

SOIL MANAGEMENT PLAN
for
The Grove at Nevada City
Nevada City Tech Center
Nevada City, California

Prepared on behalf of:
Nevada City Tech Center
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Project No. 3006B-02
January 20, 2014



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County of Nevada
Community Development Agency
Environmental Health Department
950 Maidu Avenue
Nevada City, California 95959

Attention: Mr. Grant Eisen

Reference: *The Grove at Nevada City*
Nevada City Tech Center
Nevada City, Nevada County, California

Subject: *Soil Management Plan*

Dear Mr. Eisen:

On behalf of Nevada City Tech Center, Holdrege & Kull prepared this plan to describe procedures for soil management to be used during development of The Grove at Nevada City, a proposed residential area associated with the Nevada City Tech Center campus.

This plan outlines procedures for management of soil with naturally-occurring metals concentrations that are slightly above typical background concentrations for the local area. The procedures are intended to reduce the chance of future contact with the slightly mineralized soil by excavation of the soil from the proposed development area and placement of the soil as deep, engineered fill beneath a paved roadway that is to be constructed as part of the proposed development. Because only low concentrations of metals have been detected, no off-site disposal is proposed. An estimated 1,710 cubic yards of soil will be managed within the subject property. The location of the engineered fill will be recorded with the County of Nevada.

Please contact the undersigned with any comments or questions regarding the procedures outlined in this plan.

Sincerely,

HOLDREGE & KULL

A handwritten signature in blue ink, appearing to read 'Jason W. Muir', is written over the company name and partially over the professional engineer seals.



Jason W. Muir, C.E. 60167, G.E. 2697
Principal Engineer

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LIST OF ACRONYMS

APN	Assessor's Parcel Number
ARAR	Applicable or relevant and appropriate requirement
bgs	Below the ground surface
BMP	Best Management Practice
Ca/EPA	California Environmental Protection Agency
CCR	California Code of Regulations
CFR	Code of Federal Regulations
CHHSL	California Human Health Screening Level
COPC	Constituent of Potential Concern
CRWQCB	California Regional Water Quality Control Board
DMP	Dust Mitigation Plan
DTSC	California Department of Toxic Substances Control
EPA	United States Environmental Protection Agency
H&K	Holdrege & Kull
HSC	California Health and Safety Code
HSP	Health and Safety Plan
mg/kg	Milligrams per kilogram
NCEHD	Nevada County Environmental Health Department
O&M	Operation and maintenance
OSHA	Occupational Safety and Health Administration
RCRA	Resource Conservation and Recovery Act
TTLC	Total Threshold Limit Concentration
UCL	Upper Confidence Limit
USGS	United States Geological Survey

EXECUTIVE SUMMARY

Holdrege & Kull (H&K) prepared this plan to describe procedures for management of naturally mineralized soil during development of The Grove at Nevada City, a proposed residential area associated with the Nevada City Tech Center campus.

The approximately 15-acre development area (the Site) comprises a portion of Nevada County Assessor's Parcel Number (APN) 05-190-53, and is located east of an existing graded road and west of the Tech Center campus in Nevada City, California. A vicinity map and site map are presented as Figure 1, which was prepared by KPFF Consulting Engineers (September 2013).

H&K's previous investigation of the property is summarized in our *Preliminary Soils Report for Nevada City Tech Center Housing Area* (July 26, 2010). The investigation identified surficial disturbance from shallow prospecting, as well as three mine shafts that are depicted on Figure 1. Slightly elevated concentrations of arsenic and lead were detected in soil near the three mine shafts, which are referenced herein as the Crosby, Williams and New Shaft locations.

This plan outlines procedures for management of naturally mineralized soil at the Crosby, Williams and New Shaft locations. The procedures are intended to reduce the chance of contact with the soil by future residents, visitors or workers.

The Crosby and Williams locations are within the proposed development area. Therefore, naturally mineralized soil at these locations is to be placed as deep, engineered fill beneath a paved roadway that is to be constructed as part of the proposed development. The location of the engineered fill is to be recorded with the County of Nevada so that future disturbance of the soil can be avoided. An estimated 1,710 cubic yards of soil will be managed within the subject property.

