below the present one, was commenced a few weeks since, and will probably be completed before this work reaches the public. Drifts will of course be run on the lode on this level for the entire length of the Consolidated Company's claims. A splendid 10-stamp mill, which can be increased five stamps when occasion requires, and extensive hoisting and pumping machinery have been erected within the past few months at an expense of $20,000. In the first level an immense amount of quartz, which could only be roughly estimated at thousands upon thousands of tons, is exposed-enough to keep a large, first-class quartz mill crushing for years. The second level, when thoroughly opened, will undoubtedly reveal another splendid body of quartz. Colonel Sidney has expended a large sum of money in purchasing this mine, erecting machinery, sinking shafts and doing what our miners call "dead work," but we believe that he is in possession of a first-class quartz mine, which will soon prove itself such. Dan. Collins is superintendent of the Grass Valley Consolidated Mining Company.

Laton & Son's Mill

On Union Hill, north bank of Middle Wolf Creek, about two miles in an easterly direction from Grass Valley, was built in 1865, and cost about $10,000. Runs eight stamps, propelled by a 20-horse power engine. Capacity, fifteen tons of rock every twenty-four hours. Blanket process in use, though the principal part of the gold is saved on copper plates. This mill, which is owned by B. B. Laton of Grass Valley, and C. A. Laton of San Francisco, is a custom mill.

Appendix D. Interview Documentation

Phase I Environmental Site Assessment
Interview Form

Date of interview: 2/13/07

Name of person being interviewed: Robert Pease (Chief Geologist), William Walters

(If by phone, provide phone number): (Senior Engineer), Wilson Grady (Field Tech)

Association with Real Property: see titles above

(Owner/operator/caretaker/previous owner/neighbor, etc.]

Name of person conducting interview: M. Friedman + R. Bock

Notes for worksheet: Answer each question "yes." "no," "not applicable(N/A)." or "unknown." Circle "N/A" when it is obvious that the issue addressed in the questiondoes not apply to the property. Circle "unlmown" if you are not in a position to be aware of aparticular issue. Provide explanation as needed (for example, who, what, when, where, why).

Question	General Response
1. Has the property or an adjacent property ever been used for agriculture, mineral, commercial, or industrial purposes? If yes, explain: The property is a mine and the neighboring property ~~is~~ was a farm	[✓ Yes] No Unknown N/A
2. Are any past or present improvements, such as old building foundations, evident on the property? If yes, explain: Foundations on-site were crushed and regraded [presented photos] ~ 1997	[✓ Yes] No Unknown N/A
3. Have there been or are there any unnatural topographic features (for example, mounds, areas, depressions, etc.)? If yes, explain: Old adits + prospects, also evidence of old sluice + ditch	[✓ Yes] No Unknown N/A
4. Has fill dirt ever been brought onto the property that originated from a contaminated site or that was of an unknown origin? If yes, explain: Patricia Nelson is person to speak with	Yes No [✓ Unknown] N/A

Phase I Environmental Site Assessment
Interview Form

Question	General Response
5. Have any of the following been dumped above grade, or buried and/or burned on the property: hazardous substances or petroleum products (except when burned for heating purposes), tires, automotive or industrial batteries, vehicles, barrels, pesticide containers or any other waste materials? If yes, explain: Spoke w/ Pat Nelson	Yes No [✓ Unknown] N/A
6. Has there been any past, present, or permitted or planned mining activity or oil and gas exploration/development present on the property? If yes, explain: It is a mine site	[✓ Yes] No Unknown N/A
7. Are there or have there ever been any pipelines or utility lines, either buried or overhead, crossing the property, and have there been any spills or releases associated with them? If yes, explain: Power line + water pipe line to property [shown map]	[✓ Yes] No Unknown N/A
8. Are polychlorinated biphenyls (PCB's) present or have PCB's ever been present in transformers, capacitors, or hydraulic equipment on the property and have there been any releases? If yes, explain:	Yes [✓ No] Unknown N/A
9. Is there or has there been any storage, mixing, or disposal of pesticides on the property? Note: Disposal means other than normal intended use of the product. If yes. explain: Mine shaft had trace pesticide in it (New Brunswick Mine)	[✓ Yes] No Unknown N/A
10. Have any monitoring wells been drilled (dug or driven) on the property? If yes, explain the purpose of the wells and provide any analytical results: No MWs but Mine shafts are sampled - VOCs, SVOCs, Pest, metals, others - 4/ly sampling May have data available - Check w/ Pat Nelson	[✓ Yes] No Unknown N/A

Phase I Environmental Site Assessment
Interview Form

Question	General Response
11. If the property is served by a private well, have contaminants ever been identified in the well or the system that exceeded acceptable levels? If yes, explain: See #10	[✓ Yes] No Unknown N/A
12. If surface water is present, then are there or have there been any unnatural characteristics (for example, color, sheens, odors, etc.)? If yes, explain:	Yes [✓ No] Unknown N/A
13. Are there or have there been any pits, ponds, or lagoons associated with waste treatment or disposal on the property? If yes, explain:	Yes [✓ No] Unknown N/A
14. Has the property discharged waste water (excluding storm water runoff) on or adjacent to the property? If yes, explain:	Yes No [✓ Unknown] N/A
15. Is there, or has there been, any stressed or dead vegetation present? If yes, explain: The pad at New Brunswick does not grow much but was compacted w/ heavy equip in 1997.	Yes No Unknown N/A
16. Are there or have there been any floors, drains, or walls stained by substances other than water or that are emitting foul and/or unnatural odors? If yes, explain:	Yes No Unknown [✓ N/A]
17. Have radon, asbestos-containing materials, or lead-based paint ever been identified in any on-site buildings? If yes, explain:	Yes No [✓ Unknown] N/A

Phase I Environmental Site Assessment
Interview Form

Question	General Response
18. Have any above-ground or underground storage tanks been used on the properly? If yes, explain:	Yes [✓ No] Unknown N/A
19. Have hazardous substances (for example, flammable materials, paints, pesticides or other chemicals) been stored on the property for more than 1 year? If yes, explain and provide quantities: Speak w/ Pat Nelson	Yes No [✓ Unknown] N/A
20. Have there been any industrial drums (typically 55 gallons (208 liters)), sacks, or chemicals located or dumped on the property? If yes, explain:	Yes [✓ No] Unknown N/A
21. Have there been any environmental permits or licenses associated with the property (for example. air quality and water discharge, landfills)? If yes, for conditional use to elevator shaft to evaluate shaft	[✓ Yes] No Unknown N/A
22. Have there been any compliance/enforcement notices or environmental liens relating to past or recurrent violations of environmental laws with respect to the property or any facility on the property? If yes, explain: Pat Nelson	Yes No [✓ Unknown] N/A
23. Has an environmental site assessment of the property, or any other property/ facility record, ever (1) indicated the presence of hazardous substances, petroleum products, or other potential environmental problems on the property, or (2) recommended further assessment of the property? If yes, explain/summarize the results of any further investigation:	Yes [✓ No] Unknown N/A

Phase I Environmental Site Assessment
Interview Form

Question	General Response
24. Are you aware of any past, threatened. or pending lawsuits or administrative proceedings concerning a release or threatened release of any hazardous substances or petroleum products on the real property? If yes, explain.	Yes [✓ No] Unknown N/A
25. Have there ever been spills of hazardous substances or petroleum products that were reported to the National Response Center or a local or State emergency response authority? If yes, explain:	Yes [✓ No] Unknown N/A
26. If not mentioned above, is there anything else that could indicate the presence of hazardous substances and petroleum products that may impact the property? If yes, explain:	Yes [✓ No] Unknown N/A

Phase I Environmental Site Assessment
Interview Form

Date of interview: 2/21/07

Name of person being interviewed: Patricia Nelson

(If by phone, provide phone number): 530-271-0679 x 106

Association with Real Property: Director of Environmental Affairs
(Owner/operator/caretaker/previous owner/neighbor, etc.]

Name of person conducting interview: M. Friedman

Notes for worksheet: Answer each question "yes." "no," "not applicable(N/A)." or "unknown." Circle "N/A" when it is obvious that the issue addressed in the questiondoes not apply to the property. Circle "unknown" if you are not in a position to be aware of aparticular issue. Provide explanation as needed (for example, who, what, when, where, why).

Question	General Response
1. Has the property or an adjacent property ever been used for agriculture, mineral, commercial, or industrial purposes? If yes, explain: ~~[illegible]~~ Mine + neighbors on Farm	[✓ Yes] No Unknown N/A
2. Are any past or present improvements, such as old building foundations, evident on the property? If yes, explain: Foundation removed + site re-graded	[✓ Yes] No Unknown N/A
3. Have there been or are there any unnatural topographic features (for example, mounds, areas, depressions, etc.)? If yes, explain:	Yes No Unknown N/A
4. Has fill dirt ever been brought onto the property that originated from a contaminated site or that was of an unknown origin? If yes, explain:	Yes No Unknown N/A

Phase I Environmental Site Assessment
Interview Form

Question	General Response
5. Have any of the following been dumped above grade, or buried and/or burned on the property: hazardous substances or petroleum products (except when burned for heating purposes), tires, automotive or industrial batteries, vehicles, barrels, pesticide containers or any other waste materials? If yes, explain:	Yes [✓ No] Unknown ~~N/A~~
6. Has there been any past, present, or permitted or planned mining activity or oil and gas exploration/development present on the property? If yes, explain: This Phase I is part of the process / Concurrently w/ Phase I	[✓ Yes] No Unknown N/A
7. Are there or have there ever been any pipelines or utility lines, either buried or overhead, crossing the property, and have there been any spills or releases associated with them? If yes, explain:	Yes No Unknown N/A
8. Are polychlorinated biphenyls (PCB's) present or have PCB's ever been present in transformers, capacitors, or hydraulic equipment on the property and have there been any releases? If yes, explain: AH has PG+E Powerline — but don't know of others	Yes [✓ No] Unknown ~~N/A~~
9. Is there or has there been any storage, mixing, or disposal of pesticides on the property? Note: Disposal means other than normal intended use of the product. If yes. explain: See #10	Yes No Unknown N/A
10. Have any monitoring wells been drilled (dug or driven) on the property? If yes. explain the purpose of the wells and provide any analytical results: No mws AH No mws NBW Height Sierra Pacific did have wells * Bohemia Inc - lumber mill Closed in 90's pond on site Don't know current status The DEIR + MEA summarize past water data	Yes No Unknown N/A

pg 112 MEA

Phase I Environmental Site Assessment
Interview Form

Question	General Response
11. If the property is served by a private well, have contaminants ever been identified in the well or the system that exceeded acceptable levels? If yes, explain: a See #10	[✓ Yes] [✓ No] Unknown N/A
12. If surface water is present, then are there or have there been any unnatural characteristics (for example, color, sheens, odors, etc.)? If yes, explain:	Yes No [✓ Unknown] N/A
13. Are there or have there been any pits, ponds, or lagoons associated with waste treatment or disposal on the property? If yes, explain:	Yes No Unknown N/A
14. Has the property discharged waste water (excluding storm water runoff) on or adjacent to the property? If yes, explain:	Yes No Unknown N/A
15. Is there, or has there been, any stressed or dead vegetation present? If yes, explain:	Yes No Unknown N/A
16. Are there or have there been any floors, drains, or walls stained by substances other than water or that are emitting foul and/or unnatural odors? If yes, explain:	Yes No Unknown N/A
17. Have radon, asbestos-containing materials, or lead-based paint ever been identified in any on-site buildings? If yes, explain:	Yes No Unknown N/A

Phase I Environmental Site Assessment
Interview Form

Question	General Response
18. Have any above-ground or underground storage tanks been used on the property? If yes, explain:	Yes [✓ No] Unknown N/A
19. Have hazardous substances (for example, flammable materials, paints, pesticides or other chemicals) been stored on the property for more than 1 year? If yes, explain and provide quantities:	Yes No Unknown N/A
20. Have there been any industrial drums (typically 55 gallons (208 liters)), sacks, or chemicals located or dumped on the property? If yes, explain: Vandalism in shaft at NBM HCs in water - Quality testing ~~Currently Investigating~~ Currently Investigating Reported Vandalism to sheriff - No agency involvement	Yes No Unknown N/A
21. Have there been any environmental permits or licenses associated with the property (for example, air quality and water discharge, landfills)? If yes,	Yes No Unknown N/A
22. Have there been any compliance/enforcement notices or environmental liens relating to past or recurrent violations of environmental laws with respect to the property or any facility on the property? If yes, explain:	Yes [✓ No] Unknown N/A
23. Has an environmental site assessment of the property, or any other property/ facility record, ever (1) indicated the presence of hazardous substances, petroleum products, or other potential environmental problems on the property, or (2) recommended further assessment of the property? If yes, explain/summarize the results of any further investigation:	Yes [✓ No] Unknown N/A

Phase I Environmental Site Assessment
Interview Form

Question	General Response
24. Are you aware of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any hazardous substances or petroleum products on the real property? If yes, explain.	Yes [✓ No] Unknown N/A
25. Have there ever been spills of hazardous substances or petroleum products that were reported to the National Response Center or a local or State emergency response authority? If yes, explain: Not at this time - under investigation - See #20	Yes [✓ No] Unknown N/A
26. If not mentioned above, is there anything else that could indicate the presence of hazardous substances and petroleum products that may impact the property? If yes, explain: Other than Vandalism	Yes [✓ No] Unknown N/A

APPENDIX C

Photographs

PHOTOGRAPHS – PHASE I ESA

Photo 1. Exploratory drilling pad at northeastern end of site.

Photo 2. Relic concrete slabs-on-grade at New Brunswick Location.

Photo 3. Relic concrete wall at New Brunswick location.

Photo 4. New Brunswick ore bin viewed from southeast near pond.

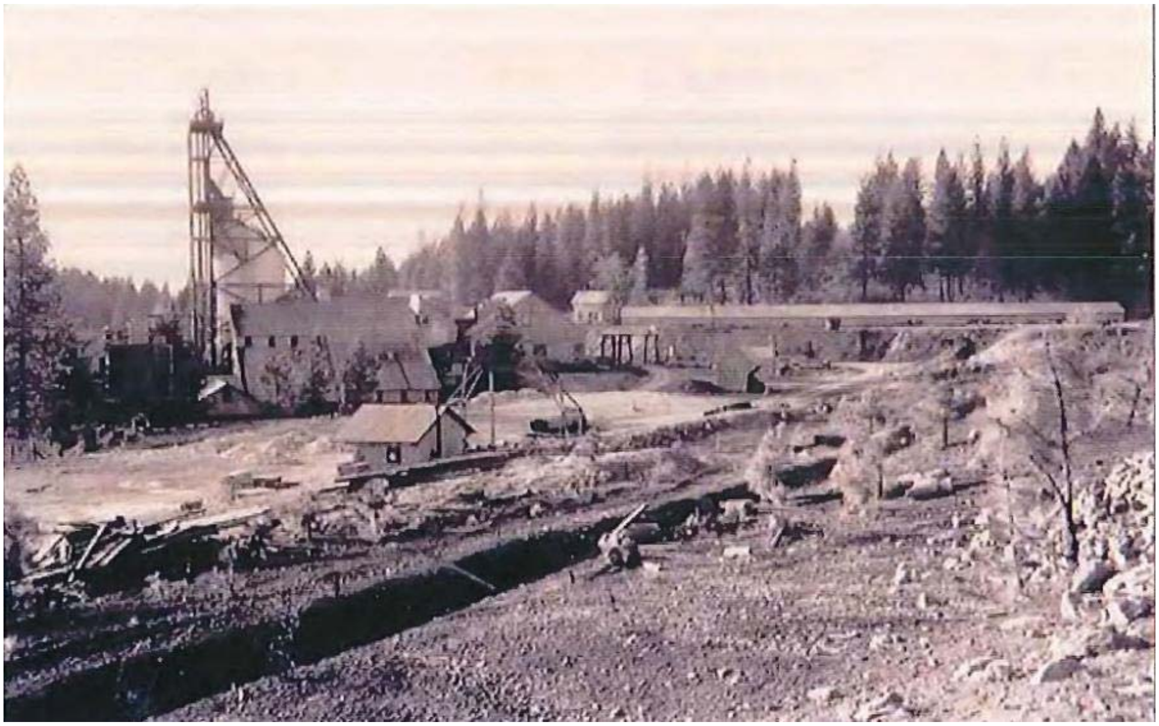

Photo 5. Historical head frame and mining structures viewed from southeast.

Photo 6. Drums and exploratory drill cores near ore bin.

Photo 7. Historical lumber milling area with stockpiles and exploratory drill cores.

Photo 8. Meadow to northeast of pond, view from northwest.

Photo 9. Underground utility valve enclosure at former New Brunswick changing room/ garage location.

PHOTOGRAPHS – PHASE II ESA

Photo 1. T1 04/16/2020

Photo 2. T1 04/16/2020

Photo 3. T1 04/16/2020

Photo 4. Waste rock, T1 04/16/2020

Photo 5. T2 04/16/2020

Photo 6. Standing water at T3 is surface runoff originating from toe of cut slope to the northeast, in the vicinity of trench T6.

Photo 7. T3 04/16/2020

Photo 8. T3 04/16/2020

Photo 9. Native soil, T3 04/16/2020

Photo 10. Waste rock, T3, 04/16/2020

Photo 11. T4 04/16/2020

Photo 12. T4 04/16/2020

Photo 13. T5 04/16/2020

Photo 14. T5 04/16/2020

Photo 15. T6 04/16/2020

Photo 16. T6 04/16/2020

Photo 17. Typical surface runoff from seepage at toe of cut slope.

Photo 18. Typical surface runoff from seepage at toe of cut slope.

Photo 19. T8 04/16/2020

Photo 20. T8 04/16/2020

Photo 21. Standing water in swale down slope from T8, viewed from T8.

Photo 22. Rounded river-run aggregate baserock overlying native soil adjacent to pavement at T10 04/16/2020.

Photo 23. T12 04/16/2020

Photo 24. T12 waste rock

Photo 25. T12 native soil

Photo 26. T12 04/16/2020

Photo 27. T13 04/16/2020. River-run baserock and native soil

Photo 28. T14 04/16/2020

Photo 29. Non-woven geotextile fabric,T14 04/16/2020

Photo 30. T15 04/17/2020

Photo 31. T15 04/17/2020

Photo 32. Waste rock, T15 04/17/2020

Photo 33. Native soil, T15 04/17/2020

Photo 34. T16 04/17/2020

Photo 35. T17 04/17/2020

Photo 36. T17 04/17/2020

Photo 37. T20 04/17/2020

Photo 38. T20 04/17/2020

Photo 39. T20 04/17/2020

Photo 40. Non-woven geotextile fabric, T20 04/17/2020

Photo 41. T22 04/17/2020

Photo 42. T23 04/17/2020

Photo 43. T23 04/17/2020

Photo 44. T23 04/17/2020

Photo 45. Non-woven geotextile fabric, T23 04/17/2020

Photo 46. T27 04/17/2020

Photo 47. T23 04/17/2020

Photo 48. Non-woven geotextile fabric, T28 04/17/2020

Photo 49. T29 04/17/2020

Photo 50. T29 04/17/2020

Photo 51. T30 04/17/2020. Waste rock extends beyond trench depth.

Photo 52. Waste rock at T30 04/17/2020

Photo 53. T31 04/17/2020. Native soil. Standing water from abandoned water line (not groundwater).

APPENDIX D

Key Site Manager Questionnaire

ASTM E 1527-13 Questionnaire for Phase I Environmental Site Assessment (ESA)

(To be completed by the property owner, property manager, and/or or tenant of the property. Please return to NV5 by email, fax at (530) 478-1019 or by mail to: 792 Searls Ave., Nevada City, CA 95959)

Complete address for property or properties:
Nevada County Sec. 31, T.16N, R.9E, M.D.M Assessor Parcel Numbers 09-630-37, 09-630-39, 09-441-03, 09-441-04, 09-441-05, 09-441-34

If applicable, please provide the name and contact information for the person completing this questionnaire.