The New Shaft location is a steep, densely vegetated area between the proposed development area and Providence Mine Road. Soil with slightly elevated metals concentrations is to remain in place at the New Shaft location, and the location is to be recorded with the County of Nevada so that future soil disturbance can be avoided.

This management plan includes:

- A summary of the results of previous soil sampling and laboratory analysis;
- Procedures for soil excavation, transport, placement, compaction, and covering;
- Dust control and monitoring procedures to be used during soil management;

- Soil sampling and analysis procedures to verify that the slightly elevated metals concentrations have been removed from the proposed development area;
- Recommendations for recordation of the soil placement location; and
- Operation and maintenance procedures, should disturbance of the soil be necessary in the future.

Geotechnical engineering recommendations pertaining to the mine features identified within the proposed development area are presented under separate cover.

This management plan establishes numerical cleanup goals for arsenic and lead in soil:

Soil Cleanup Goals for Unrestricted Re-Use

Constituent	Cleanup Goal	Reference
Total Arsenic	17 mg/kg	95 th percentile, regional background
Total Lead	80 mg/kg	Residential CHHSL

CHHSL = California Human Health Screening Level
mg/kg = milligrams per kilogram

A Dust Mitigation Plan (DMP) is appended to this management plan, and is intended to reduce the potential for exposure to naturally-occurring metals in soil during the soil management activities. The DMP outlines engineering controls to be implemented during mechanical soil disturbance. Mechanical soil disturbance includes construction activities such as excavation, transport, grading, fill placement and underground utility work.

In addition to following the specific soil management procedures approved by the Nevada County Environmental Health Department (NCEHD), the contractor selected to construct the Project must also develop a site specific health and safety plan to protect their workers, site visitors, and neighbors from potential exposure to metals in soil during the Project.

Upon completion of the soil management activities, a report is to be prepared documenting compliance with this management plan and presenting the results of verification soil sampling and analysis.

1 INTRODUCTION

At the request of Nevada City Tech Center, Holdrege & Kull (H&K) prepared this management plan to outline soil management procedures to be employed during construction of The Grove at Nevada City (the Project) located in Nevada City, California. H&K's services were performed in general accordance with our proposal dated October 7, 2013.

1.1 BASIS FOR SOIL MANAGEMENT PLAN

This management plan was prepared pursuant to Section 25356.1.5 of the California Health and Safety Code (HSC) and the findings of the site characterization (H&K, 2010).

1.2 PURPOSE OF SOIL MANAGEMENT PLAN

This plan was prepared to establish general management practices and screening criteria for naturally mineralized soil. The management practices and screening criteria set forth in this plan are to be reviewed by the Nevada County Environmental Health Department (NCEHD) and implemented under NCEHD oversight. This plan does not address worker safety and other jobsite safety issues, which are to be addressed by a health and safety plan prepared by the contractor selected to construct the Project.

1.3 ORGANIZATION OF THIS DOCUMENT

Pursuant to Section 25323.1 of the HSC, this plan describes the mineralized soil identified on the property, the proposed soil management activities, the goals to be achieved by the soil management, and the rationale for consideration of alternative management options. This plan is organized in the following sections:

1. Introduction. Includes an overview of the soil management activities and associated regulations, organization of the plan, and project goals and objectives.
2. Site Characterization. Includes description of the subject property, ownership information and soil characterization activities.
3. Soil Management Objectives. Includes a discussion of regulations; identification and review of applicable or relevant and appropriate requirements (ARARs); identification of media and constituents of concern, volume estimates prepared by others, and soil management goals.

4. Evaluation of Alternatives. Includes a listing of alternative soil management measures and basis for selection of the recommended measures.
5. Health and Safety. Health and safety will be the responsibility of the contractor selected to construct the Project.
6. Soil Management Procedures. Includes a description of techniques and methods to be employed for soil management, including excavation, transport within the property, placement and compaction, and reporting.
7. Operation and Maintenance Procedures. Describes procedures for periodic inspection of the soil placement area and provisions for future intrusive work, if necessary.