Key Site Manage or Property Owner: Rise Grass Valley Inc. Phone Number/Contact Info: 604-260-4577

1. Are you aware of any environmental cleanup liens with respect to the property or any facility located on the property that are filed or recorded under federal, tribal, state or local law?	Yes	[✓ No]	Unknown	Comments:
2. Are you aware of any physical modifications to the property (e.g. slurry walls, capping, point of use water treatment) to reduce or eliminate the potential for exposure to hazardous substances or petroleum products in the soil or groundwater?	Yes	[✓ No]	Unknown	Comments:
3. Are you aware of any land use restrictions or institutional controls (e.g. deed restrictions, restrictive covenants, easements, or zoning) in place at the site to reduce or eliminate potential exposure to hazardous substances or petroleum products in the soil or groundwater?	[✓ Yes]	No	Unknown	Comments: DEED RESTRICION WITH STATE WATER BOARD ON 17503 BRUNSWICK ROAD RESTRICTING USE OF GROUNDWATER.
4. Are you aware of any legal or administrative restrictions (e.g. deed restrictions, restrictive covenants, easements, or zoning) on the use of, or access to, the site or facility to prevent activities that could interfere with the effectiveness of a response action, in order to ensure maintenance of a condition of no significant risk to public health or the environment?	Yes	[✓ No]	Unknown	Comments:
5. Is the property or any adjoining property used for an industrial use?	[✓ Yes]	No	Unknown	Comments EXPLORATION DRILLING
6. To the best of your knowledge, has the *property* or any adjoining property been used for an industrial use in the past?	[✓ Yes]	No	Unknown	Comments: GOLD MINING & LUMBER MILL
7. Is the property or adjoining property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing or recycling facility?	Yes	[✓ No]	Unknown	Comments:
8. To the best of your knowledge has the property or any adjoining property been used in the past as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing or recycling facility?	Yes	[✓ No]	Unknown	Comments:

9. Are there currently, or to the best of your knowledge have there been previously, any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of greater than 5 gal (19 L) in the aggregate, stored on or used at the property or at the facility?	Yes	[✓ No]	Unknown	Comments:
10. Are there currently, or to the best of your knowledge have there been previously, any industrial drums (typically 55 gal (208 L)) or sacks of chemicals located on the property or at the facility?	Yes	No	[✓ Unknown]	Comments:
11. Has fill dirt or material been brought onto the property that originated from a contaminated site or that is of an unknown origin?	[✓ Yes]	No	Unknown	Comments: ROCK USED AS FILL IS PRESENT ONSITE
12. Are there currently, or the best of your knowledge have there been previously, any pits, ponds, or lagoons located on the property in connection with waste treatment or waste disposal?	Yes	No	[✓ Unknown]	Comments:
13. Is there currently, or to the best of your knowledge, has there been previously, any stained soil on the property?	Yes	No	[✓ Unknown]	Comments:
14. Are there currently, or to the best of your knowledge have there been previously, any registered or unregistered storage tanks (above or underground) located at the property?	Yes	No	[✓ Unknown]	Comments:
15. Are there currently, or to the best of your knowledge, have there been previously, any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground or adjacent to any structure located on the property?	Yes	[✓ No]	Unknown	Comments:
16. Are there currently, or to the best of your knowledge, have there been previously, any flooring, drains, or walls located within the facility that are stained by substances other than water or are emitting foul odors?	Yes	[✓ No]	Unknown	Comments:
17. As applicable, what is the source of potable water for the property (i.e. City water, domestic well, local irrigation district, etc.)?	Please explain: NO POTABLE WATER SERVICE			
18. If the property is served by a private well or non-public water system, have contaminants been identified in the well or system that exceed guidelines applicable to the water system or has the well been designated as contaminated by any government environmental health agency?	Yes	[✓ No]	Unknown	Comments:
19. Has the owner or occupant of the property been informed of the past or current existence of hazardous substances or petroleum products or environmental violations with respect to the property or any facility located on the property?	[✓ Yes]	No	Unknown	Comments: VARIOUS REPORTS COMPLETED BY PREVIOUS OWNERS

20. Does the owner or occupant of the property have any knowledge of any environmental site assessment of the property of facility that indicated the presence of hazardous substances or petroleum products on, or contamination of the property or recommended further assessment of the property?	Yes X	No	Unknown	Comments: VARIOUS REPORTS FROM PREVIOUS OWNERS
21. Does the owner or occupant of the property know of any past, threatened or pending lawsuits or administrative proceedings concerning release or threatened release of any hazardous substance or petroleum products involving the property by an owner or occupant of the property?	Yes	No X	Unknown	Comments:
22. As applicable, please identify the method of sewage disposal for the property (i.e. city or county sewer system, leach field, etc.)? How long has the current sewage disposal system at the property been in use?	NO SEWAGE DISPOSAL CURRENTLY FUTURE DISPOSAL WILL BE BY SEPTIC FIELD			
23. Does the property discharge waste water on or adjacent to the property other than storm water into a sanitary sewer system?	Yes	No X	Unknown	Comments:
24. To the best of your knowledge, have any hazardous substances or petroleum products, unidentified waste materials, tires, automotive or industrial batteries or any other waste materials been dumped above grade, buried and/or burned on the property?	Yes	No X	Unknown	Comments:
25. Is there a transformer capacitor or any hydraulic equipment for which there are any records indicating the presence of PCBs?	Yes	No X	Unknown	Comments:
26. Are you aware of any other commonly known or publicly available information within the local community about the property concerning recognized environmental conditions in connection with the property?	Yes X	No	Unknown	Comments: VARIOUS REPORTS FROM PREVIOUS OWNERS
27. Are you aware of any existing documents related to environmental conditions on the subject property (e.g. prior ESA reports, environmental reports, environmental permits, geotechnical reports, risk assessments, etc.)	Yes X	No	Unknown	Comments: REPORTS FROM PREVIOUS OWNERS & REPORTS FOR ONGOING PERMITS

Signed: Ben Mossman	Name (please print):
Date: FEB 12 2020	BEN MOSSMAN

APPENDIX E

Laboratory Reports and Chain of Custody Documentation

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

May 12, 2020

Report to:	Bill to:
Jason Muir	Amy Hollarman
NV5	NV5
792 Searls Avenue	792 Searls Avenue
Nevada City, CA 95959	Nevada City, CA 95959

cc: Kyle Leach

Project ID: 5279.05
ACZ Project ID: L58635

Jason Muir:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on April 24, 2020. This project has been assigned to ACZ’s project number, L58635. Please reference this number in all future inquiries.

All analyses were performed according to ACZ’s Quality Assurance Plan. The enclosed results relate only to the samples received under L58635. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ’s current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after June 11, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ’s stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Inorganic Analytical Results

NV5
Project ID: 5279.05
Sample ID: T1-A

ACZ Sample ID: ***L58635-01***
Date Sampled: *04/16/20 09:00*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	100	6	B		mg/Kg	4	20	05/05/20 18:27	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	93.5		*	%	0.1	0.5	04/29/20 13:15	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:10	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 8:43	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 11:25	krs

** Please refer to Qualifier Reports for details.*

NV5

Project ID: 5279.05
Sample ID: T1-B

ACZ Sample ID: ***L58635-02***
Date Sampled: *04/16/20 09:05*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	103		U		mg/Kg	4	20	05/05/20 18:39	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	77.9		*	%	0.1	0.5	04/29/20 15:01	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:12	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 9:37	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 11:36	krs

** Please refer to Qualifier Reports for details.*

NV5

Project ID: 5279.05
Sample ID: T2-A

ACZ Sample ID: ***L58635-03***
Date Sampled: *04/16/20 09:30*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	101	6	B		mg/Kg	4	20	05/05/20 18:43	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	91.5		*	%	0.1	0.5	04/29/20 15:54	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:14	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 9:55	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 11:47	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T2-B

ACZ Sample ID: ***L58635-04***
Date Sampled: *04/16/20 09:35*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	103		U		mg/Kg	4	20	05/05/20 18:48	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	75.8		*	%	0.1	0.5	04/29/20 16:47	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:17	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 10:13	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 11:58	krs

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5

Project ID:	5279.05	ACZ Sample ID:	***L58635-05***
Sample ID:	T3-A	Date Sampled:	*04/16/20 10:00*
		Date Received:	*04/24/20*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	101	28			mg/Kg	4	20	05/05/20 18:52	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	89.0		*	%	0.1	0.5	04/29/20 17:40	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:19	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 10:31	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 12:10	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T3-B

ACZ Sample ID: ***L58635-06***
Date Sampled: *04/16/20 10:05*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	102		U		mg/Kg	4	20	05/05/20 19:03	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	71.2		*	%	0.1	0.5	04/29/20 18:33	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:21	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 10:49	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 12:21	krs

** Please refer to Qualifier Reports for details.*

NV5

Project ID: 5279.05
Sample ID: T4-A

ACZ Sample ID: ***L58635-07***
Date Sampled: *04/16/20 10:40*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	100	15	B		mg/Kg	4	20	05/05/20 19:07	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	91.2		*	%	0.1	0.5	04/29/20 19:26	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:24	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 11:07	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 12:32	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T4-B

ACZ Sample ID: ***L58635-08***
Date Sampled: *04/16/20 10:45*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	102		U		mg/Kg	4	20	05/05/20 19:11	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	69.2		*	%	0.1	0.5	04/29/20 20:19	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:26	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 11:25	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 12:44	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T5-A

ACZ Sample ID: ***L58635-09***
Date Sampled: *04/16/20 11:10*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	102	29			mg/Kg	4	20	05/05/20 19:15	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	86.9		*	%	0.1	0.5	04/29/20 21:12	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:28	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 11:42	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 12:55	krs

** Please refer to Qualifier Reports for details.*

NV5

Project ID: 5279.05
Sample ID: T5-B

ACZ Sample ID: ***L58635-10***
Date Sampled: *04/16/20 11:15*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	102	8	B		mg/Kg	4	20	05/05/20 19:19	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	79.8		*	%	0.1	0.5	04/29/20 22:06	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:31	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 12:00	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 13:06	krs

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5
Project ID: 5279.05
Sample ID: T5-C

ACZ Sample ID: ***L58635-11***
Date Sampled: *04/16/20 11:15*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	105		U		mg/Kg	4	20	05/05/20 19:23	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	71.8		*	%	0.1	0.5	04/29/20 22:59	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:33	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 12:18	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 13:18	krs

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5

Project ID: 5279.05
Sample ID: T6-A

ACZ Sample ID: ***L58635-12***
Date Sampled: *04/16/20 11:40*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	102	16	B		mg/Kg	4	20	05/05/20 19:27	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	90.0		*	%	0.1	0.5	04/29/20 23:52	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:36	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 12:36	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 13:29	krs

** Please refer to Qualifier Reports for details.*

NV5		ACZ Sample ID:	***L58635-13***
Project ID:	5279.05	Date Sampled:	*04/16/20 11:45*
Sample ID:	T6-B	Date Received:	*04/24/20*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	103		U		mg/Kg	4	20	05/05/20 19:31	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	70.2		*	%	0.1	0.5	04/30/20 0:45	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:38	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 12:54	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 13:40	krs

** Please refer to Qualifier Reports for details.*

NV5

Project ID:	5279.05
Sample ID:	T7-A

ACZ Sample ID:	***L58635-14***
Date Sampled:	*04/16/20 12:00*
Date Received:	*04/24/20*
Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	100	8	B		mg/Kg	4	20	05/05/20 19:35	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	95.6		*	%	0.1	0.5	04/30/20 1:38	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:40	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 13:12	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 13:52	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T7-C

ACZ Sample ID: ***L58635-15***
Date Sampled: *04/16/20 12:05*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	100	50			mg/Kg	4	20	05/05/20 19:50	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	92.8		*	%	0.1	0.5	04/30/20 2:31	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:43	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 13:30	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 14:03	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T7-D

ACZ Sample ID: ***L58635-16***
Date Sampled: *04/16/20 12:10*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	103		U		mg/Kg	4	20	05/05/20 19:54	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	76.1		*	%	0.1	0.5	04/30/20 3:24	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:45	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 13:48	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 14:14	krs

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5
Project ID: 5279.05
Sample ID: T8-A

ACZ Sample ID: ***L58635-17***
Date Sampled: *04/16/20 12:40*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	102	7	B		mg/Kg	4	20	05/05/20 19:58	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	78.6		*	%	0.1	0.5	04/30/20 4:17	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:47	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 14:06	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 14:26	krs

** Please refer to Qualifier Reports for details.*

NV5		ACZ Sample ID:	***L58635-18***
Project ID:	5279.05	Date Sampled:	*04/16/20 12:45*
Sample ID:	T8-B	Date Received:	*04/24/20*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	103		U		mg/Kg	4	20	05/05/20 20:02	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	73.4		*	%	0.1	0.5	04/30/20 5:10	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:50	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 14:24	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 14:37	krs

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5
Project ID: 5279.05
Sample ID: T9-A

ACZ Sample ID: ***L58635-19***
Date Sampled: *04/16/20 13:00*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	101		U		mg/Kg	4	20	05/05/20 20:06	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	82.7		*	%	0.1	0.5	04/30/20 6:03	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:52	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 14:42	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 14:48	krs

** Please refer to Qualifier Reports for details.*

NV5

Project ID: 5279.05
Sample ID: T9-B

ACZ Sample ID: ***L58635-20***
Date Sampled: *04/16/20 13:05*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	101		U		mg/Kg	4	20	05/05/20 20:10	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	93.7		*	%	0.1	0.5	04/30/20 6:57	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:54	llr
Digestion - Hot Plate	M3050B ICP								05/03/20 15:00	llr
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 15:00	krs

** Please refer to Qualifier Reports for details.*

NV5

Project ID:	5279.05
Sample ID:	T9-C

ACZ Sample ID:	***L58635-21***
Date Sampled:	*04/16/20 13:10*
Date Received:	*04/24/20*
Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	104		U		mg/Kg	4	20	05/05/20 21:15	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	67.9		*	%	0.1	0.5	04/29/20 13:40	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:50	llr
Digestion - Hot Plate	M3050B ICP								05/04/20 10:00	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 16:30	jms

** Please refer to Qualifier Reports for details.*

NV5

Project ID:	5279.05	ACZ Sample ID:	***L58635-22***
Sample ID:	T10-B	Date Sampled:	*04/16/20 13:30*
		Date Received:	*04/24/20*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	103		U		mg/Kg	4	20	05/05/20 21:27	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	75.7		*	%	0.1	0.5	04/29/20 15:24	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:51	llr
Digestion - Hot Plate	M3050B ICP								05/04/20 13:02	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 16:39	jms

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T11-B

ACZ Sample ID: ***L58635-23***
Date Sampled: *04/16/20 13:45*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	100		U		mg/Kg	4	20	05/05/20 21:31	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	94.2		*	%	0.1	0.5	04/29/20 16:16	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:53	llr
Digestion - Hot Plate	M3050B ICP								05/04/20 14:03	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 16:48	jms

** Please refer to Qualifier Reports for details.*

NV5

Project ID:	5279.05	ACZ Sample ID:	***L58635-24***
Sample ID:	T12-A	Date Sampled:	*04/16/20 14:00*
		Date Received:	*04/24/20*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	102	19	B		mg/Kg	4	20	05/05/20 21:35	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	78.4		*	%	0.1	0.5	04/29/20 17:08	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:54	llr
Digestion - Hot Plate	M3050B ICP								05/04/20 15:03	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 16:58	jms

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T12-B

ACZ Sample ID: ***L58635-25***
Date Sampled: *04/16/20 14:05*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	104		U		mg/Kg	4	20	05/05/20 21:39	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	69.7		*	%	0.1	0.5	04/29/20 18:00	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:56	llr
Digestion - Hot Plate	M3050B ICP								05/04/20 16:04	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 17:07	jms

** Please refer to Qualifier Reports for details.*

NV5

Project ID: 5279.05

Sample ID: T13-B

ACZ Sample ID: ***L58635-26***

Date Sampled: *04/16/20 14:30*

Date Received: *04/24/20*

Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	103		U		mg/Kg	4	20	05/05/20 21:50	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	74.3		*	%	0.1	0.5	04/29/20 18:52	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:57	llr
Digestion - Hot Plate	M3050B ICP								05/04/20 17:05	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 17:17	jms

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T14-A

ACZ Sample ID: ***L58635-27***
Date Sampled: *04/16/20 14:50*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	101	402			mg/Kg	4	20	05/05/20 21:58	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	93.3		*	%	0.1	0.5	04/29/20 19:45	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 11:59	llr
Digestion - Hot Plate	M3050B ICP								05/04/20 18:06	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 17:26	jms

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T14-B

ACZ Sample ID: ***L58635-28***
Date Sampled: *04/16/20 14:55*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	202	765			mg/Kg	8	40	05/06/20 12:22	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	82.7		*	%	0.1	0.5	04/29/20 20:37	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 12:01	llr
Digestion - Hot Plate	M3050B ICP								05/04/20 19:06	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 17:36	jms

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T14-C

ACZ Sample ID: ***L58635-29***
Date Sampled: *04/16/20 15:00*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	105	394			mg/Kg	4	20	05/05/20 22:06	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	70.9		*	%	0.1	0.5	04/29/20 21:29	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 12:02	llr
Digestion - Hot Plate	M3050B ICP								05/04/20 20:07	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 17:45	jms

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5
Project ID: 5279.05
Sample ID: T14A-A

ACZ Sample ID: ***L58635-30***
Date Sampled: *04/16/20 15:20*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	103	48			mg/Kg	4	20	05/05/20 22:10	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	71.7		*	%	0.1	0.5	04/29/20 22:21	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 12:04	llr
Digestion - Hot Plate	M3050B ICP								05/04/20 21:08	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 17:55	jms

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T14A-B

ACZ Sample ID: ***L58635-31***
Date Sampled: *04/16/20 15:25*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	105	273			mg/Kg	4	20	05/05/20 22:14	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	81.4		*	%	0.1	0.5	04/29/20 23:13	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 12:05	llr
Digestion - Hot Plate	M3050B ICP								05/04/20 22:09	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 18:04	jms

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T15-A

ACZ Sample ID: ***L58635-32***
Date Sampled: *04/16/20 15:40*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	103	28			mg/Kg	4	20	05/05/20 22:18	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	78.0		*	%	0.1	0.5	04/30/20 0:05	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 12:07	llr
Digestion - Hot Plate	M3050B ICP								05/04/20 23:09	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 18:14	jms

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T15-B

ACZ Sample ID: ***L58635-33***
Date Sampled: *04/16/20 15:45*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	102	10	B		mg/Kg	4	20	05/05/20 22:22	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	72.7		*	%	0.1	0.5	04/30/20 0:57	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 12:09	llr
Digestion - Hot Plate	M3050B ICP								05/05/20 0:10	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 18:23	jms

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5
Project ID: 5279.05
Sample ID: T16-A

ACZ Sample ID: ***L58635-34***
Date Sampled: *04/16/20 16:10*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	108	10	B		mg/Kg	4	20	05/05/20 22:26	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	63.9		*	%	0.1	0.5	04/30/20 1:50	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 12:10	llr
Digestion - Hot Plate	M3050B ICP								05/05/20 1:11	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 18:33	jms

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T16-B

ACZ Sample ID: ***L58635-35***
Date Sampled: *04/16/20 16:15*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	103		U		mg/Kg	4	20	05/05/20 22:37	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	72.7		*	%	0.1	0.5	04/30/20 2:42	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 12:12	llr
Digestion - Hot Plate	M3050B ICP								05/05/20 2:12	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 18:42	jms

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T17-A

ACZ Sample ID: ***L58635-36***
Date Sampled: *04/16/20 16:40*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	108	17	B		mg/Kg	4	20	05/05/20 22:41	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	68.6		*	%	0.1	0.5	04/30/20 3:34	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 12:13	llr
Digestion - Hot Plate	M3050B ICP								05/05/20 3:12	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 18:52	jms

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5

Project ID: 5279.05
Sample ID: T17-B

ACZ Sample ID: ***L58635-37***
Date Sampled: *04/16/20 16:45*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	102	6	B		mg/Kg	4	20	05/05/20 22:45	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	75.8		*	%	0.1	0.5	04/30/20 4:26	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 12:15	llr
Digestion - Hot Plate	M3050B ICP								05/05/20 4:13	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 19:01	jms

** Please refer to Qualifier Reports for details.*

NV5

Project ID:	5279.05
Sample ID:	T18-A

ACZ Sample ID:	***L58635-38***
Date Sampled:	*04/16/20 17:10*
Date Received:	*04/24/20*
Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	505	2150			mg/Kg	20	100	05/06/20 12:26	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	87.0		*	%	0.1	0.5	04/30/20 5:18	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 12:16	llr
Digestion - Hot Plate	M3050B ICP								05/05/20 5:14	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 19:10	jms

** Please refer to Qualifier Reports for details.*

NV5

Project ID: 5279.05
Sample ID: T19-A

ACZ Sample ID: ***L58635-39***
Date Sampled: *04/17/20 08:15*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	103	41			mg/Kg	4	20	05/05/20 22:53	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	77.6		*	%	0.1	0.5	04/30/20 6:10	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 12:18	llr
Digestion - Hot Plate	M3050B ICP								05/05/20 6:15	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 19:20	jms

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5

Project ID:	5279.05
Sample ID:	T19-B

ACZ Sample ID:	***L58635-40***
Date Sampled:	*04/17/20 08:20*
Date Received:	*04/24/20*
Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	104	46			mg/Kg	4	20	05/05/20 22:57	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	80.5		*	%	0.1	0.5	04/30/20 7:03	llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 12:20	llr
Digestion - Hot Plate	M3050B ICP								05/05/20 7:15	krs/mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								04/30/20 19:29	jms

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T19-C

ACZ Sample ID: ***L58635-41***
Date Sampled: *04/17/20 08:25*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	103		U		mg/Kg	4	20	05/06/20 13:46	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	74.9		*	%	0.1	0.5	04/29/20 18:00	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 17:15	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 9:22	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 9:30	krs

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5

Project ID:	5279.05
Sample ID:	T20-A
ACZ Sample ID:	***L58635-42***
Date Sampled:	*04/17/20 08:40*
Date Received:	*04/24/20*
Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	104	106			mg/Kg	4	20	05/06/20 13:50	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	77.4		*	%	0.1	0.5	04/29/20 20:17	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 17:21	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 9:39	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 9:39	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T20-B

ACZ Sample ID: ***L58635-43***
Date Sampled: *04/17/20 08:45*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	525		U	*	mg/Kg	20	100	05/08/20 0:39	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	70.8		*	%	0.1	0.5	04/29/20 21:25	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 17:28	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 9:57	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 9:48	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T21-A

ACZ Sample ID: ***L58635-44***
Date Sampled: *04/17/20 09:00*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	106		U		mg/Kg	4	20	05/06/20 13:58	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	62.8		*	%	0.1	0.5	04/29/20 22:34	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 17:34	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 10:15	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 9:58	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T21A-A

ACZ Sample ID: ***L58635-45***
Date Sampled: *04/17/20 09:20*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	101	497			mg/Kg	4	20	05/06/20 14:10	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	90.8		*	%	0.1	0.5	04/29/20 23:42	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 17:41	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 11:08	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 10:07	krs

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5

Project ID:	5279.05
Sample ID:	T21A-B

ACZ Sample ID:	***L58635-46***
Date Sampled:	*04/17/20 09:25*
Date Received:	*04/24/20*
Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	515		U	*	mg/Kg	20	100	05/08/20 0:55	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	74.5		*	%	0.1	0.5	04/30/20 0:51	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 17:47	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 11:25	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 10:17	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T22-A

ACZ Sample ID: ***L58635-47***
Date Sampled: *04/17/20 09:40*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	105	41			mg/Kg	4	20	05/06/20 14:30	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	75.2		*	%	0.1	0.5	04/30/20 1:59	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 17:54	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 11:43	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 10:26	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T22-B

ACZ Sample ID: ***L58635-48***
Date Sampled: *04/17/20 09:45*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	515		U	*	mg/Kg	20	100	05/08/20 0:59	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	71.8		*	%	0.1	0.5	04/30/20 3:08	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 18:01	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 12:01	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 10:36	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T23-A

ACZ Sample ID: ***L58635-49***
Date Sampled: *04/17/20 10:00*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	515	1540			mg/Kg	20	100	05/08/20 1:03	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	80.7		*	%	0.1	0.5	04/30/20 4:17	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 18:07	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 12:18	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 10:45	krs

** Please refer to Qualifier Reports for details.*

NV5

Project ID: 5279.05
Sample ID: T23-B

ACZ Sample ID: ***L58635-50***
Date Sampled: *04/17/20 10:05*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	103		U		mg/Kg	4	20	05/06/20 14:42	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	74.5		*	%	0.1	0.5	04/30/20 5:25	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 18:14	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 12:36	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 10:55	krs

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5

Project ID:	5279.05	ACZ Sample ID:	***L58635-51***
Sample ID:	T24-B	Date Sampled:	*04/17/20 10:20*
		Date Received:	*04/24/20*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	106		U		mg/Kg	4	20	05/06/20 14:46	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	74.9		*	%	0.1	0.5	04/30/20 6:34	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 18:20	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 12:54	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 11:04	krs

** Please refer to Qualifier Reports for details.*

NV5

Project ID:	5279.05	ACZ Sample ID:	***L58635-52***
Sample ID:	T25-A	Date Sampled:	*04/17/20 10:25*
		Date Received:	*04/24/20*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	110	8	B		mg/Kg	4	20	05/06/20 14:50	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	70.5		*	%	0.1	0.5	04/30/20 7:42	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 18:27	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 13:11	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 11:14	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T25-B

ACZ Sample ID: ***L58635-53***
Date Sampled: *04/17/20 10:30*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	107		U		mg/Kg	4	20	05/06/20 14:54	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	72.2		*	%	0.1	0.5	04/30/20 8:51	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 18:34	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 13:29	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 11:23	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T26-A

ACZ Sample ID: ***L58635-54***
Date Sampled: *04/17/20 11:00*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	107	105			mg/Kg	4	20	05/06/20 14:58	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	68.5		*	%	0.1	0.5	04/30/20 9:59	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 18:40	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 13:47	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 11:33	krs

** Please refer to Qualifier Reports for details.*

NV5

Project ID: 5279.05
Sample ID: T26-B

ACZ Sample ID: ***L58635-55***
Date Sampled: *04/17/20 11:05*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	110	8	B		mg/Kg	4	20	05/06/20 15:10	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	66.6		*	%	0.1	0.5	04/30/20 11:08	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 18:47	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 14:04	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 11:42	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T27-A

ACZ Sample ID: ***L58635-56***
Date Sampled: *04/17/20 11:20*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	107		U		mg/Kg	4	20	05/06/20 15:14	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	69.1		*	%	0.1	0.5	04/30/20 12:17	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 18:53	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 14:22	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 11:52	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T28-A

ACZ Sample ID: ***L58635-57***
Date Sampled: *04/17/20 11:40*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	105	44			mg/Kg	4	20	05/06/20 15:18	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	80.3		*	%	0.1	0.5	04/30/20 13:25	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 19:00	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 14:40	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 12:01	krs

** Please refer to Qualifier Reports for details.*

NV5

Project ID:	5279.05
Sample ID:	T28-B
ACZ Sample ID:	***L58635-58***
Date Sampled:	*04/17/20 11:45*
Date Received:	*04/24/20*
Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	535		U	*	mg/Kg	20	100	05/08/20 1:14	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	72.6		*	%	0.1	0.5	04/30/20 14:34	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 19:06	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 14:57	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 12:10	krs

** Please refer to Qualifier Reports for details.*

NV5

Project ID: 5279.05

Sample ID: T28-C

ACZ Sample ID: ***L58635-59***

Date Sampled: *04/17/20 11:50*

Date Received: *04/24/20*

Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	530		U	*	mg/Kg	20	100	05/08/20 1:22	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	68.4		*	%	0.1	0.5	04/30/20 15:42	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 19:13	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 15:15	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 12:20	krs

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5
Project ID: 5279.05
Sample ID: T29-A

ACZ Sample ID: ***L58635-60***
Date Sampled: *04/17/20 12:00*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	101	26			mg/Kg	4	20	05/06/20 15:30	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	92.6		*	%	0.1	0.5	04/30/20 16:51	jms

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/29/20 19:20	jms
Digestion - Hot Plate	M3050B ICP								05/05/20 15:33	mlp
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 12:29	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T29-B

ACZ Sample ID: ***L58635-61***
Date Sampled: *04/17/20 12:05*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	101	59			mg/Kg	4	20	05/07/20 20:28	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	89.6		*	%	0.1	0.5	04/30/20 10:28	krs/llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/30/20 9:32	krs
Digestion - Hot Plate	M3050B ICP								05/06/20 11:07	krs
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 12:00	krs

** Please refer to Qualifier Reports for details.*

NV5		ACZ Sample ID:	***L58635-62***
Project ID:	5279.05	Date Sampled:	*04/17/20 12:10*
Sample ID:	T29-C	Date Received:	*04/24/20*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	515		U	*	mg/Kg	20	100	05/11/20 19:02	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	70.3		*	%	0.1	0.5	04/30/20 10:31	krs/llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/30/20 9:36	krs
Digestion - Hot Plate	M3050B ICP								05/06/20 12:45	krs
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 12:21	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T30-A

ACZ Sample ID: ***L58635-63***
Date Sampled: *04/17/20 12:30*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	104	20			mg/Kg	4	20	05/07/20 20:43	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	79.2		*	%	0.1	0.5	04/30/20 10:33	krs/llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/30/20 9:41	krs
Digestion - Hot Plate	M3050B ICP								05/06/20 13:17	krs
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 12:43	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T30-B

ACZ Sample ID: ***L58635-64***
Date Sampled: *04/17/20 12:35*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	105	39			mg/Kg	4	20	05/07/20 20:47	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	74.4		*	%	0.1	0.5	04/30/20 10:35	krs/llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/30/20 9:46	krs
Digestion - Hot Plate	M3050B ICP								05/06/20 13:50	krs
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 13:04	krs

** Please refer to Qualifier Reports for details.*

NV5

Project ID:	5279.05	ACZ Sample ID:	***L58635-65***
Sample ID:	T31-A	Date Sampled:	*04/17/20 12:55*
		Date Received:	*04/24/20*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	105	7	B		mg/Kg	4	20	05/07/20 20:51	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	76.7		*	%	0.1	0.5	04/30/20 10:36	krs/llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/30/20 9:51	krs
Digestion - Hot Plate	M3050B ICP								05/06/20 14:22	krs
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 13:26	krs

** Please refer to Qualifier Reports for details.*

NV5

Project ID:	5279.05	ACZ Sample ID:	***L58635-66***
Sample ID:	T32-A	Date Sampled:	*04/17/20 13:20*
		Date Received:	*04/24/20*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	108	7	B		mg/Kg	4	20	05/07/20 21:03	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	71.9		*	%	0.1	0.5	04/30/20 10:38	krs/llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/30/20 9:55	krs
Digestion - Hot Plate	M3050B ICP								05/06/20 14:55	krs
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 13:47	krs

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T33-A

ACZ Sample ID: ***L58635-67***
Date Sampled: *04/17/20 13:30*
Date Received: *04/24/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	102	9	B		mg/Kg	4	20	05/07/20 21:07	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	78.7		*	%	0.1	0.5	04/30/20 10:40	krs/llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/30/20 10:00	krs
Digestion - Hot Plate	M3050B ICP								05/06/20 15:27	krs
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 14:09	krs

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5

Project ID: 5279.05

Sample ID: T34-A

ACZ Sample ID: ***L58635-68***

Date Sampled: *04/17/20 13:40*

Date Received: *04/24/20*

Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	103	23			mg/Kg	4	20	05/07/20 21:11	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	82.3		*	%	0.1	0.5	04/30/20 10:41	krs/llr

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								04/30/20 10:05	krs
Digestion - Hot Plate	M3050B ICP								05/06/20 16:00	krs
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								05/01/20 14:30	krs

** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer’s certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ’s Extended Qualifiers, please click:

https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Arsenic, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG496497													
WG496497ICV	ICV	05/05/20 17:49	II200501-6	4		3.865	mg/L	97	90	110			
WG496497ICB	ICB	05/05/20 17:52				U	mg/L		-0.12	0.12			
WG496483PBS	PBS	05/05/20 18:16				U	mg/Kg		-12	12			
WG496483LCSS	LCSS	05/05/20 18:20	PCN61046	97.6		92.6	mg/Kg		80.8	114			
WG496483LCSSD	LCSSD	05/05/20 18:23	PCN61046	97.6		94.1	mg/Kg		80.8	114	2	20	
L58635-01MS	MS	05/05/20 18:31	II200501-2	100.08	6	102.9	mg/Kg	97	75	125			
L58635-01MSD	MSD	05/05/20 18:35	II200501-2	100.08	6	104	mg/Kg	98	75	125	1	20	
WG496597													
WG496597ICV	ICV	05/05/20 20:37	II200501-6	4		3.91	mg/L	98	90	110			
WG496597ICB	ICB	05/05/20 20:40				U	mg/L		-0.12	0.12			
WG496499PBS	PBS	05/05/20 21:04				U	mg/Kg		-12	12			
WG496499LCSS	LCSS	05/05/20 21:08	PCN61046	97.6		87.2	mg/Kg		80.8	114			
WG496499LCSSD	LCSSD	05/05/20 21:11	PCN61046	97.6		92.5	mg/Kg		80.8	114	6	20	
L58635-21MS	MS	05/05/20 21:19	II200501-2	104.0832	U	86.7	mg/Kg	83	75	125			
L58635-21MSD	MSD	05/05/20 21:23	II200501-2	105.084	U	86.1	mg/Kg	82	75	125	1	20	
WG496662													
WG496662ICV	ICV	05/06/20 11:33	II200501-6	4		3.981	mg/L	100	90	110			
WG496662ICB	ICB	05/06/20 11:36				U	mg/L		-0.12	0.12			
WG496499PBS	PBS	05/06/20 12:00				U	mg/Kg		-12	12			
WG496499LCSS	LCSS	05/06/20 12:03	PCN61046	97.6		88.5	mg/Kg		80.8	114			
WG496499LCSSD	LCSSD	05/06/20 12:07	PCN61046	97.6		94.1	mg/Kg		80.8	114	6	20	
L58635-21MS	MS	05/06/20 12:15	II200501-2	104.0832	U	85.8	mg/Kg	82	75	125			
L58635-21MSD	MSD	05/06/20 12:18	II200501-2	105.084	U	87.2	mg/Kg	83	75	125	2	20	
WG496664													
WG496664ICV	ICV	05/06/20 13:07	II200501-6	4		3.858	mg/L	96	90	110			
WG496664ICB	ICB	05/06/20 13:11				U	mg/L		-0.12	0.12			
WG496568PBS	PBS	05/06/20 13:35				U	mg/Kg		-12	12			
WG496568LCSS	LCSS	05/06/20 13:39	PCN61046	97.6		88.3	mg/Kg		80.8	114			
WG496568LCSSD	LCSSD	05/06/20 13:42	PCN61046	97.6		87.6	mg/Kg		80.8	114	1	20	
L58635-44MS	MS	05/06/20 14:02	II200501-2	106.0848	U	98.4	mg/Kg	93	75	125			
L58635-44MSD	MSD	05/06/20 14:06	II200501-2	106.0848	U	95.1	mg/Kg	90	75	125	3	20	
WG496784													
WG496784ICV	ICV	05/07/20 19:48	II200501-6	4		3.936	mg/L	98	90	110			
WG496784ICB	ICB	05/07/20 19:52				U	mg/L		-0.12	0.12			
WG496648PBS	PBS	05/07/20 20:16				U	mg/Kg		-12	12			
WG496648LCSS	LCSS	05/07/20 20:20	PCN61046	97.6		86.6	mg/Kg		80.8	114			
WG496648LCSSD	LCSSD	05/07/20 20:24	PCN61046	97.6		85.4	mg/Kg		80.8	114	1	20	
L58635-61MS	MS	05/07/20 20:32	II200501-2	101.0808	59	152.5	mg/Kg	93	75	125			
L58635-61MSD	MSD	05/07/20 20:35	II200501-2	101.0808	59	159.6	mg/Kg	100	75	125	5	20	
WG496768													
WG496768ICV	ICV	05/07/20 23:59	II200501-6	4		3.902	mg/L	98	90	110			
WG496768ICB	ICB	05/08/20 0:03				U	mg/L		-0.12	0.12			
WG496568PBS	PBS	05/08/20 0:27				U	mg/Kg		-12	12			
WG496568LCSS	LCSS	05/08/20 0:31	PCN61046	97.6		88.7	mg/Kg		80.8	114			
WG496568LCSSD	LCSSD	05/08/20 0:35	PCN61046	97.6		87.8	mg/Kg		80.8	114	1	20	
L58635-44MS	MS	05/08/20 0:47	II200501-2	106.0848	5	97	mg/Kg	87	75	125			
L58635-44MSD	MSD	05/08/20 0:51	II200501-2	106.0848	5	97.2	mg/Kg	87	75	125	0	20	

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

WG496846

WG496846ICV	ICV	05/11/20 18:12	II200501-6	4		4.016	mg/L	100	90	110			
WG496846ICB	ICB	05/11/20 18:16				U	mg/L		-0.12	0.12			
WG496648PBS	PBS	05/11/20 18:39				U	mg/Kg		-12	12			
WG496648LCSS	LCSS	05/11/20 18:43	PCN61046	97.6		91.9	mg/Kg		80.8	114			
WG496648LCSSD	LCSSD	05/11/20 18:47	PCN61046	97.6		92	mg/Kg		80.8	114	0	20	
L58635-61MS	MS	05/11/20 18:55	II200501-2	101.0808	62	158.5	mg/Kg	95	75	125			
L58635-61MSD	MSD	05/11/20 18:59	II200501-2	101.0808	62	166.7	mg/Kg	104	75	125	5	20	

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG496335													
L58635-01DUP	DUP	04/29/20 14:08			93.5	94.22	%				1	20	
WG496335PBS	PBS	04/30/20 7:50				U	%		-0.1	0.1			
WG496339													
L58635-21DUP	DUP	04/29/20 14:32			67.9	68.01	%				0	20	
WG496339PBS	PBS	04/30/20 7:55				U	%		-0.1	0.1			
WG496355													
L58635-41DUP	DUP	04/29/20 19:08			74.9	75.32	%				1	20	
WG496355PBS	PBS	04/30/20 17:59				U	%		-0.1	0.1			
WG496387													
WG496387PBS	PBS	04/30/20 10:27				U	%		-0.1	0.1			
L58635-61DUP	DUP	04/30/20 10:30			89.6	91.35	%				2	20	

NV5

ACZ Project ID: ***L58635***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L58635-43	WG496768	Arsenic, total (3050)	M6010D ICP	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
L58635-46	WG496768	Arsenic, total (3050)	M6010D ICP	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
L58635-48	WG496768	Arsenic, total (3050)	M6010D ICP	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
L58635-58	WG496768	Arsenic, total (3050)	M6010D ICP	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
L58635-59	WG496768	Arsenic, total (3050)	M6010D ICP	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
L58635-62	WG496846	Arsenic, total (3050)	M6010D ICP	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

NV5
5279.05

ACZ Project ID: L58635
Date Received: 04/24/2020 13:57
Received By:
Date Printed: 4/27/2020

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?		X	▨
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		▨
6) Is the Chain of Custody form complete and accurate?	X		▨
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	▨

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits? 1			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		▨

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
UNKNOWN		NA		

Was ice present in the shipment container(s)?

`No - Wet or gel ice was not present in the shipment container(s).`

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

NV5
5279.05

ACZ Project ID: L58635
Date Received: 04/24/2020 13:57
Received By:
Date Printed: 4/27/2020

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

L58635

ACZ Laboratories, Inc. 1 of 8

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Jason Muir
Company: NV5
E-mail: Jason.muir@nv5.com

Address: 792 Searls Avenue
Nevada City
Telephone: 530 362-2776

Copy of Report to:

Name: Kyle Leach
Company:

E-mail: kleach08@gmail.com
Telephone: 530-575-5605

Invoice to:

Name: Amy Hollarman
Company: NV5
E-mail: amy.hollarman@nv5.com

Address: same
Telephone: 530 478-1305

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☒

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Leach **Sampler's Site Information** **State** CA **Zip code** 95945 **Time Zone** PDT

***Sampler's Signature:**

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

ANALYSES REQUESTED *(attach list or use quote number)*

Quote #:
PO#: 5279.05
Reporting state for compliance testing: CA
Check box if samples include NRC licensed material? ☐

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Total Arsenic 6010							
T1-A	4/16/20 : 9:00	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T1-B	9:05	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T2-A	9:30	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T2-B	9:35	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T3-A	10,00	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T3-B	10:05	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T4-A	10:40	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T4-B	10:45	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T5-A	11:10	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T5-B	11:15	SO	1	☒	☐	☐	☐	☐	☐	☐	☐

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please hold all samples after analysis for additional testing.