1.4 LIMITATIONS AND EXCEPTIONS

The information provided in this plan is not meant to be comprehensive, to identify all potential concerns, or to eliminate the risk associated with environmental conditions. H&K used professional judgment and experience to arrive at the conclusions presented herein. Therefore, the conclusions are not to be considered scientific certainties. The recommendations provided herein are contingent upon H&K's review of future sampling results and any other pertinent information that becomes available.

No environmental assessment can eliminate all uncertainty. H&K does not warrant the accuracy of information supplied by others, or the use of segregated portions of this plan. Furthermore, the concentrations detected in the samples collected during the site investigation may not be representative of conditions between the locations sampled. Other forms of contamination may be present within the site that the investigation did not detect. Professional judgment and interpretation are inherent in the process and uncertainty is inevitable. Therefore, the recommendations presented in this plan may need to be revised based on site conditions encountered during the soil management.

H&K prepared and issued this plan for the exclusive use of our client. Any reliance on this plan by a third party is at the party's sole risk. H&K is not responsible for any other party's interpretations of the reported information.

H&K performed this work in accordance with present, regional, generally accepted standards of care. This report does not represent a legal opinion. No warranty, expressed or implied, including any implied warranty of merchantability or fitness for the purpose is made or intended in connection with the work.

The findings of this report are valid as of the present date. However, changes in the conditions of the property can occur with the passage of time. The changes may be due to natural processes or to the works of man, on the project site or adjacent properties. Changes in regulations, interpretations, and/or enforcement policies may occur at any time. Such changes may affect the extent of mitigation required.

If changes are made to the nature or design of the Project as described in this plan, then the conclusions and recommendations presented in this plan should be considered invalid by all parties. Only H&K can determine the validity of the conclusions and recommendations presented in this plan. Therefore, H&K should be retained to review all project changes and prepare written responses with regards to their impacts on H&K's conclusions and recommendations.

H&K is not responsible for the health and safety of non-H&K personnel, on or off the project site. The contractor is responsible for work site conditions.

2 SITE CHARACTERIZATION

2.1 SITE LOCATION AND DESCRIPTION

The approximately 15-acre development area comprises a portion of Nevada County Assessor's Parcel Number (APN) 05-190-53, and is located immediately east of an existing graded road and west of the Tech Center campus in Nevada City, California. The property is located in the northwest quarter of Section 13, Township 16 North, Range 8 East based on the Mount Diablo geodetic datum. A vicinity map and site map are presented as Figure 1, which was prepared by KPFF Consulting Engineers (September 2013).

2.2 SITE HISTORY

The subject property is located within the historic Nevada City gold mining district, on the southern edge of the Champion group of mines. A review of historical mining maps identified three inclined shafts at the site, several spoils piles, and evidence of near-surface prospecting.

2.3 PROPOSED IMPROVEMENTS

The Project includes the development of a residential area adjacent to the existing Tech Center campus. A tentative map, prepared by KPFF Consulting Engineers (September 2013), is presented as Figure 1.

2.4 PHYSICAL SETTING

The subject property is situated in the Sierra Nevada physiographic province at elevations ranging from approximately 2,460 to 2,600 feet above mean sea level. The southern portion of the property is relatively flat-lying, while other portions of the site slope moderately to steeply towards Peck Ravine. Regional native vegetation typically includes mixed conifer and oak woodlands.

2.4.1 Geologic Conditions

According to Lindgren (1896), the property is located on a narrow belt of Calaveras slate bounded by diabase (to the southwest) and granodiorite (to the northeast). Clark (1998) describes the geology as slate, schist and quartzite located between greenstone and amphibolite to the southwest and granitic rocks to the northeast. Several gold-bearing quartz veins are mapped near these geologic contacts, one of which strikes southeast across the property and dips toward the northeast.

2.4.2 Groundwater Conditions

H&K did not perform a groundwater investigation at the subject property. In many cases in the foothills region, groundwater is controlled by bedrock fractures. In other cases, groundwater may lie in perched zones above resistant rock or impermeable soil. This results in groundwater depths and conditions that are difficult to predict without performing hydrogeologic investigation.