Call Kyle Leach 530 575 5605 with any questions about sample ID's

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
4/20/20,420	4/20/20 4:20		4/24/20 10:18

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

L58635 Chain of Custod

L58635

ACZ Laboratories, Inc. 2 of 8

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Jason Muir

Company: NV5

E-mail: Jason.muir@nv5.com

Address: 792 Searls Avenue
Nevada City

Telephone: 530 362-2776

Copy of Report to:

Name: Kyle Leach

Company:

E-mail: kleach08@gmail.com

Telephone:

Invoice to:

Name: Amy Hollarman

Company: NV5

E-mail: amy.hollarman@nv5.com

Address: same

Telephone: 530 478-1305

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☒

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Leach **Sampler's Site Information** **State** CA **Zip code** 95945 **Time Zone** PDT

***Sampler's Signature:**

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

ANALYSES REQUESTED *(attach list or use quote number)*

Quote #:

PO#: 5279.05

Reporting state for compliance testing: CA

Check box if samples include NRC licensed material? ☐

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Total Arsenic 6010							
T5-C	4/16/20: 11:15	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T6-A	11:40	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T6-B	11:45	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T7-A	12:00	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T7-C	12:05	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T7-D	12:10	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T8-A	12:40	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T8-B	12:45	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T9-A	1:00	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T9-B	1:05	SO	1	☒	☐	☐	☐	☐	☐	☐	☐

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please hold all samples after analysis for additional testing.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4/20/20 4:20		4/24/20 10:18

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

L58635

ACZ Laboratories, Inc. 3 of 8

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Jason Muir
Company: NV5
E-mail: Jason.muir@nv5.com

Address: 792 Searls Avenue
Nevada City
Telephone: 530 362-2776

Copy of Report to:

Name: Kyle Leach
Company:

E-mail: kleach08@gmail.com
Telephone:

Invoice to:

Name: Amy Hollarman
Company: NV5
E-mail: amy.hollarman@nv5.com

Address: same
Telephone: 530 478-1305

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☒
If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Leach **Sampler's Site Information** **State** CA **Zip code** 95945 **Time Zone** PDT
***Sampler's Signature:**

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

ANALYSES REQUESTED *(attach list or use quote number)*

Quote #:
PO#: 5279.05
Reporting state for compliance testing: CA
Check box if samples include NRC licensed material? ☐

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Total Arsenic 6010							
T9-C	4/16/20 1:10 p	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T10-B	1:30	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T11-B	1:45	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T12-A	2:00	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T12-B	2:05	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T13-B	2:30	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T14A	2:50	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T14B	2:55	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T14C	3:00	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T14A-A	3:20	SO	1	☒	☐	☐	☐	☐	☐	☐	☐

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please hold all samples after analysis for additional testing.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4/20/20 4:20		4/21/20 10:18

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

L58635

ACZ Laboratories, Inc. T4 of 8

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Jason Muir
Company: NV5
E-mail: Jason.muir@nv5.com

Address: 792 Searls Avenue
Nevada City
Telephone: 530 362-2776

Copy of Report to:

Name: Kyle Leach
Company:

E-mail: kleach08@gmail.com
Telephone:

Invoice to:

Name: Amy Hollarman
Company: NV5
E-mail: amy.hollarman@nv5.com

Address: same

Telephone: 530 478-1305

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☒
If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Leach **Sampler's Site Information** **State** CA **Zip code** 95945 **Time Zone** PDT

***Sampler's Signature:**

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION ANALYSES REQUESTED *(attach list or use quote number)*

Quote #:
PO#: 5279.05
Reporting state for compliance testing: CA
Check box if samples include NRC licensed material? ☐

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Total Arsenic 6010							
T14A-B	4/16/20 : 3:25	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T15A	3:40	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T15B	3:45	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T16A	4:10	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T16B	4:15	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
		SO	1	☒	☐	☐	☐	☐	☐	☐	☐
		SO	1	☒	☐	☐	☐	☐	☐	☐	☐
		SO	1	☒	☐	☐	☐	☐	☐	☐	☐
		SO	1	☒	☐	☐	☐	☐	☐	☐	☐
		SO	1	☒	☐	☐	☐	☐	☐	☐	☐

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please hold all samples after analysis for additional testing.

See second cooler for samples T17A → T34A COC's 5-8

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4/20/20 4:20		4/24/20 1018

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L586355 of 8

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Jason Muir
Company: NV5
E-mail: Jason.muir@nv5.com

Address: 792 Searls Avenue
Nevada City
Telephone: 530 362-2776

Copy of Report to:

Name: Kyle Leach
Company:

E-mail: kleach08@gmail.com
Telephone:

Invoice to:

Name: Amy Hollarman
Company: NV5
E-mail: amy.hollarman@nv5.com

Address: same

Telephone: 530 478-1305

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☒

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Leach **Sampler's Site Information** **State** CA **Zip code** 95945 **Time Zone** PDT

***Sampler's Signature:**

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION ANALYSES REQUESTED *(attach list or use quote number)*

Quote #:
PO#: 5279.05
Reporting state for compliance testing: CA
Check box if samples include NRC licensed material? ☐

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Total Arsenic 6010							
T17-A	4/16/20: 4:40	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T17-B	· 445	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T18-A	↓ 5:10	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T19-A	4/17/20: 815	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T19-B	8:20	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T19-C	8:25	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T20-A	8:40	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T20-B	8:45	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T21-A	9:00	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T21A-A	↓ 9:20	SO	1	☒	☐	☐	☐	☐	☐	☐	☐

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please hold all samples after analysis for additional testing.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4/20/20 4:20		4/21/20 10:18

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

L58635

ACZ Laboratories, Inc. 6 of 8

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Jason Muir	Address: 792 Searls Avenue
Company: NV5	Nevada City
E-mail: Jason.muir@nv5.com	Telephone: 530 362-2776

Copy of Report to:

Name: Kyle Leach	E-mail: kleach08@gmail.com
Company:	Telephone:

Invoice to:

Name: Amy Hollarman	Address: same
Company: NV5	
E-mail: amy.hollarman@nv5.com	Telephone: 530 478-1305

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? **Yes** ☐ **No** ☒

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Leach **Sampler's Site Information** **State** CA **Zip code** 95945 **Time Zone** PDT

***Sampler's Signature:** ____________

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION ANALYSES REQUESTED *(attach list or use quote number)*

Quote #:

PO#: 5279.05

Reporting state for compliance testing: CA

Check box if samples include NRC licensed material? ☐

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Total Arsenic 6010							
T21A-B	4/17/20: 9:25	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T22-A	9:40	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T22-B	9:45	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T23-A	10:00	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T23-B	10:05	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T24-B	10:20	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T25-A	10:25	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T25-B	10:30	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T26-A	11:00	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T26-B	11:05	SO	1	☒	☐	☐	☐	☐	☐	☐	☐

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please hold all samples after analysis for additional testing.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4/20/20 4:20		4/21/20 10:18

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

L58635

ACZ Laboratories, Inc. 7 of 8

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Jason Muir
Company: NV5
E-mail: Jason.muir@nv5.com

Address: 792 Searls Avenue
Nevada City
Telephone: 530 362-2776

Copy of Report to:

Name: Kyle Leach
Company:

E-mail: kleach08@gmail.com
Telephone:

Invoice to:

Name: Amy Hollarman
Company: NV5
E-mail: amy.hollarman@nv5.com

Address: same
Telephone: 530 478-1305

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☒

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Leach **Sampler's Site Information** **State** CA **Zip code** 95945 **Time Zone** PDT

***Sampler's Signature:** ____________

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PROJECT INFORMATION ANALYSES REQUESTED *(attach list or use quote number)*

Quote #:
PO#: 5279.05
Reporting state for compliance testing: CA
Check box if samples include NRC licensed material? ☐

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Total Arsenic 6010							
T27-A	4/17/20: 11:20	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T28-A	11:40	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T28-B	11:45	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T28-C	11:50	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T29-A	12:00	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T29-B	12:05	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T29-C	12:10	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T30-A	12:30	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T30-B	12:35	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T31-A	12:55	SO	1	☒	☐	☐	☐	☐	☐	☐	☐

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please hold all samples after analysis for additional testing.

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RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4/20/20 4:20		4/24/20 10:18

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

L58635

ACZ Laboratories, Inc. 8 of 8

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Jason Muir
Company: NV5
E-mail: Jason.muir@nv5.com

Address: 792 Searls Avenue
Nevada City
Telephone: 530 362-2776

Copy of Report to:

Name: Kyle Leach
Company:

E-mail: kleach08@gmail.com
Telephone:

Invoice to:

Name: Amy Hollarman
Company: NV5
E-mail: amy.hollarman@nv5.com

Address: same

Telephone: 530 478-1305

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☒

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Leach **Sampler's Site Information** **State** CA **Zip code** 95945 **Time Zone** PDT

***Sampler's Signature:** ____________________

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

ANALYSES REQUESTED *(attach list or use quote number)*

Quote #:
PO#: 5279.05
Reporting state for compliance testing: CA
Check box if samples include NRC licensed material? ☐

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Total Arsenic 6010							
T32-A	4/17/20 : 1:20	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T33-A	↓ : 1:30	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T34-A	: 1:40	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
		SO	1	☒	☐	☐	☐	☐	☐	☐	☐
		SO	1	☒	☐	☐	☐	☐	☐	☐	☐
		SO	1	☒	☐	☐	☐	☐	☐	☐	☐
		SO	1	☒	☐	☐	☐	☐	☐	☐	☐
		SO	1	☒	☐	☐	☐	☐	☐	☐	☐
		SO	1	☒	☐	☐	☐	☐	☐	☐	☐
		SO	1	☒	☐	☐	☐	☐	☐	☐	☐

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please hold all samples after analysis for additional testing.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4/20/20:4:20		4/24/20 10:18

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

June 15, 2020

Report to:	Bill to:
Jason Muir	Amy Hollarman
NV5	NV5
792 Searls Avenue	792 Searls Avenue
Nevada City, CA 95959	Nevada City, CA 95959

cc: Kyle Leach

Project ID: 5279.05
ACZ Project ID: L59323

Jason Muir:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 29, 2020. This project has been assigned to ACZ's project number, L59323. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L59323. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after July 15, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Case Narrative

NV5

June 15, 2020

Project ID: 5279.05
ACZ Project ID: L59323

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 8 miscellaneous samples from NV5 on May 29, 2020. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L59323. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. (N1) Applies to: L59323-03, -06, -08 for /CACO3

Samples required pulverization in order to have enough mass for analysis.

Inorganic Analytical Results

NV5
Project ID: 5279.05
Sample ID: T1-A

ACZ Sample ID: ***L59323-01***
Date Sampled: *04/16/20 09:00*
Date Received: *05/29/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, total (3050)	M6010D ICP	100		U	*	mg/Kg	3	20	06/09/20 2:55	kja
Arsenic, total (3050)	M6010D ICP	100	12	B		mg/Kg	4	20	06/09/20 2:55	kja
Barium, total (3050)	M6010D ICP	100	22.1			mg/Kg	0.7	4	06/09/20 2:55	kja
Beryllium, total (3050)	M6010D ICP	100		U		mg/Kg	1	5	06/09/20 2:55	kja
Cadmium, total (3050)	M6010D ICP	100		U		mg/Kg	0.8	3	06/09/20 2:55	kja
Chromium, total (3050)	M6010D ICP	100	309		*	mg/Kg	1	5	06/09/20 2:55	kja
Cobalt, total (3050)	M6010D ICP	100	38		*	mg/Kg	1	5	06/09/20 2:55	kja
Copper, total (3050)	M6010D ICP	100	97		*	mg/Kg	1	5	06/09/20 2:55	kja
Lead, total (3050)	M6010D ICP	100	16	B		mg/Kg	3	20	06/09/20 2:55	kja
Mercury, total	M7471A CVAA	185	0.28	H	*	mg/Kg	0.04	0.2	06/03/20 14:20	slm
Molybdenum, total (3050)	M6010D ICP	100		U		mg/Kg	2	10	06/09/20 2:55	kja
Nickel, total (3050)	M6010D ICP	200	273		*	mg/Kg	2	8	06/10/20 4:24	kja
Selenium, total (3050)	M6010D ICP	100	8	B		mg/Kg	5	30	06/09/20 2:55	kja
Silver, total (3050)	M6010D ICP	100	8		*	mg/Kg	1	3	06/09/20 2:55	kja
Thallium, total (3050)	M6010D ICP	100		U		mg/Kg	10	50	06/09/20 2:55	kja
Vanadium, total (3050)	M6010D ICP	200	101			mg/Kg	2	5	06/10/20 4:24	kja
Zinc, total (3050)	M6010D ICP	100	64		*	mg/Kg	2	5	06/09/20 2:55	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		2.81	B		t CaCO3/Kt	0.31	3.1	06/15/20 0:00	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		103			t CaCO3/Kt	1	5	06/15/20 0:00	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		100.0			t CaCO3/Kt			06/15/20 0:00	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	10.3		*	%	0.1	0.5	06/12/20 12:04	qcm
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/09/20 0:00	qcm
pH		1	8.3		*	units	0.1	0.1	06/09/20 0:00	qcm
Sulfur Forms	M600/2-78-054 3.2.4									
Sulfur Organic Residual		1	0.09	B	*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Pyritic Sulfide		1	0.04	B	*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Sulfate		1		U	*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Total		1	0.09	B	*	%	0.01	0.1	06/10/20 0:00	llr
Total Sulfur minus Sulfate		1	0.13			%	0.01	0.1	06/10/20 0:00	llr

** Please refer to Qualifier Reports for details.*

NV5

Project ID:	5279.05
Sample ID:	T1-A

ACZ Sample ID:	***L59323-01***
Date Sampled:	*04/16/20 09:00*
Date Received:	*05/29/20*
Sample Matrix:	*Soil*

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP								06/05/20 11:00	mlp
Saturated Paste Extraction	USDA No. 60 (2)								06/08/20 11:31	qcm
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								06/03/20 13:15	llr

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5
Project ID: 5279.05
Sample ID: T7-C

ACZ Sample ID: ***L59323-02***
Date Sampled: *04/16/20 12:05*
Date Received: *05/29/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, total (3050)	M6010D ICP	101		U	*	mg/Kg	3	20	06/09/20 3:07	kja
Arsenic, total (3050)	M6010D ICP	101	48			mg/Kg	4	20	06/09/20 3:07	kja
Barium, total (3050)	M6010D ICP	101	6.3			mg/Kg	0.7	4	06/09/20 3:07	kja
Beryllium, total (3050)	M6010D ICP	101		U		mg/Kg	1	5	06/09/20 3:07	kja
Cadmium, total (3050)	M6010D ICP	101		U		mg/Kg	0.8	3	06/09/20 3:07	kja
Chromium, total (3050)	M6010D ICP	1010	960		*	mg/Kg	10	50	06/10/20 4:35	kja
Cobalt, total (3050)	M6010D ICP	101	82		*	mg/Kg	1	5	06/09/20 3:07	kja
Copper, total (3050)	M6010D ICP	101	87		*	mg/Kg	1	5	06/09/20 3:07	kja
Lead, total (3050)	M6010D ICP	101		U		mg/Kg	3	20	06/09/20 3:07	kja
Mercury, total	M7471A CVAA	192	0.29	H	*	mg/Kg	0.04	0.2	06/03/20 14:25	slm
Molybdenum, total (3050)	M6010D ICP	101		U		mg/Kg	2	10	06/09/20 3:07	kja
Nickel, total (3050)	M6010D ICP	1010	1370		*	mg/Kg	8	40	06/10/20 4:35	kja
Selenium, total (3050)	M6010D ICP	101	10	B		mg/Kg	5	30	06/09/20 3:07	kja
Silver, total (3050)	M6010D ICP	101	7		*	mg/Kg	1	3	06/09/20 3:07	kja
Thallium, total (3050)	M6010D ICP	101		U		mg/Kg	10	50	06/09/20 3:07	kja
Vanadium, total (3050)	M6010D ICP	101	63			mg/Kg	1	3	06/09/20 3:07	kja
Zinc, total (3050)	M6010D ICP	101	17		*	mg/Kg	2	5	06/09/20 3:07	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		4.06			t CaCO3/Kt	0.31	3.1	06/15/20 0:00	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		97.0			t CaCO3/Kt	1	5	06/15/20 0:00	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		92.9			t CaCO3/Kt			06/15/20 0:00	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	9.7		*	%	0.1	0.5	06/12/20 12:13	qcm
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/09/20 0:00	qcm
pH		1	8.2		*	units	0.1	0.1	06/09/20 0:00	qcm
Sulfur Forms	M600/2-78-054 3.2.4									
Sulfur Organic Residual		1	0.08	B	*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Pyritic Sulfide		1	0.02	B	*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Sulfate		1	0.03	B	*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Total		1	0.13		*	%	0.01	0.1	06/10/20 0:00	llr
Total Sulfur minus Sulfate		1	0.10			%	0.01	0.1	06/10/20 0:00	llr

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T7-C

ACZ Sample ID: ***L59323-02***
Date Sampled: *04/16/20 12:05*
Date Received: *05/29/20*
Sample Matrix: *Soil*

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP								06/05/20 12:00	mlp
Saturated Paste Extraction	USDA No. 60 (2)								06/08/20 11:35	qcm
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								06/03/20 13:22	llr

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T14-B

ACZ Sample ID: ***L59323-03***
Date Sampled: *04/16/20 14:55*
Date Received: *05/29/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, total (3050)	M6010D ICP	101		U	*	mg/Kg	3	20	06/09/20 3:18	kja
Arsenic, total (3050)	M6010D ICP	505	1260			mg/Kg	20	100	06/10/20 4:39	kja
Barium, total (3050)	M6010D ICP	101	32.2			mg/Kg	0.7	4	06/09/20 3:18	kja
Beryllium, total (3050)	M6010D ICP	101		U		mg/Kg	1	5	06/09/20 3:18	kja
Cadmium, total (3050)	M6010D ICP	101		U		mg/Kg	0.8	3	06/09/20 3:18	kja
Chromium, total (3050)	M6010D ICP	505	849		*	mg/Kg	5	30	06/10/20 4:39	kja
Cobalt, total (3050)	M6010D ICP	101	38		*	mg/Kg	1	5	06/09/20 3:18	kja
Copper, total (3050)	M6010D ICP	101	80		*	mg/Kg	1	5	06/09/20 3:18	kja
Lead, total (3050)	M6010D ICP	101	7	B		mg/Kg	3	20	06/09/20 3:18	kja
Mercury, total	M7471A CVAA	195	0.21	H	*	mg/Kg	0.04	0.2	06/03/20 14:25	slm
Molybdenum, total (3050)	M6010D ICP	101		U		mg/Kg	2	10	06/09/20 3:18	kja
Nickel, total (3050)	M6010D ICP	505	436		*	mg/Kg	4	20	06/10/20 4:39	kja
Selenium, total (3050)	M6010D ICP	101	5	B		mg/Kg	5	30	06/09/20 3:18	kja
Silver, total (3050)	M6010D ICP	101	7		*	mg/Kg	1	3	06/09/20 3:18	kja
Thallium, total (3050)	M6010D ICP	101		U		mg/Kg	10	50	06/09/20 3:18	kja
Vanadium, total (3050)	M6010D ICP	101	73			mg/Kg	1	3	06/09/20 3:18	kja
Zinc, total (3050)	M6010D ICP	101	32		*	mg/Kg	2	5	06/09/20 3:18	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		11.6			t CaCO3/Kt	0.31	3.1	06/15/20 0:00	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		104			t CaCO3/Kt	1	5	06/15/20 0:00	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		92.4			t CaCO3/Kt			06/15/20 0:00	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	10.4		*	%	0.1	0.5	06/12/20 12:23	qcm
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/09/20 0:00	qcm
pH		1	7.3		*	units	0.1	0.1	06/09/20 0:00	qcm
Sulfur Forms	M600/2-78-054 3.2.4									
Sulfur Organic Residual		1	0.18		*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Pyritic Sulfide		1	0.15		*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Sulfate		1	0.04	B	*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Total		1	0.37		*	%	0.01	0.1	06/10/20 0:00	llr
Total Sulfur minus Sulfate		1	0.33			%	0.01	0.1	06/10/20 0:00	llr

NV5
Project ID: 5279.05
Sample ID: T14-B

ACZ Sample ID: ***L59323-03***
Date Sampled: *04/16/20 14:55*
Date Received: *05/29/20*
Sample Matrix: *Soil*

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP								06/05/20 12:20	mlp
Saturated Paste Extraction	USDA No. 60 (2)								06/08/20 11:36	qcm
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								06/03/20 13:29	llr

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5
Project ID: 5279.05
Sample ID: T14A-B

ACZ Sample ID: ***L59323-04***
Date Sampled: *04/16/20 15:25*
Date Received: *05/29/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, total (3050)	M6010D ICP	103		U	*	mg/Kg	3	20	06/09/20 3:22	kja
Arsenic, total (3050)	M6010D ICP	103	285			mg/Kg	4	20	06/09/20 3:22	kja
Barium, total (3050)	M6010D ICP	103	187			mg/Kg	0.7	4	06/09/20 3:22	kja
Beryllium, total (3050)	M6010D ICP	103		U		mg/Kg	1	5	06/09/20 3:22	kja
Cadmium, total (3050)	M6010D ICP	103		U		mg/Kg	0.8	3	06/09/20 3:22	kja
Chromium, total (3050)	M6010D ICP	103	503		*	mg/Kg	1	5	06/09/20 3:22	kja
Cobalt, total (3050)	M6010D ICP	103	52		*	mg/Kg	1	5	06/09/20 3:22	kja
Copper, total (3050)	M6010D ICP	103	84		*	mg/Kg	1	5	06/09/20 3:22	kja
Lead, total (3050)	M6010D ICP	103		U		mg/Kg	3	20	06/09/20 3:22	kja
Mercury, total	M7471A CVAA	198		UH	*	mg/Kg	0.04	0.2	06/03/20 14:26	slm
Molybdenum, total (3050)	M6010D ICP	103		U		mg/Kg	2	10	06/09/20 3:22	kja
Nickel, total (3050)	M6010D ICP	103	115		*	mg/Kg	0.8	4	06/09/20 3:22	kja
Selenium, total (3050)	M6010D ICP	103	8	B		mg/Kg	5	30	06/09/20 3:22	kja
Silver, total (3050)	M6010D ICP	103	6		*	mg/Kg	1	3	06/09/20 3:22	kja
Thallium, total (3050)	M6010D ICP	103		U		mg/Kg	10	50	06/09/20 3:22	kja
Vanadium, total (3050)	M6010D ICP	206	120			mg/Kg	2	5	06/10/20 4:42	kja
Zinc, total (3050)	M6010D ICP	103	45		*	mg/Kg	2	5	06/09/20 3:22	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		0.94	B		t CaCO3/Kt	0.31	3.1	06/15/20 0:00	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		1.0			t CaCO3/Kt	1	5	06/15/20 0:00	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		0.1			t CaCO3/Kt			06/15/20 0:00	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	0.1	B	*	%	0.1	0.5	06/12/20 12:32	qcm
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/09/20 0:00	qcm
pH		1	7.4		*	units	0.1	0.1	06/09/20 0:00	qcm
Sulfur Forms	M600/2-78-054 3.2.4									
Sulfur Organic Residual		1	0.02	B	*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Pyritic Sulfide		1		U	*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Sulfate		1	0.01	B	*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Total		1	0.03	B	*	%	0.01	0.1	06/10/20 0:00	llr
Total Sulfur minus Sulfate		1	0.02	B		%	0.01	0.1	06/10/20 0:00	llr

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T14A-B

ACZ Sample ID: ***L59323-04***
Date Sampled: *04/16/20 15:25*
Date Received: *05/29/20*
Sample Matrix: *Soil*

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP								06/05/20 12:40	mlp
Saturated Paste Extraction	USDA No. 60 (2)								06/08/20 11:38	qcm
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								06/03/20 13:36	llr

** Please refer to Qualifier Reports for details.*

NV5

Project ID:	5279.05	ACZ Sample ID:	***L59323-05***
Sample ID:	T18-A	Date Sampled:	*04/16/20 17:10*
		Date Received:	*05/29/20*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, total (3050)	M6010D ICP	100		U	*	mg/Kg	3	20	06/09/20 3:26	kja
Arsenic, total (3050)	M6010D ICP	500	1080			mg/Kg	20	100	06/10/20 12:49	kja
Barium, total (3050)	M6010D ICP	100	96.8			mg/Kg	0.7	4	06/09/20 3:26	kja
Beryllium, total (3050)	M6010D ICP	100		U		mg/Kg	1	5	06/09/20 3:26	kja
Cadmium, total (3050)	M6010D ICP	100		U		mg/Kg	0.8	3	06/09/20 3:26	kja
Chromium, total (3050)	M6010D ICP	100	95		*	mg/Kg	1	5	06/09/20 3:26	kja
Cobalt, total (3050)	M6010D ICP	100	29		*	mg/Kg	1	5	06/09/20 3:26	kja
Copper, total (3050)	M6010D ICP	100	73		*	mg/Kg	1	5	06/09/20 3:26	kja
Lead, total (3050)	M6010D ICP	100	10	B		mg/Kg	3	20	06/09/20 3:26	kja
Mercury, total	M7471A CVAA	196	0.06	BH	*	mg/Kg	0.04	0.2	06/03/20 14:27	slm
Molybdenum, total (3050)	M6010D ICP	100		U		mg/Kg	2	10	06/09/20 3:26	kja
Nickel, total (3050)	M6010D ICP	100	87.3		*	mg/Kg	0.8	4	06/09/20 3:26	kja
Selenium, total (3050)	M6010D ICP	100		U		mg/Kg	5	30	06/09/20 3:26	kja
Silver, total (3050)	M6010D ICP	100	9		*	mg/Kg	1	3	06/09/20 3:26	kja
Thallium, total (3050)	M6010D ICP	100		U		mg/Kg	10	50	06/09/20 3:26	kja
Vanadium, total (3050)	M6010D ICP	200	110			mg/Kg	2	5	06/10/20 4:46	kja
Zinc, total (3050)	M6010D ICP	100	54		*	mg/Kg	2	5	06/09/20 3:26	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		10.6			t CaCO3/Kt	0.31	3.1	06/15/20 0:00	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		18.0			t CaCO3/Kt	1	5	06/15/20 0:00	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		7.4			t CaCO3/Kt			06/15/20 0:00	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	1.8		*	%	0.1	0.5	06/12/20 13:01	qcm
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/09/20 0:00	qcm
pH		1	7.6		*	units	0.1	0.1	06/09/20 0:00	qcm
Sulfur Forms	M600/2-78-054 3.2.4									
Sulfur Organic Residual		1	0.14		*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Pyritic Sulfide		1	0.19		*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Sulfate		1	0.01	B	*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Total		1	0.34		*	%	0.01	0.1	06/10/20 0:00	llr
Total Sulfur minus Sulfate		1	0.33			%	0.01	0.1	06/10/20 0:00	llr

** Please refer to Qualifier Reports for details.*

NV5		ACZ Sample ID:	***L59323-05***
Project ID:	5279.05	Date Sampled:	*04/16/20 17:10*
Sample ID:	T18-A	Date Received:	*05/29/20*
		Sample Matrix:	*Soil*

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP								06/05/20 13:00	mlp
Saturated Paste Extraction	USDA No. 60 (2)								06/08/20 11:40	qcm
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								06/03/20 13:43	llr

** Please refer to Qualifier Reports for details.*

NV5
Project ID: 5279.05
Sample ID: T20-A

ACZ Sample ID: ***L59323-06***
Date Sampled: *04/17/20 08:40*
Date Received: *05/29/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, total (3050)	M6010D ICP	102		U	*	mg/Kg	3	20	06/09/20 3:30	kja
Arsenic, total (3050)	M6010D ICP	102	109			mg/Kg	4	20	06/09/20 3:30	kja
Barium, total (3050)	M6010D ICP	102	107			mg/Kg	0.7	4	06/09/20 3:30	kja
Beryllium, total (3050)	M6010D ICP	102		U		mg/Kg	1	5	06/09/20 3:30	kja
Cadmium, total (3050)	M6010D ICP	102		U		mg/Kg	0.8	3	06/09/20 3:30	kja
Chromium, total (3050)	M6010D ICP	102	65		*	mg/Kg	1	5	06/09/20 3:30	kja
Cobalt, total (3050)	M6010D ICP	102	26		*	mg/Kg	1	5	06/09/20 3:30	kja
Copper, total (3050)	M6010D ICP	102	112		*	mg/Kg	1	5	06/09/20 3:30	kja
Lead, total (3050)	M6010D ICP	102	17	B		mg/Kg	3	20	06/09/20 3:30	kja
Mercury, total	M7471A CVAA	192	0.27	H	*	mg/Kg	0.04	0.2	06/03/20 14:31	slm
Molybdenum, total (3050)	M6010D ICP	102		U		mg/Kg	2	10	06/09/20 3:30	kja
Nickel, total (3050)	M6010D ICP	102	40.5		*	mg/Kg	0.8	4	06/09/20 3:30	kja
Selenium, total (3050)	M6010D ICP	102		U		mg/Kg	5	30	06/09/20 3:30	kja
Silver, total (3050)	M6010D ICP	102	10		*	mg/Kg	1	3	06/09/20 3:30	kja
Thallium, total (3050)	M6010D ICP	102		U		mg/Kg	10	50	06/09/20 3:30	kja
Vanadium, total (3050)	M6010D ICP	204	197			mg/Kg	2	5	06/10/20 5:01	kja
Zinc, total (3050)	M6010D ICP	102	52		*	mg/Kg	2	5	06/09/20 3:30	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		7.50			t CaCO3/Kt	0.31	3.1	06/15/20 0:00	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		3.0			t CaCO3/Kt	1	5	06/15/20 0:00	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		-4.5			t CaCO3/Kt			06/15/20 0:00	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	0.3	B	*	%	0.1	0.5	06/12/20 13:10	qcm
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/09/20 0:00	qcm
pH		1	6.2		*	units	0.1	0.1	06/09/20 0:00	qcm
Sulfur Forms	M600/2-78-054 3.2.4									
Sulfur Organic Residual		1	0.11		*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Pyritic Sulfide		1	0.10		*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Sulfate		1	0.03	B	*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Total		1	0.24		*	%	0.01	0.1	06/10/20 0:00	llr
Total Sulfur minus Sulfate		1	0.21			%	0.01	0.1	06/10/20 0:00	llr

NV5

Project ID:	5279.05
Sample ID:	T20-A

ACZ Sample ID:	***L59323-06***
Date Sampled:	*04/17/20 08:40*
Date Received:	*05/29/20*
Sample Matrix:	*Soil*

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP								06/05/20 13:20	mlp
Saturated Paste Extraction	USDA No. 60 (2)								06/08/20 11:41	qcm
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								06/03/20 13:50	llr

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5
Project ID: 5279.05
Sample ID: T21A-A

ACZ Sample ID: ***L59323-07***
Date Sampled: *04/17/20 09:20*
Date Received: *05/29/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, total (3050)	M6010D ICP	100		U	*	mg/Kg	3	20	06/09/20 3:37	kja
Arsenic, total (3050)	M6010D ICP	200	523			mg/Kg	8	40	06/10/20 5:05	kja
Barium, total (3050)	M6010D ICP	100	45.4			mg/Kg	0.7	4	06/09/20 3:37	kja
Beryllium, total (3050)	M6010D ICP	100		U		mg/Kg	1	5	06/09/20 3:37	kja
Cadmium, total (3050)	M6010D ICP	100		U		mg/Kg	0.8	3	06/09/20 3:37	kja
Chromium, total (3050)	M6010D ICP	100	62		*	mg/Kg	1	5	06/09/20 3:37	kja
Cobalt, total (3050)	M6010D ICP	100	17		*	mg/Kg	1	5	06/09/20 3:37	kja
Copper, total (3050)	M6010D ICP	100	32		*	mg/Kg	1	5	06/09/20 3:37	kja
Lead, total (3050)	M6010D ICP	100	5	B		mg/Kg	3	20	06/09/20 3:37	kja
Mercury, total	M7471A CVAA	191		UH	*	mg/Kg	0.04	0.2	06/03/20 14:32	slm
Molybdenum, total (3050)	M6010D ICP	100		U		mg/Kg	2	10	06/09/20 3:37	kja
Nickel, total (3050)	M6010D ICP	100	48.4		*	mg/Kg	0.8	4	06/09/20 3:37	kja
Selenium, total (3050)	M6010D ICP	100		U		mg/Kg	5	30	06/09/20 3:37	kja
Silver, total (3050)	M6010D ICP	100	5		*	mg/Kg	1	3	06/09/20 3:37	kja
Thallium, total (3050)	M6010D ICP	100		U		mg/Kg	10	50	06/09/20 3:37	kja
Vanadium, total (3050)	M6010D ICP	100	70			mg/Kg	1	3	06/09/20 3:37	kja
Zinc, total (3050)	M6010D ICP	100	30		*	mg/Kg	2	5	06/09/20 3:37	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		7.50			t CaCO3/Kt	0.31	3.1	06/15/20 0:00	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		8.0			t CaCO3/Kt	1	5	06/15/20 0:00	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		0.5			t CaCO3/Kt			06/15/20 0:00	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1	0.8		*	%	0.1	0.5	06/12/20 13:20	qcm
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/09/20 0:00	qcm
pH		1	7.1		*	units	0.1	0.1	06/09/20 0:00	qcm
Sulfur Forms	M600/2-78-054 3.2.4									
Sulfur Organic Residual		1	0.14		*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Pyritic Sulfide		1	0.04	B	*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Sulfate		1	0.06	B	*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Total		1	0.24		*	%	0.01	0.1	06/10/20 0:00	llr
Total Sulfur minus Sulfate		1	0.18			%	0.01	0.1	06/10/20 0:00	llr

** Please refer to Qualifier Reports for details.*

NV5

Project ID:	5279.05	ACZ Sample ID:	***L59323-07***
Sample ID:	T21A-A	Date Sampled:	*04/17/20 09:20*
		Date Received:	*05/29/20*
		Sample Matrix:	*Soil*

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP								06/05/20 13:40	mlp
Saturated Paste Extraction	USDA No. 60 (2)								06/08/20 11:43	qcm
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								06/03/20 13:57	llr

** Please refer to Qualifier Reports for details.*

Inorganic Analytical Results

NV5		ACZ Sample ID:	***L59323-08***
Project ID:	5279.05	Date Sampled:	*04/17/20 10:00*
Sample ID:	T23-A	Date Received:	*05/29/20*
		Sample Matrix:	*Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, total (3050)	M6010D ICP	510		U	*	mg/Kg	20	80	06/10/20 5:09	kja
Arsenic, total (3050)	M6010D ICP	510	2440			mg/Kg	20	100	06/10/20 5:09	kja
Barium, total (3050)	M6010D ICP	510	95			mg/Kg	4	20	06/10/20 5:09	kja
Beryllium, total (3050)	M6010D ICP	510		U	*	mg/Kg	5	30	06/10/20 5:09	kja
Cadmium, total (3050)	M6010D ICP	510		U	*	mg/Kg	4	10	06/10/20 5:09	kja
Chromium, total (3050)	M6010D ICP	510	53		*	mg/Kg	5	30	06/10/20 5:09	kja
Cobalt, total (3050)	M6010D ICP	510	40			mg/Kg	5	30	06/10/20 5:09	kja
Copper, total (3050)	M6010D ICP	510	81		*	mg/Kg	5	30	06/10/20 5:09	kja
Lead, total (3050)	M6010D ICP	510		U	*	mg/Kg	20	80	06/10/20 5:09	kja
Mercury, total	M7471A CVAA	187	0.13	BH	*	mg/Kg	0.04	0.2	06/03/20 14:33	slm
Molybdenum, total (3050)	M6010D ICP	510		U	*	mg/Kg	10	50	06/10/20 5:09	kja
Nickel, total (3050)	M6010D ICP	510	34		*	mg/Kg	4	20	06/10/20 5:09	kja
Selenium, total (3050)	M6010D ICP	510		U	*	mg/Kg	30	100	06/10/20 5:09	kja
Silver, total (3050)	M6010D ICP	510		U	*	mg/Kg	5	10	06/10/20 5:09	kja
Thallium, total (3050)	M6010D ICP	510		U	*	mg/Kg	50	300	06/10/20 5:09	kja
Vanadium, total (3050)	M6010D ICP	510	176			mg/Kg	5	10	06/10/20 5:09	kja
Zinc, total (3050)	M6010D ICP	510	80			mg/Kg	10	30	06/10/20 5:09	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		4.69			t CaCO3/Kt	0.31	3.1	06/15/20 0:00	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		0.0			t CaCO3/Kt	1	5	06/15/20 0:00	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		-4.7			t CaCO3/Kt			06/15/20 0:00	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	1		U	*	%	0.1	0.5	06/12/20 13:29	qcm
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/09/20 0:00	qcm
pH		1	4.8		*	units	0.1	0.1	06/09/20 0:00	qcm
Sulfur Forms	M600/2-78-054 3.2.4									
Sulfur Organic Residual		1	0.10		*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Pyritic Sulfide		1	0.02	B	*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Sulfate		1	0.03	B	*	%	0.01	0.1	06/10/20 0:00	llr
Sulfur Total		1	0.15		*	%	0.01	0.1	06/10/20 0:00	llr
Total Sulfur minus Sulfate		1	0.12			%	0.01	0.1	06/10/20 0:00	llr

** Please refer to Qualifier Reports for details.*

NV5

Project ID:	5279.05	ACZ Sample ID:	***L59323-08***
Sample ID:	T23-A	Date Sampled:	*04/17/20 10:00*
		Date Received:	*05/29/20*
		Sample Matrix:	*Soil*

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP								06/05/20 14:00	mlp
Saturated Paste Extraction	USDA No. 60 (2)								06/08/20 11:45	qcm
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								06/03/20 14:05	llr

** Please refer to Qualifier Reports for details.*

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:

https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

NV5

ACZ Project ID: ***L59323***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Antimony, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498788													
WG498788ICV	ICV	06/09/20 2:06	II200526-5	4		4.014	mg/L	100	90	110			
WG498788ICB	ICB	06/09/20 2:10				U	mg/L		-0.09	0.09			
WG498588PBS	PBS	06/09/20 2:33				U	mg/Kg		-9	9			
WG498588LCSS1	LCSS	06/09/20 2:37	PCN61044	99.4		76.1	mg/Kg		2.03	203			
WG498588LCSSD1	LCSSD	06/09/20 2:40	PCN61044	99.4		71.8	mg/Kg		2.03	203	6	20	
L59323-01MS	MS	06/09/20 2:59	II200526-3	199.6	U	98.4	mg/Kg	49	75	125			M2
L59323-01MSD	MSD	06/09/20 3:03	II200526-3	199.6	U	103.6	mg/Kg	52	75	125	5	20	M2
WG498874													
WG498874ICV	ICV	06/10/20 3:46	II200526-5	4		4.039	mg/L	101	90	110			
WG498874ICB	ICB	06/10/20 3:50				U	mg/L		-0.09	0.09			
WG498588PBS	PBS	06/10/20 4:13				U	mg/Kg		-9	9			
WG498588LCSS1	LCSS	06/10/20 4:16	PCN61044	99.4		70.3	mg/Kg		2.03	203			
WG498588LCSSD1	LCSSD	06/10/20 4:20	PCN61044	99.4		75.1	mg/Kg		2.03	203	7	20	
L59323-01MS	MS	06/10/20 4:27	II2XSOIL	20.02	U	96.4	mg/Kg	482	75	125			M1
L59323-01MSD	MSD	06/10/20 4:31	II2XSOIL	20.02	U	110.1	mg/Kg	550	75	125	13	20	M1