2.4.3 Surface Water Conditions

The property is located on and near the banks of Peck Ravine, an ephemeral drainage course, approximately 1,500 feet south of Deer Creek. Property elevations range from approximately 2,460 to 2,600 feet above mean sea level. The southern portion of the property is relatively flat-lying, while other portions of the site slope moderately to steeply towards Peck Ravine.

2.5 SUMMARY OF PREVIOUS SOIL CHARACTERIZATION

H&K's previous investigation of the property is summarized in the *Preliminary Soils Report for Nevada City Tech Center Housing Area* (H&K; July 26, 2010). The investigation included records review, surface reconnaissance, soil sampling and laboratory analysis.

Twenty discrete soil samples obtained from the property were analyzed for total arsenic, lead and mercury by SunStar Laboratories, Inc. (ELAP No. 2250) of Lake Forest, California. Total arsenic and lead were analyzed by US EPA Method 6010B, and total mercury was analyzed by US EPA Method 7471A. H&K's 2010 report describes the sampling, analysis and quality control procedures. Sample locations are depicted on Figure 2, laboratory results are summarized in Table 1, photos of the sampling event are presented as Appendix A, and the laboratory report is presented as Appendix B.

2.5.1 Development Area Soil

Twelve soil samples were obtained from the proposed development area at locations where no soil management is proposed. In the twelve soil samples, total arsenic concentrations ranged from less than 5 milligrams per kilogram (mg/kg) to 26 mg/kg, total lead ranged from less than 3 mg/kg to 22 mg/kg, and total mercury ranged from less than 0.1 mg/kg to 0.16 mg/kg. Results are discussed below.

Arsenic

H&K used ProUCL software (Version 5.0; EPA, September 2013) to estimate an upper confidence limit (UCL) on the arithmetic mean of soil arsenic concentrations

detected in the proposed development area. This analysis yielded a 95% UCL of 12.6 mg/kg, which is within the range of local background concentrations described in Section 2.5.5. Results of the analysis are presented in Appendix C.

The detected soil arsenic values are higher than the California Human Health Screening Level (CHHSL; 0.07 mg/kg) for arsenic in residential soil, which is not uncommon for the Sierra Nevada foothills region and in other parts of California. Soil arsenic concentrations in local background soil typically range up to approximately 17 mg/kg, as discussed below in Section 2.5.5.

The CHHSL value corresponds to a theoretical one-per-million cancer incidence based on routine, long-term exposure to soil, including ingestion, dermal contact and inhalation of soil dust. The CHHSL conservatively assumes that arsenic in soil is 100 percent available for human uptake. Research pertaining to the actual availability of arsenic in soil is currently being performed by the California EPA.

Lead

The detected soil lead concentrations in the twelve soil samples obtained from the proposed development area are lower than the CHHSL for lead in residential soil (80 mg/kg) and the Total Threshold Limit Concentration (TTLC) for lead (1,000 mg/kg).

Mercury

The detected soil mercury concentrations in the twelve soil samples obtained from the proposed development area are lower than the CHHSL for mercury in residential soil (18 mg/kg) and the TTLC for mercury (20 mg/kg).

2.5.2 Williams Location Soil

Two soil samples were obtained from stockpiles at the Williams location, representing approximately 350 cubic yards of soil. Total arsenic concentrations ranged from 34 to 37 mg/kg, total lead ranged from 23 to 300 mg/kg, and total mercury ranged from 0.11 to 0.2 mg/kg. Because arsenic concentrations exceed local background values, and because one of the lead concentrations exceeds the CHHSL, this soil is to be used as deep road fill to reduce the chance of future contact with the soil.

2.5.3 Crosby Location Soil

Three soil samples were obtained from a stockpile at the Crosby location, representing approximately 1,360 cubic yards of soil. Total arsenic concentrations

ranged from 17 to 34 mg/kg, total lead ranged from 19 to 44 mg/kg, and total mercury ranged up to 0.1 mg/kg. Because some of the detected arsenic concentrations exceed local background values, this soil is to be used as deep road fill to reduce the chance of future contact with the soil.