Arsenic, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498788													
WG498788ICV	ICV	06/09/20 2:06	II200526-5	4		3.921	mg/L	98	90	110			
WG498788ICB	ICB	06/09/20 2:10				U	mg/L		-0.12	0.12			
WG498588PBS	PBS	06/09/20 2:33				U	mg/Kg		-12	12			
WG498588LCSS1	LCSS	06/09/20 2:37	PCN61044	97.6		91.7	mg/Kg		80.8	114			
WG498588LCSSD1	LCSSD	06/09/20 2:40	PCN61044	97.6		87	mg/Kg		80.8	114	5	20	
L59323-01MS	MS	06/09/20 2:59	II200526-3	100.08	12	98.9	mg/Kg	87	75	125			
L59323-01MSD	MSD	06/09/20 3:03	II200526-3	100.08	12	102.7	mg/Kg	91	75	125	4	20	
WG498874													
WG498874ICV	ICV	06/10/20 3:46	II200526-5	4		3.975	mg/L	99	90	110			
WG498874ICB	ICB	06/10/20 3:50				U	mg/L		-0.12	0.12			
WG498588PBS	PBS	06/10/20 4:13				U	mg/Kg		-12	12			
WG498588LCSS1	LCSS	06/10/20 4:16	PCN61044	97.6		87	mg/Kg		80.8	114			
WG498588LCSSD1	LCSSD	06/10/20 4:20	PCN61044	97.6		93.1	mg/Kg		80.8	114	7	20	
L59323-01MS	MS	06/10/20 4:27	II2XSOIL	100	13	106.3	mg/Kg	93	75	125			
L59323-01MSD	MSD	06/10/20 4:31	II2XSOIL	100	13	110.5	mg/Kg	98	75	125	4	20	
WG498978													
WG498978ICV	ICV	06/10/20 12:00	II200526-5	4		3.958	mg/L	99	90	110			
WG498978ICB	ICB	06/10/20 12:03				U	mg/L		-0.12	0.12			
WG498588PBS	PBS	06/10/20 12:26				U	mg/Kg		-12	12			
WG498588LCSS1	LCSS	06/10/20 12:30	PCN61044	97.6		84.9	mg/Kg		80.8	114			
WG498588LCSSD1	LCSSD	06/10/20 12:34	PCN61044	97.6		89.4	mg/Kg		80.8	114	5	20	
L59323-01MS	MS	06/10/20 12:41	II2XSOIL	100	13	114	mg/Kg	101	75	125			
L59323-01MSD	MSD	06/10/20 12:45	II2XSOIL	100	13	112.4	mg/Kg	99	75	125	1	20	

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Barium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498788													
WG498788ICV	ICV	06/09/20 2:06	II200526-5	2		2.002	mg/L	100	90	110			
WG498788ICB	ICB	06/09/20 2:10				U	mg/L		-0.021	0.021			
WG498588PBS	PBS	06/09/20 2:33				U	mg/Kg		-2.1	2.1			
WG498588LCSS1	LCSS	06/09/20 2:37	PCN61044	320		310.4	mg/Kg		264	376			
WG498588LCSSD1	LCSSD	06/09/20 2:40	PCN61044	320		294.2	mg/Kg		264	376	5	20	
L59323-01MS	MS	06/09/20 2:59	II200526-3	50.05	22.1	66.34	mg/Kg	88	75	125			
L59323-01MSD	MSD	06/09/20 3:03	II200526-3	50.05	22.1	67.19	mg/Kg	90	75	125	1	20	
WG498874													
WG498874ICV	ICV	06/10/20 3:46	II200526-5	2		2.016	mg/L	101	90	110			
WG498874ICB	ICB	06/10/20 3:50				U	mg/L		-0.021	0.021			
WG498588PBS	PBS	06/10/20 4:13				U	mg/Kg		-2.1	2.1			
WG498588LCSS1	LCSS	06/10/20 4:16	PCN61044	320		294.9	mg/Kg		264	376			
WG498588LCSSD1	LCSSD	06/10/20 4:20	PCN61044	320		315.7	mg/Kg		264	376	7	20	
L59323-01MS	MS	06/10/20 4:27	II2XSOIL	50	23	67.3	mg/Kg	89	75	125			
L59323-01MSD	MSD	06/10/20 4:31	II2XSOIL	50	23	69.6	mg/Kg	93	75	125	3	20	

Beryllium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498788													
WG498788ICV	ICV	06/09/20 2:06	II200526-5	2		1.974	mg/L	99	90	110			
WG498788ICB	ICB	06/09/20 2:10				U	mg/L		-0.03	0.03			
WG498588PBS	PBS	06/09/20 2:33				U	mg/Kg		-3	3			
WG498588LCSS1	LCSS	06/09/20 2:37	PCN61044	41.4		40.3	mg/Kg		34.5	48.4			
WG498588LCSSD1	LCSSD	06/09/20 2:40	PCN61044	41.4		38.5	mg/Kg		34.5	48.4	5	20	
L59323-01MS	MS	06/09/20 2:59	II200526-3	50.05	U	48	mg/Kg	96	75	125			
L59323-01MSD	MSD	06/09/20 3:03	II200526-3	50.05	U	47.9	mg/Kg	96	75	125	0	20	
WG498874													
WG498874ICV	ICV	06/10/20 3:46	II200526-5	2		1.999	mg/L	100	90	110			
WG498874ICB	ICB	06/10/20 3:50				U	mg/L		-0.03	0.03			
WG498588PBS	PBS	06/10/20 4:13				U	mg/Kg		-3	3			
WG498588LCSS1	LCSS	06/10/20 4:16	PCN61044	41.4		38.3	mg/Kg		34.5	48.4			
WG498588LCSSD1	LCSSD	06/10/20 4:20	PCN61044	41.4		40.6	mg/Kg		34.5	48.4	6	20	
L59323-01MS	MS	06/10/20 4:27	II2XSOIL	50	U	49.5	mg/Kg	99	75	125			
L59323-01MSD	MSD	06/10/20 4:31	II2XSOIL	50	U	50.4	mg/Kg	101	75	125	2	20	

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Cadmium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498788													
WG498788ICV	ICV	06/09/20 2:06	II200526-5	2		1.963	mg/L	98	90	110			
WG498788ICB	ICB	06/09/20 2:10				U	mg/L		-0.024	0.024			
WG498588PBS	PBS	06/09/20 2:33				U	mg/Kg		-2.4	2.4			
WG498588LCSS1	LCSS	06/09/20 2:37	PCN61044	114		109.3	mg/Kg		94.4	134			
WG498588LCSSD1	LCSSD	06/09/20 2:40	PCN61044	114		105.1	mg/Kg		94.4	134	4	20	
L59323-01MS	MS	06/09/20 2:59	II200526-3	50.05	U	45.39	mg/Kg	91	75	125			
L59323-01MSD	MSD	06/09/20 3:03	II200526-3	50.05	U	45.52	mg/Kg	91	75	125	0	20	
WG498874													
WG498874ICV	ICV	06/10/20 3:46	II200526-5	2		1.992	mg/L	100	90	110			
WG498874ICB	ICB	06/10/20 3:50				U	mg/L		-0.024	0.024			
WG498588PBS	PBS	06/10/20 4:13				U	mg/Kg		-2.4	2.4			
WG498588LCSS1	LCSS	06/10/20 4:16	PCN61044	114		104.9	mg/Kg		94.4	134			
WG498588LCSSD1	LCSSD	06/10/20 4:20	PCN61044	114		110	mg/Kg		94.4	134	5	20	
L59323-01MS	MS	06/10/20 4:27	II2XSOIL	50.1	U	48.4	mg/Kg	97	75	125			
L59323-01MSD	MSD	06/10/20 4:31	II2XSOIL	50.1	U	49.3	mg/Kg	98	75	125	2	20	

Chromium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498788													
WG498788ICV	ICV	06/09/20 2:06	II200526-5	2		1.996	mg/L	100	90	110			
WG498788ICB	ICB	06/09/20 2:10				U	mg/L		-0.03	0.03			
WG498588PBS	PBS	06/09/20 2:33				U	mg/Kg		-3	3			
WG498588LCSS1	LCSS	06/09/20 2:37	PCN61044	147		144.5	mg/Kg		120	173			
WG498588LCSSD1	LCSSD	06/09/20 2:40	PCN61044	147		137.6	mg/Kg		120	173	5	20	
L59323-01MS	MS	06/09/20 2:59	II200526-3	50.1	309	368.2	mg/Kg	118	75	125			
L59323-01MSD	MSD	06/09/20 3:03	II200526-3	50.1	309	376.1	mg/Kg	134	75	125	2	20	M3
WG498874													
WG498874ICV	ICV	06/10/20 3:46	II200526-5	2		2.027	mg/L	101	90	110			
WG498874ICB	ICB	06/10/20 3:50				U	mg/L		-0.03	0.03			
WG498588PBS	PBS	06/10/20 4:13				U	mg/Kg		-3	3			
WG498588LCSS1	LCSS	06/10/20 4:16	PCN61044	147		138.1	mg/Kg		120	173			
WG498588LCSSD1	LCSSD	06/10/20 4:20	PCN61044	147		147.1	mg/Kg		120	173	6	20	
L59323-01MS	MS	06/10/20 4:27	II2XSOIL	50.1	324	382.8	mg/Kg	129	75	125			M3
L59323-01MSD	MSD	06/10/20 4:31	II2XSOIL	50.1	324	399.4	mg/Kg	162	75	125	4	20	M3

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Cobalt, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498788													
WG498788ICV	ICV	06/09/20 2:06	II200526-5	2.002		1.948	mg/L	97	90	110			
WG498788ICB	ICB	06/09/20 2:10				U	mg/L		-0.03	0.03			
WG498588PBS	PBS	06/09/20 2:33				U	mg/Kg		-3	3			
WG498588LCSS1	LCSS	06/09/20 2:37	PCN61044	46.7		45.5	mg/Kg		39.2	54.3			
WG498588LCSSD1	LCSSD	06/09/20 2:40	PCN61044	46.7		43.2	mg/Kg		39.2	54.3	5	20	
L59323-01MS	MS	06/09/20 2:59	II200526-3	50	38	75.4	mg/Kg	75	75	125			
L59323-01MSD	MSD	06/09/20 3:03	II200526-3	50	38	79.5	mg/Kg	83	75	125	5	20	
WG498874													
WG498874ICV	ICV	06/10/20 3:46	II200526-5	2.002		1.973	mg/L	99	90	110			
WG498874ICB	ICB	06/10/20 3:50				U	mg/L		-0.03	0.03			
WG498588PBS	PBS	06/10/20 4:13				U	mg/Kg		-3	3			
WG498588LCSS1	LCSS	06/10/20 4:16	PCN61044	46.7		43.6	mg/Kg		39.2	54.3			
WG498588LCSSD1	LCSSD	06/10/20 4:20	PCN61044	46.7		46.3	mg/Kg		39.2	54.3	6	20	
L59323-01MS	MS	06/10/20 4:27	II2XSOIL	50	41	81.4	mg/Kg	81	75	125			
L59323-01MSD	MSD	06/10/20 4:31	II2XSOIL	50	41	86.2	mg/Kg	90	75	125	6	20	

Copper, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498788													
WG498788ICV	ICV	06/09/20 2:06	II200526-5	2		1.978	mg/L	99	90	110			
WG498788ICB	ICB	06/09/20 2:10				U	mg/L		-0.03	0.03			
WG498588PBS	PBS	06/09/20 2:33				U	mg/Kg		-3	3			
WG498588LCSS1	LCSS	06/09/20 2:37	PCN61044	97.7		93	mg/Kg		82	113			
WG498588LCSSD1	LCSSD	06/09/20 2:40	PCN61044	97.7		87.1	mg/Kg		82	113	7	20	
L59323-01MS	MS	06/09/20 2:59	II200526-3	50.1	97	125.6	mg/Kg	57	75	125			M2
L59323-01MSD	MSD	06/09/20 3:03	II200526-3	50.1	97	132	mg/Kg	70	75	125	5	20	M2
WG498874													
WG498874ICV	ICV	06/10/20 3:46	II200526-5	2		2.01	mg/L	101	90	110			
WG498874ICB	ICB	06/10/20 3:50				U	mg/L		-0.03	0.03			
WG498588PBS	PBS	06/10/20 4:13				U	mg/Kg		-3	3			
WG498588LCSS1	LCSS	06/10/20 4:16	PCN61044	97.7		88.1	mg/Kg		82	113			
WG498588LCSSD1	LCSSD	06/10/20 4:20	PCN61044	97.7		95.1	mg/Kg		82	113	8	20	
L59323-01MS	MS	06/10/20 4:27	II2XSOIL	50	99	128.8	mg/Kg	60	75	125			MA
L59323-01MSD	MSD	06/10/20 4:31	II2XSOIL	50	99	137.2	mg/Kg	76	75	125	6	20	

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Lead, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498788													
WG498788ICV	ICV	06/09/20 2:06	II200526-5	4		4.029	mg/L	101	90	110			
WG498788ICB	ICB	06/09/20 2:10				U	mg/L		-0.09	0.09			
WG498588PBS	PBS	06/09/20 2:33				U	mg/Kg		-9	9			
WG498588LCSS1	LCSS	06/09/20 2:37	PCN61044	105		102.5	mg/Kg		86.7	123			
WG498588LCSSD1	LCSSD	06/09/20 2:40	PCN61044	105		95.8	mg/Kg		86.7	123	7	20	
L59323-01MS	MS	06/09/20 2:59	II200526-3	100.17	16	112.7	mg/Kg	97	75	125			
L59323-01MSD	MSD	06/09/20 3:03	II200526-3	100.17	16	115	mg/Kg	99	75	125	2	20	
WG498874													
WG498874ICV	ICV	06/10/20 3:46	II200526-5	4		4.061	mg/L	102	90	110			
WG498874ICB	ICB	06/10/20 3:50				U	mg/L		-0.09	0.09			
WG498588PBS	PBS	06/10/20 4:13				U	mg/Kg		-9	9			
WG498588LCSS1	LCSS	06/10/20 4:16	PCN61044	105		96.9	mg/Kg		86.7	123			
WG498588LCSSD1	LCSSD	06/10/20 4:20	PCN61044	105		103.9	mg/Kg		86.7	123	7	20	
L59323-01MS	MS	06/10/20 4:27	II2XSOIL	100.1	21	121.9	mg/Kg	101	75	125			
L59323-01MSD	MSD	06/10/20 4:31	II2XSOIL	100.1	21	125.9	mg/Kg	105	75	125	3	20	

Mercury, total M7471A CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498358													
WG498358ICV	ICV	06/03/20 13:59	HG200602-7	.00999		.0105	mg/L	105	90	110			
WG498358ICB	ICB	06/03/20 14:01				U	mg/L		-0.0006	0.0006			
WG498360													
WG498360PBS	PBS	06/03/20 14:16				U	mg/Kg		-0.09	0.09			
WG498360LCSS	LCSS	06/03/20 14:17	PCN59512	5.79		6.57	mg/Kg		3.6	8.39			
WG498360LCSSD	LCSSD	06/03/20 14:19	PCN59512	5.79		6.58	mg/Kg		3.6	8.39	0	20	
L59323-01MS	MS	06/03/20 14:21	HG200602-9	.92092	.28	1.205	mg/Kg	100	85	115			
L59323-01MSD	MSD	06/03/20 14:23	HG200602-9	.91091	.28	1.207	mg/Kg	102	85	115	0	20	

Molybdenum, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498788													
WG498788ICV	ICV	06/09/20 2:06	II200526-5	2		2.018	mg/L	101	90	110			
WG498788ICB	ICB	06/09/20 2:10				U	mg/L		-0.06	0.06			
WG498588PBS	PBS	06/09/20 2:33				U	mg/Kg		-6	6			
WG498588LCSS1	LCSS	06/09/20 2:37	PCN61044	78.8		78.6	mg/Kg		63.1	94.4			
WG498588LCSSD1	LCSSD	06/09/20 2:40	PCN61044	78.8		74.2	mg/Kg		63.1	94.4	6	20	
L59323-01MS	MS	06/09/20 2:59	II200526-3	49.95	U	46.5	mg/Kg	93	75	125			
L59323-01MSD	MSD	06/09/20 3:03	II200526-3	49.95	U	46.7	mg/Kg	93	75	125	0	20	
WG498874													
WG498874ICV	ICV	06/10/20 3:46	II200526-5	2		2.053	mg/L	103	90	110			
WG498874ICB	ICB	06/10/20 3:50				U	mg/L		-0.06	0.06			
WG498588PBS	PBS	06/10/20 4:13				U	mg/Kg		-6	6			
WG498588LCSS1	LCSS	06/10/20 4:16	PCN61044	78.8		74.6	mg/Kg		63.1	94.4			
WG498588LCSSD1	LCSSD	06/10/20 4:20	PCN61044	78.8		78.9	mg/Kg		63.1	94.4	6	20	
L59323-01MS	MS	06/10/20 4:27	II2XSOIL	49.95	U	48.6	mg/Kg	97	75	125			
L59323-01MSD	MSD	06/10/20 4:31	II2XSOIL	49.95	U	49.8	mg/Kg	100	75	125	2	20	

NV5 ACZ Project ID: ***L59323***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Neutralization Potential as CaCO3 M600/2-78-054 3.2.3 - Modified (No Heat)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498954													
L59323-04DUP	DUP	06/12/20 12:42			.1	.13	%				26	20	RA
L59323-04MS	MS	06/12/20 12:51	SI190303-1	1	.1	1.18	%	108	70	130			
WG498954LCSS	LCSS	06/12/20 14:35	PCN59691	4.66		4.45	%	95	80	120			
WG498954PBS	PBS	06/12/20 14:45				U	%		-0.2	0.2			

Nickel, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498788													
WG498788ICV	ICV	06/09/20 2:06	II200526-5	2		1.97	mg/L	99	90	110			
WG498788ICB	ICB	06/09/20 2:10				U	mg/L		-0.024	0.024			
WG498588PBS	PBS	06/09/20 2:33				U	mg/Kg		-2.4	2.4			
WG498588LCSS1	LCSS	06/09/20 2:37	PCN61044	119		117.6	mg/Kg		98.1	140			
WG498588LCSSD1	LCSSD	06/09/20 2:40	PCN61044	119		112.6	mg/Kg		98.1	140	4	20	
L59323-01MS	MS	06/09/20 2:59	II200526-3	50.1	264	244.6	mg/Kg	-39	75	125			M3
L59323-01MSD	MSD	06/09/20 3:03	II200526-3	50.1	264	252.4	mg/Kg	-23	75	125	3	20	M3
WG498874													
WG498874ICV	ICV	06/10/20 3:46	II200526-5	2		1.973	mg/L	99	90	110			
WG498874ICB	ICB	06/10/20 3:50				U	mg/L		-0.024	0.024			
WG498588PBS	PBS	06/10/20 4:13				U	mg/Kg		-2.4	2.4			
WG498588LCSS1	LCSS	06/10/20 4:16	PCN61044	119		111.3	mg/Kg		98.1	140			
WG498588LCSSD1	LCSSD	06/10/20 4:20	PCN61044	119		117	mg/Kg		98.1	140	5	20	
L59323-01MS	MS	06/10/20 4:27	II2XSOIL	50	273	256.2	mg/Kg	-34	75	125			M2
L59323-01MSD	MSD	06/10/20 4:31	II2XSOIL	50	273	268	mg/Kg	-10	75	125	5	20	M2

pH, Saturated Paste EPA 600/2-78-054 section 3.2.2

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498840													
WG498840ICV	ICV	06/09/20 9:33	PCN59583	4.01		4	units	100	3.9	4.1			
L59323-01DUP	DUP	06/09/20 9:36			8.3	8.34	units				0	20	

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Selenium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498788													
WG498788ICV	ICV	06/09/20 2:06	II200526-5	4		4.021	mg/L	101	90	110			
WG498788ICB	ICB	06/09/20 2:10				U	mg/L		-0.15	0.15			
WG498588PBS	PBS	06/09/20 2:33				U	mg/Kg		-15	15			
WG498588LCSS1	LCSS	06/09/20 2:37	PCN61044	93.1		96.4	mg/Kg		73.5	113			
WG498588LCSSD1	LCSSD	06/09/20 2:40	PCN61044	93.1		93.1	mg/Kg		73.5	113	3	20	
L59323-01MS	MS	06/09/20 2:59	II200526-3	100.17	8	98.4	mg/Kg	90	75	125			
L59323-01MSD	MSD	06/09/20 3:03	II200526-3	100.17	8	99.3	mg/Kg	91	75	125	1	20	
WG498874													
WG498874ICV	ICV	06/10/20 3:46	II200526-5	4		4.04	mg/L	101	90	110			
WG498874ICB	ICB	06/10/20 3:50				U	mg/L		-0.15	0.15			
WG498588PBS	PBS	06/10/20 4:13				U	mg/Kg		-15	15			
WG498588LCSS1	LCSS	06/10/20 4:16	PCN61044	93.1		91.4	mg/Kg		73.5	113			
WG498588LCSSD1	LCSSD	06/10/20 4:20	PCN61044	93.1		99.9	mg/Kg		73.5	113	9	20	
L59323-01MS	MS	06/10/20 4:27	II2XSOIL	100.1	U	102	mg/Kg	102	75	125			
L59323-01MSD	MSD	06/10/20 4:31	II2XSOIL	100.1	U	102	mg/Kg	102	75	125	0	20	

Silver, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498788													
WG498788ICV	ICV	06/09/20 2:06	II200526-5	1		.992	mg/L	99	90	110			
WG498788ICB	ICB	06/09/20 2:10				U	mg/L		-0.03	0.03			
WG498588PBS	PBS	06/09/20 2:33				U	mg/Kg		-3	3			
WG498588LCSS1	LCSS	06/09/20 2:37	PCN61044	32		32.4	mg/Kg		25.5	38.4			
WG498588LCSSD1	LCSSD	06/09/20 2:40	PCN61044	32		30.6	mg/Kg		25.5	38.4	6	20	
L59323-01MS	MS	06/09/20 2:59	II200526-3	50	8	58.1	mg/Kg	100	75	125			
L59323-01MSD	MSD	06/09/20 3:03	II200526-3	50	8	56	mg/Kg	96	75	125	4	20	
WG498874													
WG498874ICV	ICV	06/10/20 3:46	II200526-5	1		1.013	mg/L	101	90	110			
WG498874ICB	ICB	06/10/20 3:50				U	mg/L		-0.03	0.03			
WG498588PBS	PBS	06/10/20 4:13				U	mg/Kg		-3	3			
WG498588LCSS1	LCSS	06/10/20 4:16	PCN61044	32		27.7	mg/Kg		25.5	38.4			
WG498588LCSSD1	LCSSD	06/10/20 4:20	PCN61044	32		29.7	mg/Kg		25.5	38.4	7	20	
L59323-01MS	MS	06/10/20 4:27	II2XSOIL	50.05	U	48.5	mg/Kg	97	75	125			
L59323-01MSD	MSD	06/10/20 4:31	II2XSOIL	50.05	U	48.3	mg/Kg	97	75	125	0	20	

Sulfur Organic Residual M600/2-78-054 3.2.4

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498800													
L59323-01DUP	DUP	06/10/20 13:43			.09	.08	%				12	20	RA

Sulfur Pyritic Sulfide M600/2-78-054 3.2.4

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498800													
L59323-01DUP	DUP	06/10/20 13:43			.04	.03	%				29	20	RA

NV5

ACZ Project ID: ***L59323***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Sulfur Sulfate M600/2-78-054 3.2.4

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498800													
WG498800PBS	PBS	06/10/20 13:26				U	%		-0.03	0.03			
L59323-01DUP	DUP	06/10/20 13:43			U	.02	%				200	20	RA

Sulfur Total M600/2-78-054 3.2.4

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498800													
WG498800PBS	PBS	06/10/20 11:58				.02	%		-0.03	0.03			
WG498800LCSS	LCSS	06/10/20 12:04	PCN60873	4.01		3.78	%	94	80	120			
L59323-01MS	MS	06/10/20 12:13	PCN60251	1.32	.09	1.39	%	98	80	120			
L59323-01DUP	DUP	06/10/20 12:16			.09	.13	%				36	20	RA
WG498800LCSS	LCSS	06/10/20 12:41	PCN60873	4.01		3.76	%	94	80	120			
WG498800PBS	PBS	06/10/20 12:43				U	%		-0.03	0.03			

Thallium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498788													
WG498788ICV	ICV	06/09/20 2:06	II200526-5	4		4	mg/L	100	90	110			
WG498788ICB	ICB	06/09/20 2:10				U	mg/L		-0.3	0.3			
WG498588PBS	PBS	06/09/20 2:33				U	mg/Kg		-30	30			
WG498588LCSS1	LCSS	06/09/20 2:37	PCN61044	104		94	mg/Kg		83.8	123			
WG498588LCSSD1	LCSSD	06/09/20 2:40	PCN61044	104		91	mg/Kg		83.8	123	3	20	
L59323-01MS	MS	06/09/20 2:59	II200526-3	200.4	U	178	mg/Kg	89	75	125			
L59323-01MSD	MSD	06/09/20 3:03	II200526-3	200.4	U	177	mg/Kg	88	75	125	1	20	
WG498874													
WG498874ICV	ICV	06/10/20 3:46	II200526-5	4		4.09	mg/L	102	90	110			
WG498874ICB	ICB	06/10/20 3:50				U	mg/L		-0.3	0.3			
WG498588PBS	PBS	06/10/20 4:13				U	mg/Kg		-30	30			
WG498588LCSS1	LCSS	06/10/20 4:16	PCN61044	104		94	mg/Kg		83.8	123			
WG498588LCSSD1	LCSSD	06/10/20 4:20	PCN61044	104		96	mg/Kg		83.8	123	2	20	
L59323-01MS	MS	06/10/20 4:27	II2XSOIL	200	U	189	mg/Kg	95	75	125			
L59323-01MSD	MSD	06/10/20 4:31	II2XSOIL	200	U	192	mg/Kg	96	75	125	2	20	

Total Sulfur Minus Sulfate M600/2-78-054 3.2.4

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498800													
WG498800PBS	PBS	06/10/20 13:26				U	%		-0.03	0.03			
L59323-01DUP	DUP	06/10/20 13:43			.13	.11	%				17	20	

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Vanadium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498788													
WG498788ICV	ICV	06/09/20 2:06	II200526-5	2		2.014	mg/L	101	90	110			
WG498788ICB	ICB	06/09/20 2:10				U	mg/L		-0.03	0.03			
WG498588PBS	PBS	06/09/20 2:33				U	mg/Kg		-1.5	1.5			
WG498588LCSS1	LCSS	06/09/20 2:37	PCN61044	174		176.9	mg/Kg		137	211			
WG498588LCSSD1	LCSSD	06/09/20 2:40	PCN61044	174		166.3	mg/Kg		137	211	6	20	
L59323-01MS	MS	06/09/20 2:59	II200526-3	49.95	102	154.7	mg/Kg	106	75	125			
L59323-01MSD	MSD	06/09/20 3:03	II200526-3	49.95	102	152.2	mg/Kg	101	75	125	2	20	
WG498874													
WG498874ICV	ICV	06/10/20 3:46	II200526-5	2		2.015	mg/L	101	90	110			
WG498874ICB	ICB	06/10/20 3:50				U	mg/L		-0.03	0.03			
WG498588PBS	PBS	06/10/20 4:13				U	mg/Kg		-1.5	1.5			
WG498588LCSS1	LCSS	06/10/20 4:16	PCN61044	174		164.1	mg/Kg		137	211			
WG498588LCSSD1	LCSSD	06/10/20 4:20	PCN61044	174		176.2	mg/Kg		137	211	7	20	
L59323-01MS	MS	06/10/20 4:27	II2XSOIL	50	101	157.4	mg/Kg	113	75	125			
L59323-01MSD	MSD	06/10/20 4:31	II2XSOIL	50	101	157.3	mg/Kg	113	75	125	0	20	

Zinc, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG498788													
WG498788ICV	ICV	06/09/20 2:06	II200526-5	2		1.935	mg/L	97	90	110			
WG498788ICB	ICB	06/09/20 2:10				U	mg/L		-0.06	0.06			
WG498588PBS	PBS	06/09/20 2:33				U	mg/Kg		-6	6			
WG498588LCSS1	LCSS	06/09/20 2:37	PCN61044	212		204.6	mg/Kg		171	252			
WG498588LCSSD1	LCSSD	06/09/20 2:40	PCN61044	212		191.5	mg/Kg		171	252	7	20	
L59323-01MS	MS	06/09/20 2:59	II200526-3	50.075	64	106.6	mg/Kg	85	75	125			
L59323-01MSD	MSD	06/09/20 3:03	II200526-3	50.075	64	108.6	mg/Kg	89	75	125	2	20	
WG498874													
WG498874ICV	ICV	06/10/20 3:46	II200526-5	2		1.961	mg/L	98	90	110			
WG498874ICB	ICB	06/10/20 3:50				U	mg/L		-0.06	0.06			
WG498588PBS	PBS	06/10/20 4:13				U	mg/Kg		-6	6			
WG498588LCSS1	LCSS	06/10/20 4:16	PCN61044	212		193.5	mg/Kg		171	252			
WG498588LCSSD1	LCSSD	06/10/20 4:20	PCN61044	212		209.4	mg/Kg		171	252	8	20	
L59323-01MS	MS	06/10/20 4:27	II2XSOIL	50.05	73	119.2	mg/Kg	100	75	125			
L59323-01MSD	MSD	06/10/20 4:31	II2XSOIL	50.05	73	119.6	mg/Kg	101	75	125	0	20	

NV5

ACZ Project ID: ***L59323***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L59323-01	WG498788	Antimony, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Chromium, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Cobalt, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Copper, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG498360	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
			M7471A CVAA	QR	Sample matrix is solid rock and a homogenous sample aliquot could not be created for Hg analysis prior to preparation and air drying. Hg analysis was performed on crushed, homogenized, and air dried (40C) sub sample. Some loss of Hg may have occurred. Residual moisture on the prepped sample fraction was used for data correction.
	WG498954	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG498874	Nickel, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG498788	Silver, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG498800	Sulfur Organic Residual	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG498788	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L59323-02	WG498788	Antimony, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG498874	Chromium, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG498788	Cobalt, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Copper, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG498360	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
			M7471A CVAA	QR	Sample matrix is solid rock and a homogenous sample aliquot could not be created for Hg analysis prior to preparation and air drying. Hg analysis was performed on crushed, homogenized, and air dried (40C) sub sample. Some loss of Hg may have occurred. Residual moisture on the prepped sample fraction was used for data correction.
	WG498954	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG498874	Nickel, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG498788	Silver, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG498800	Sulfur Organic Residual	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG498788	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Inorganic Extended Qualifier Report

NV5 ACZ Project ID: ***L59323***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L59323-03	WG498788	Antimony, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG498874	Chromium, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG498788	Cobalt, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Copper, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG498360	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
			M7471A CVAA	QR	Sample matrix is solid rock and a homogenous sample aliquot could not be created for Hg analysis prior to preparation and air drying. Hg analysis was performed on crushed, homogenized, and air dried (40C) sub sample. Some loss of Hg may have occurred. Residual moisture on the prepped sample fraction was used for data correction.
	WG498954	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	N1	See Case Narrative.
			M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG498874	Nickel, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG498788	Silver, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG498800	Sulfur Organic Residual	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG498788	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Inorganic Extended Qualifier Report

NV5

ACZ Project ID: ***L59323***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L59323-04	WG498788	Antimony, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Chromium, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Cobalt, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Copper, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG498360	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
			M7471A CVAA	QR	Sample matrix is solid rock and a homogenous sample aliquot could not be created for Hg analysis prior to preparation and air drying. Hg analysis was performed on crushed, homogenized, and air dried (40C) sub sample. Some loss of Hg may have occurred. Residual moisture on the prepped sample fraction was used for data correction.
	WG498954	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG498788	Nickel, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Silver, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG498800	Sulfur Organic Residual	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG498788	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L59323-05	WG498788	Antimony, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Chromium, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Cobalt, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Copper, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG498360	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
			M7471A CVAA	QR	Sample matrix is solid rock and a homogenous sample aliquot could not be created for Hg analysis prior to preparation and air drying. Hg analysis was performed on crushed, homogenized, and air dried (40C) sub sample. Some loss of Hg may have occurred. Residual moisture on the prepped sample fraction was used for data correction.
	WG498954	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG498788	Nickel, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Silver, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG498800	Sulfur Organic Residual	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG498788	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Inorganic Extended Qualifier Report

NV5

ACZ Project ID: ***L59323***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L59323-06	WG498788	Antimony, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Chromium, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Cobalt, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Copper, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG498360	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
			M7471A CVAA	QR	Sample matrix is solid rock and a homogenous sample aliquot could not be created for Hg analysis prior to preparation and air drying. Hg analysis was performed on crushed, homogenized, and air dried (40C) sub sample. Some loss of Hg may have occurred. Residual moisture on the prepped sample fraction was used for data correction.
	WG498954	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	N1	See Case Narrative.
			M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG498788	Nickel, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Silver, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG498800	Sulfur Organic Residual	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG498788	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Inorganic Extended Qualifier Report

NV5

ACZ Project ID: ***L59323***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L59323-07	WG498788	Antimony, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Chromium, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Cobalt, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Copper, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG498360	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
			M7471A CVAA	QR	Sample matrix is solid rock and a homogenous sample aliquot could not be created for Hg analysis prior to preparation and air drying. Hg analysis was performed on crushed, homogenized, and air dried (40C) sub sample. Some loss of Hg may have occurred. Residual moisture on the prepped sample fraction was used for data correction.
	WG498954	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG498788	Nickel, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Silver, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG498800	Sulfur Organic Residual	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG498788	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L59323-08	WG498874	Antimony, total (3050)	M6010D ICP	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M6010D ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Beryllium, total (3050)	M6010D ICP	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
		Cadmium, total (3050)	M6010D ICP	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
		Chromium, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Copper, total (3050)	M6010D ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Lead, total (3050)	M6010D ICP	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
	WG498360	Mercury, total	M7471A CVAA	H3	Sample was received and analyzed past holding time.
			M7471A CVAA	QR	Sample matrix is solid rock and a homogenous sample aliquot could not be created for Hg analysis prior to preparation and air drying. Hg analysis was performed on crushed, homogenized, and air dried (40C) sub sample. Some loss of Hg may have occurred. Residual moisture on the prepped sample fraction was used for data correction.
	WG498874	Molybdenum, total (3050)	M6010D ICP	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
	WG498954	Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)	N1	See Case Narrative.
			M600/2-78-054 3.2.3 - Modified (No Heat)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG498874	Nickel, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Selenium, total (3050)	M6010D ICP	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
		Silver, total (3050)	M6010D ICP	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
	WG498800	Sulfur Organic Residual	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Total	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG498874	Thallium, total (3050)	M6010D ICP	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.

Certification Qualifiers

NV5

ACZ Project ID: ***L59323***

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Neutralization Potential as CaCO3	M600/2-78-054 3.2.3 - Modified (No Heat)
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2
Sulfur Total	M600/2-78-054 3.2.4

Sample Receipt

NV5
5279.05

ACZ Project ID: L59323
Date Received: 05/29/2020 16:35
Received By:
Date Printed: 6/1/2020

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		▨
3) Does this project require special handling procedures such as CLP protocol?		X	▨
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		▨
6) Is the Chain of Custody form complete and accurate?	X		▨
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	▨

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		▨
9) Are all labels on containers and are they intact and legible?	X		▨
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		▨
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		▨
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		▨
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?		X	▨

Some parameters were received past hold time.

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
UNKNOWN		NA		

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

NV5
5279.05

ACZ Project ID: L59323
Date Received: 05/29/2020 16:35
Received By:
Date Printed: 6/1/2020

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

~~L58635~~ RELOG: L59323

ACZ Laboratories, Inc. 1 of 8

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Jason Muir
Company: NV5
E-mail: Jason.muir@nv5.com
Address: 792 Searls Avenue
Nevada City
Telephone: 530 362-2776

Copy of Report to:

Name: Kyle Leach
Company:
E-mail: kleach08@gmail.com
Telephone: 530-575-5605

Invoice to:

Name: Amy Hollarman
Company: NV5
E-mail: amy.hollarman@nv5.com
Address: same
Telephone: 530 478-1305

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☒

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Leach **Sampler's Site Information** **State** CA **Zip code** 95945 **Time Zone** PDT

***Sampler's Signature:** ____________

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION ANALYSES REQUESTED (attach list or use quote number)

Quote #:
PO#: 5279.05
Reporting state for compliance testing: CA
Check box if samples include NRC licensed material? ☐

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Total Arsenic 6010		Add #1 (May 15, 2020): Tot CAM 17 Metals, ABA Mod Sobek					
! T1-A	4/16/20 : 9:00	SO	1	☒	☐	X	X	☐	☐	☐	☐
T1-B	9:05	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T2-A	9:30	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T2-B	9:35	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T3-A	10:00	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T3-B	10:05	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T4-A	10:40	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T4-B	10:45	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T5-A	11:10	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T5-B	11:15	SO	1	☒	☐	☐	☐	☐	☐	☐	☐

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please hold all samples after analysis for additional testing.

Call Kyle Leach 530 575 5605 with any questions about sample ID's

Addendum No. 1: 2020.05.15: Tot CAM 17 Metals, ABA Mod Sobek: 8 samples (T1-A, T7-C, T14-B, T14A-B, T18-A, T20-A, T21A-A, T23-A

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
4/20/20, 4:20	4/20/20 4:20		4/21/20 10:18

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

L59323 Chain of Custod

~~L58635~~ RELOG: 59323

ACZ Laboratories, Inc. 2 of 8

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Jason Muir
Company: NV5
E-mail: Jason.muir@nv5.com
Address: 792 Searls Avenue
Nevada City
Telephone: 530 362-2776

Copy of Report to:

Name: Kyle Leach
Company:
E-mail: kleach08@gmail.com
Telephone:

Invoice to:

Name: Amy Hollarman
Company: NV5
E-mail: amy.hollarman@nv5.com
Address: same
Telephone: 530 478-1305

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☒

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Leach **Sampler's Site Information** **State** CA **Zip code** 95945 **Time Zone** PDT

***Sampler's Signature:**

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #:
PO#: 5279.05
Reporting state for compliance testing: CA
Check box if samples include NRC licensed material? ☐

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Total Arsenic 6010		Add #1 (May 15, 2020): Tot CAM 17 Metals, ABA Mod Sobek					
T5-C	4/16/20: 11:15	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T6-A	11:40	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T6-B	11:45	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T7-A	12:00	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
2 T7-C	12:05	SO	1	☒	☐	☒	☒	☐	☐	☐	☐
T7-D	12:10	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T8-A	12:40	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T8-B	12:45	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T9-A	1:00	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T9-B	1:05	SO	1	☒	☐	☐	☐	☐	☐	☐	☐

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please hold all samples after analysis for additional testing.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY	DATE:TIME
	4/20/20 4:20		4/24/20 10:18

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

~~L58635~~ RELOG:59323

ACZ Laboratories, Inc. 3 of 8

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Jason Muir
Company: NV5
E-mail: Jason.muir@nv5.com

Address: 792 Searls Avenue
Nevada City
Telephone: 530 362-2776

Copy of Report to:

Name: Kyle Leach
Company:

E-mail: kleach08@gmail.com
Telephone:

Invoice to:

Name: Amy Hollarman
Company: NV5
E-mail: amy.hollarman@nv5.com

Address: same
Telephone: 530 478-1305

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☒

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Leach **Sampler's Site Information** **State** CA **Zip code** 95945 **Time Zone** PDT

***Sampler's Signature:** ____________

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION ANALYSES REQUESTED (attach list or use quote number)

Quote #:
PO#: 5279.05
Reporting state for compliance testing: CA
Check box if samples include NRC licensed material? ☐

SAMPLE IDENTIFICATION	DATE:TIME		Matrix	# of Containers	Total Arsenic 6010		Add #1 (May 15, 2020): Tot CAM 17 Metals, ABA Mod Sobek					
T9-C	4/16/20	1:10 p	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T10-B		1:30	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T11-B		1:45	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T12-A		2:00	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T12-B		2:05	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T13-B		2:30	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T14A		2:50	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
3 T14B		2:55	SO	1	☒	☐	X	X	☐	☐	☐	☐
T14C		3:00	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T14A-A		3:20	SO	1	☒	☐	☐	☐	☐	☐	☐	☐

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please hold all samples after analysis for additional testing.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4/20/20 4:20		4/24/20 [illegible]

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

L58635 RELOG: 59323

ACZ Laboratories, Inc. T4 of 8

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Jason Muir
Company: NV5
E-mail: Jason.muir@nv5.com
Address: 792 Searls Avenue
Nevada City
Telephone: 530 362-2776

Copy of Report to:

Name: Kyle Leach
Company:
E-mail: kleach08@gmail.com
Telephone:

Invoice to:

Name: Amy Hollarman
Company: NV5
E-mail: amy.hollarman@nv5.com
Address: same
Telephone: 530 478-1305

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☒
If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Leach **Sampler's Site Information** **State** CA **Zip code** 95945 **Time Zone** PDT
***Sampler's Signature:** ______

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION ANALYSES REQUESTED (attach list or use quote number)

Quote #:
PO#: 5279.05
Reporting state for compliance testing: CA
Check box if samples include NRC licensed material? ☐

	SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Total Arsenic 6010		Add #1 (May 15, 2020): Tot CAM 17 Metals, ABA Mod Sobek					
4	T14A-B	4/16/20 : 3:25	SO	1	☒	☐	☒	☒	☐	☐	☐	☐
	T15A	↓ 3:40	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
	T15B	3:45	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
	T16A	4:10	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
	T16B	4:15	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
			SO	1	☒	☐	☐	☐	☐	☐	☐	☐
			SO	1	☒	☐	☐	☐	☐	☐	☐	☐
			SO	1	☒	☐	☐	☐	☐	☐	☐	☐
			SO	1	☒	☐	☐	☐	☐	☐	☐	☐
			SO	1	☒	☐	☐	☐	☐	☐	☐	☐

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please hold all samples after analysis for additional testing.

See second cooler for samples T17A → T34A COC's 5-8

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4/20/20 4:20		4/24/20 1018

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

RELOG: 59323

ACZ Laboratories, Inc. L58635 of 8
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Jason Muir
Company: NV5
E-mail: Jason.muir@nv5.com
Address: 792 Searls Avenue
Nevada City
Telephone: 530 362-2776

Copy of Report to:

Name: Kyle Leach
Company:
E-mail: kleach08@gmail.com
Telephone:

Invoice to:

Name: Amy Hollarman
Company: NV5
E-mail: amy.hollarman@nv5.com
Address: same
Telephone: 530 478-1305

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☒
If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Leach **Sampler's Site Information** **State** CA **Zip code** 95945 **Time Zone** PDT
***Sampler's Signature:** ____________

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #:
PO#: 5279.05
Reporting state for compliance testing: CA
Check box if samples include NRC licensed material? ☐

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Total Arsenic 6010		Add #1 (May 15, 2020): Tot CAM 17 Metals, ABA Mod Sobek					
T17-A	4/16/20: 4:40	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T17-B	· 445	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
5 T18-A	↓ 5:10	SO	1	☒	☐	X	X	☐	☐	☐	☐
T19-A	4/17/20: 815	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T19-B	8:20	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T19-C	8:25	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
6 T20-A	8:40	SO	1	☒	☐	X	X	☐	☐	☐	☐
T20-B	8:45	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T21-A	9:00	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
7 T21A-A	↓ 9:20	SO	1	☒	☐	X	X	☐	☐	☐	☐

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please hold all samples after analysis for additional testing.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4/24/20 4:20		4/24/20 10:18

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

~~L58635~~ RELOG: 59323

ACZ Laboratories, Inc. 6 of 8

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Jason Muir
Company: NV5
E-mail: Jason.muir@nv5.com

Address: 792 Searls Avenue
Nevada City
Telephone: 530 362-2776

Copy of Report to:

Name: Kyle Leach
Company:

E-mail: kleach08@gmail.com
Telephone:

Invoice to:

Name: Amy Hollarman
Company: NV5
E-mail: amy.hollarman@nv5.com

Address: same
Telephone: 530 478-1305

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☒ NO ☐

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PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #:
PO#: 5279.05
Reporting state for compliance testing: CA
Check box if samples include NRC licensed material? ☐

SAMPLE IDENTIFICATION	DATE TIME	Matrix	# of Containers	Total Arsenic 6010		Add #1 (May 15, 2020): Tot CAM 17 Metals, ABA Mod Sobek					
T21A-B	4/17/20: 9:25	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T22-A	9:40	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T22-B	9:45	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
0 T23-A	10:00	SO	1	☒	☐	X	X	☐	☐	☐	☐
T23-B	10:05	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T24-B	10:20	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T25-A	10:25	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T25-B	10:30	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T26-A	11:00	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
T26-B	11:05	SO	1	☒	☐	☐	☐	☐	☐	☐	☐

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

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RELINQUISHED BY	DATE TIME	RECEIVED BY	DATE TIME
	4/20/20 4:20		4/21/20 10:18

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

APPENDIX F

Resumes of Environmental Professionals

Nevada City, California
Jason.Muir@NV5.com
530.478.1305

EDUCATION

M.S. Environmental Engineering, U.C. Berkeley
B.A. Environmental Science, U.C. Berkeley

REGISTRATIONS/CERTIFICATIONS

Professional Engineer, CA No. 60167
Geotechnical Engineer, CA No. 2697
OSHA HAZWOPER Supervisor
Qualified SWPPP Developer/ Practitioner

EXPERTISE

Preliminary Endangerment Assessment (PEA)
Engineering Evaluation/Cost Analysis (EE/CA)
Human Health Risk Assessment (HHRA)
Phase I Environmental Site Assessment (ESA)
Initial Site Assessment (ISA)
Phase II Site Investigation (PSI/SI)
Ecological Scoping Assessment (ESA)
Ecological Predictive Assessment (Eco PA)
Ecological Validation Study
Construction Quality Assurance (CQA)
Construction Management (CM)
Mine Waste Characterization (Title 27/Non-15)
Mine Reclamation Planning (SMARA)
Water Quality Monitoring and Permitting
Contaminant Transport Modeling
Geotechnical Investigation and Design

AFFILIATIONS

Geoprofessional Business Association
American Society of Civil Engineers
Engineer's Association of Nevada County
Association of Drilled Shaft Contractors
Placer Architects, Geologists, Engineers, and Surveyors

Jason W. Muir, PE, GE

Manager, Environmental Division
Associate Engineer

Mr. Muir is a California registered Civil Engineer and Geotechnical Engineer and holds a Master of Science in Environmental Engineering from the University of California at Berkeley. He has been in the industry for 23 years.

His professional background includes hazardous materials site characterization, risk assessment and remediation under CERCLA, mine permitting and reclamation under SMARA, and water quality evaluation and permitting under the California Water Code and Title 27. Mr. Muir performs predictive human health and ecological risk assessment to support hazardous materials site characterization and remediation.

Mr. Muir has provided characterization, risk assessment, remedial design and/or quality assurance for over three dozen sites regulated by the California Department of Toxic Substances Control (DTSC). He and his team have characterized abandoned mine lands totaling over 3,000 acres in northern California, and they have participated in eight USEPA Brownfield assessment and cleanup projects.

He and his team have performed more than 500 Phase I/II environmental site assessments including municipal, commercial, and transportation improvement projects, characterizing and mitigating environmental conditions related to hydrocarbon and solvent releases, unpermitted waste disposal sites, abandoned mine features, underground storage tanks, lead-containing paint, naturally occurring asbestos, aerially deposited lead and pesticide residuals pursuant to local, state, and federal guidelines.

Mr. Muir also performs geotechnical investigation; earth dam and waste containment design; landfill and mine permitting; reclamation planning; water quality monitoring, reporting and permitting; development of waste discharge requirements and water quality protection standards; storm water permitting; spill prevention, control and cleanup planning; and management of construction quality assurance and construction materials testing.

Project Experience

MALAKOFF DIGGINS STATE HISTORIC PARK, SEDIMENT AND MERCURY ABATEMENT INITIATIVE

Nevada County, California

Project manager for engineering evaluation of sediment and mercury control at Malakoff Diggins State Historic Park for a 330-acre hydraulic mining pit. Evaluated passive technologies including surface water interception and diversion, sediment retention, saddle dam construction and outlet design. Work was performed for The Sierra Fund and in conjunction with USGS. Current work at the site includes hazardous materials site characterization and surface water monitoring as a subconsultant to Golder Associates on behalf of the California Department of Parks and Recreation.

SR 49 DORSEY DRIVE INTERCHANGE

Grass Valley, California

Managed hazardous materials Phase II site characterization for heavy metals and obtained DTSC and county health department approval for this award-winning project. The project included construction of northbound and southbound on- and off-ramps from SR 49; re-alignment of an existing frontage road; and extensive cuts and fills up to 65 feet in height.

DTSC BEAR RIVER MILL SITE RDIP

Grass Valley, Ca

Currently project manager for site characterization and preparation of Remedial Design and Implementation Plan (RDIP) for approximately 15,000 cubic yards of mine waste rock and tailings to be consolidated at the former Bear River Sawmill site located centrally within the property. Previously developed land use controls and obtained DTSC certification for southern portion of the property on behalf of the County of Nevada, and performed a geotechnical engineering investigation for the proposed Nevada County Operations Center currently under design. Previously obtained DTSC certification for industrial use of the eastern and western portions of the property on behalf of Golder Associates.

DTSC/USEPA YUBA RIVER CHARTER SCHOOL HAZARDOUS MATERIALS ASSESSMENT AND CLEANUP

Grass Valley, California

Principal-in-charge and project manager for site characterization, risk assessment and remedial action planning related to an unpermitted disposal site. Site investigation, risk assessment and Removal Action Work Plan (RAW) were approved by DTSC for a new elementary school campus. The approved cleanup plan facilitated the award of a USEPA Brownfield cleanup grant of $600,000. Cleanup was performed in 2015. Performed remediation construction management and quality assurance, and the property was certified by DTSC for school construction. Currently managing construction materials testing for the new school.

USEPA BROWNFIELD ASSESSMENTS, STILES MILL AND PROVIDENCE MINE

Nevada City, CA

Performed predictive human health risk assessment of the historic Stiles Mill site and Providence Mine site, located on Deer Creek in Nevada City. The HHRAs supported two USEPA Brownfield cleanups that were performed in 2014 and 2015. The HHRAs were approved by USEPA with no revisions required. Third HHRA for Providence Quartz Mill Site is currently under review by DTSC.

DEER CREEK/STOCKING FLAT EE/CA

Nevada City, California

Project manager for site investigation related to an Engineering Evaluation/Cost Analysis (EE/CA) and Human and Ecological Risk Assessment (HERA) performed on behalf of the United States Bureau of Land Management (BLM). The assessment included characterization of hard rock and placer mine waste deposits, surface water quality, and sediment impact related to mercury and methylmercury. Work was performed in conjunction with USGS and URS Group.

USEPA BROWNFIELD CLEANUP DESIGN, SOUTH AUBURN STREET PROPERTIES

Grass Valley, California

Conducted hazardous materials site investigation (SI) to characterize heavy metals including mercury in a proposed residential area and wetland impacted by 16,000 cubic yards of mine tailings, as well as historical aerial deposition of contaminants from nearby historical milling processes. Services included SI, human health risk assessment (HHRA), ecological scoping assessment (ESA), ecological predictive assessment (PA) and validation study, and preparation of a cleanup plan (RAW).

USFS PITTSBURG-LIBERTY MILL SITE

Mono County, California

Project manager responsible for Integrated Site Assessment (ISA) of a former mill site associated with the Pittsburg-Liberty gold mine on behalf of the USDA Forest Service Region 4. The assessment included characterization of 30,000 cubic yards of processed mine tailings containing mercury, arsenic, and other heavy metals and an assessment of water quality impact.

DTSC SPRING HILL MINE

Grass Valley, Ca

Project manager responsible for a PEA and RAW approved by DTSC for the consolidation and capping of 60,000 cubic yards of mill tailings associated with a former tailings pond and associated mine waste rock. The approved cleanup plan allows most of the mine waste to be used as engineered fill for a proposed commercial center, while a portion of the tailings will be removed and disposed as Class I hazardous waste.

COMBIE RESERVOIR SEDIMENT AND MERCURY REMOVAL PROJECT

Meadow Vista, California

Performed the technical antidegradation analysis in 2012 on behalf of The Sierra Fund to facilitate project permitting by the California Regional Water Quality Control Board (CRWQCB). Project manager for sediment characterization performed in 2016 and 2017 on behalf of Nevada Irrigation District, including the development and oversight of an exploratory drilling and laboratory analysis program for total mercury, methylmercury and CAM 17 metals, technical review of laboratory data, data evaluation for quality control, and preparation of a technical summary report. Project manager for three-year sediment and mercury removal project, including oversight of permitting and regulatory compliance, water quality monitoring, performance monitoring and reporting.

MEADOW VISTA LANDFILL

Placer County, California

CQA engineer during landfill closure activities. Revised design of leachate collection and recovery system and facilitated improvements to gas extraction system, storm drain system and joint trench hydrostatic pressure release.

McCOURTNEY ROAD LANDFILL

Nevada County, California

Project manager for CM and CQA during facility improvements, including earthwork repairs and pump station installation, as well as post-closure monitoring and maintenance of the facility. Prepared Report of Waste Discharge and negotiated a reduction in leachate and groundwater monitoring during update of Waste Discharge Requirements. Prepared Final Closure Plan for surface impoundment and Post Closure Maintenance Plan for landfill units. Supervised settlement surveys and prepared liner repair plans and specifications to address settlement issues. Evaluated anomalous constituent concentrations in groundwater considering the interaction with landfill gas and leachate constituents. Performed hydrogeologic evaluation regarding drawdown in adjacent wells resulting from groundwater extraction at the facility. Project engineer for closure of two landfill units.

RIDGE ROAD REHABILITATION PROJECT

Sierra County, CA

Project manager in charge of hazardous materials Initial Site Assessment (ISA) and Site Investigation (SI) (Phase I/II Environmental Site Assessment) under Caltrans review for a 2.6-mile road improvement project in Sierra County. SI included soil sampling and analysis along the improvement corridor for aerially deposited lead (ADL), naturally occurring asbestos (NOA) and targeted assessment for historical mine features. Classified soil pursuant to Caltrans guidelines and provided management alternatives.

WATER QUALITY, MINING AND WASTE MANAGEMENT

Northern California

Project manager for the waste characterization and waste discharge requirements under Title 27 for numerous surface mines and waste management units in northern California. Working closely with the California Regional Water Quality Control Board, Mr. Muir has permitted mine sites and solid waste facilities in the counties of Calaveras, Nevada, Placer, Sierra, Siskiyou, and Yuba.

SIERRA COLLEGE EXPANSION PROJECT

Grass Valley, Ca

Project manager for the Phase I/II environmental site characterization associated with a Mitigated Negative Declaration for expansion of Sierra College's 100-acre Nevada County campus. Recognized environmental conditions included past waste management practices, lumber drying, and agricultural pesticide application

DTSC KEMPER ROAD SUBDIVISIONS

Auburn, Ca

Project manager for PEAs related to three proposed subdivisions and former orchard properties on Kemper Road in Auburn, California. DTSC granted "No Further Action" for two of the properties and approved a cleanup plan (RAW) for the third property.

Nevada City, California
Julie.Turnross@NV5.com
530.478.1305

EDUCATION

M.S. Engineering Geoscience, University of California, Berkeley
B.S. Geoscience, University of Arizona, Tucson

EXPERTISE

Groundwater hydrogeology
Environmental characterization
Soil/groundwater remediation
Phase I environmental site assessments
Remedial investigations
Feasibility studies
Risk characterizations

JULIE TURNROSS

Hydrogeologist

Ms. Turnross has over 30 years of experience serving in technical and management capacities on a variety of projects in the areas of groundwater hydrogeology, environmental characterization, and soil/groundwater remediation. Joining the NV5 team in 2018, her projects have included Phase I environmental site assessments, remedial investigations, feasibility studies, risk characterizations, and implementation of remedial alternatives at the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), and other facilities with soil, groundwater, surface water, and air contamination. Specialties include project strategy and scope of work development, integration of remedial strategies with property redevelopment, property and transfer and redevelopment guidance, providing review services and settlement support to insurance carriers regarding environmental matters, project and multi-disciplinary team management, and Environmental Impact Report (EIR) support.

Ms. Turnross has provided litigation support and peer review for a wide variety of cases, and has served as an expert witness. She has also worked extensively with regulatory agencies throughout California and the west coast. Prior to joining NV5, Ms. Turnross worked for various companies including Treadwell and Rollo, Harding Lawson Associates, the U.S. Geological Survey, Lawrence Berkeley Laboratory, and ARCO Exploration Company.

Project Experience

PROPERTY ACQUISITION STUDY

RANCHO CORDOVA, CA

Hydrogeologist responsible for the evaluation acquisition of a property located between two Superfund sites. Ms. Turnross' activities included the evaluation of adequacy of groundwater investigations in the property vicinity, Superfund remedy efficacy, potential residual contamination in soil as a result of declining water levels, and effect of land use controls on future site developments.

POLYCHLORINATED BIPHENYL (PCB) SOURCE EVALUATION

RICHMOND, CA

Hydrogeologist in charge of evaluating known and potential historical PCB uses and tidal flow patterns to identify potential sources of PCBs in slough sediments at an East Bay site. Investigations included review of historical investigations performed in the site vicinity, identification of existing and historical storm sewers and surface runoff pathways to evaluate potential stormwater runoff discharges to the slough in the vicinity of current and historical sites with PCB uses.

NAVAL SHIPYARD PROPOSED REDEVELOPMENT

SAN FRANCISCO, CA

Hydrogeologist responsible for providing environmental, technical, and regulatory consulting services to developer to support early transfer of former U.S. Navy shipyard in San Francisco, California being remediated under the CERCLA program. Ms. Turnross conducted technical reviews of U.S. Navy documents to evaluate remedial design selection and risk assessment, developed risk management plan strategy and remedial scope of work for early transfer process, and directed costing of remedial alternatives. Ms. Turnross supported transfer documentation, including Finding of Suitability for Lease, and Finding of Suitability to Transfer, Lease in Furtherance of Conveyance. Ms. Turnross involved regulatory agencies including the U.S. Environmental Protection Agency (EPA), the Department of Toxic Substances Control (DTSC), the Regional Water Quality Control Board (RWQCB), and the California EPA.

THIRD PARTY REVIEW OF FORMER NAVAL SHIPYARD

VALLEJO, CA

Hydrogeologist in charge of providing review of environmental documents to evaluate performance of guaranteed fixed price remediation and verify compliance with environmental insurance policy restrictions and requirements on behalf of an insurance company. Ms. Turnross' remedial activities evaluated included soil and sediment excavation, treatment, disposal, in-situ stabilization, soil vapor extraction, enhanced bioremediation, and capping. Ms. Turnross evaluated reasonableness and necessity of activities and costs.

BROWNFIELD REDEVELOPMENT

SAN FRANCISCO, CA

Hydrogeologist responsible for providing environmental consulting services to support a client's legal counsel, address special requests for information from project stakeholders, and present information at planning and technical meetings as part of ongoing redevelopment of developer-owned portion of former U.S. Navy Shipyard located in San Francisco, California. Ms. Turnross provided review of and recommendations on environmental documents. She also provided oversight for asbestos and dust monitoring activities, including negotiations with regulatory agencies and coordination with the public.

PHASE I ENVIRONMENTAL SITE ASSESSMENTS

VARIOUS LOCATIONS, U.S.

Hydrogeologist in charge of performing or managing over 500 Phase I Environmental Site Assessments using ASTM International standards. Clients have included lending institutions, real estate developers, insurance companies, law firms, and property owners. Some of the properties assessed have included manufacturing facilities, industrial sites, agricultural properties, office buildings, residential properties, and shopping centers. Ms. Turnross specialized in properties with complex hazardous material uses and historical or current contamination issues. She also provided recommendations to facilitate real estate transactions, including insurance acquisitions.

ENVIRONMENTAL IMPACT REPORT (EIR)

SAN FRANCISCO, CA

Hydrogeologist responsible for assisting in preparation of environmental and hazardous materials portions of EIR for large commercial and residential redevelopment on a CERCLA site. Since remediation wasn't complete when the EIR was being prepared, demonstration of the efficacy of selected remedies was required.

TECHNICAL ADVISOR

MORGAN HILL, CA

Hydrogeologist in charge of providing technical advice, review, and support for a multi-aquifer perchlorate investigation and remediation located in Morgan Hill, California. Ms. Turnross provided oversight of onsite and offsite ion-exchange treatment systems, bottled water supply program, and offsite investigations. Technical issues at the site included the evaluation of potential offsite sources of contamination, background contaminant levels, and effects of imported water on groundwater flow.

DRY CLEANER INVESTIGATION

TURLOCK, CA

Hydrogeologist responsible for providing litigation support for a case where a private well had been contaminated with dry cleaning solvents. Ms. Turnross identified other potential sources of contamination, including municipal utilities, and reviewed results of investigations performed at the dry cleaning facility and other nearby sites.