2.5.4 New Shaft Location Soil

Three soil samples were obtained from the New Shaft location, which comprises a steep, densely vegetated area located west of the proposed development area and east of the adjacent graded road. Total arsenic concentrations ranged from less than 5 mg/kg to 29 mg/kg, total lead ranged from 11 to 140 mg/kg, and total mercury ranged up to 0.13 mg/kg. Because some of the detected arsenic concentrations exceed local background values, and because one of the lead concentrations exceeds the CHHSL, this area is to remain as open space, and future soil disturbance is to be prohibited.

2.5.5 Local Background Soil Arsenic Concentrations

In the Nevada City and Grass Valley area, arsenic is known to occur in soil at concentrations exceeding typical regulatory benchmarks for arsenic in residential soil. Therefore, a discussion of regional background soil arsenic concentrations is informative with respect to risk management decisions involving arsenic in soil.

H&K compiled background soil arsenic data for eight local assessments performed under the Cal-EPA Department of Toxic Substances Control (DTSC) Voluntary Cleanup Program, including the Spring Hill, North Star, Kenny Ranch, Winds Aloft, Osborne Hill, Loma Rica, La Barr Meadows and Bear River Mill properties. Background arsenic data are presented in Appendix D. DTSC has reviewed and approved the investigation reports for which the background data were obtained.

The 208 local background arsenic concentrations, listed in Table 1 of Appendix D, range from non-detect to 48 milligrams per kilogram (mg/kg). The mean is 5.3 mg/kg, the standard deviation is 6.9 mg/kg and the coefficient of variation is 1.3. Descriptive statistics for the non-transformed and base 10 log-transformed data are presented in Appendix D.

The DTSC (1997, 2007) provides a framework in which risk assessors may identify background arsenic concentrations. Based on these guidance documents, visual and statistical evaluation of the regional background arsenic data were performed as described below.

Microsoft Excel Analyze-it™ version 1.73 was used to prepare normality plots of the non-transformed and log-transformed data. The plots are presented in Appendix D, and descriptive statistics are summarized in Tables 2 and 3 of Appendix D. The non-transformed data are clearly not normal, as is often the case with trace metals. Although the log-transformed data generally display a linear distribution, the log-transformed data are not normally distributed based on the Shapiro-Wilk normality test. The coefficient of variation, as well as gaps and inflections observed in the log-transformed data, attest to the fact that the data were obtained from different sites and different geologic units.

With the exception of the Winds Aloft site, the eight background data locations share similar geology. Published geologic descriptions generally indicate that the sites are underlain by quartz diorite, diabase and/or ultramafic rock, as plotted on the QAP diagram presented as Figure 1 in Appendix D. The QAP in Figure 1 is a simplified depiction of the compositional ratio of quartz (Q), alkali feldspar (A), and plagioclase feldspar (P) in igneous plutonic rocks mapped at seven of the eight locations. Specific geologic descriptions are presented in Table 4 of Appendix D.

Outlying data were evaluated using the fourth spread procedure described by DTSC (2007). The fourth spread, f_s , is defined as the measure of spread in a data set that is resistant to outliers and is calculated according to the following equation: $f_s = Q_3 - Q_1$. By definition, any observation farther than $1.5f_s$ from the closest fourth is considered an outlier. For the log-transformed data set, $1.5f_s$ is equal to 1.25, and any observation below $Q_1 - 1.5f_s$ or above $Q_3 + 1.5f_s$ would be considered an outlier. By this method, none of the data were determined to be outliers.

The 95th percentile value for the local background arsenic data set is 17 mg/kg. This value may be considered a background threshold value representing local background soil arsenic concentrations.

3 SOIL MANAGEMENT OBJECTIVES

3.1 OVERVIEW

This section is intended to describe the constituents and media of concern, potential exposure pathways, and soil management goals; to establish acceptable exposure levels that are protective of human health and the environment; and to consider potentially applicable environmental regulations.

3.2 ARARs

Applicable or Relevant and Appropriate Requirements (ARARs) include federal, state, and local environmental laws, regulations, and standards that can be chemical-specific, location-specific, or action specific. Chemical-specific ARARs are health-based or environmentally-based numerical limits. Location-specific ARARs may pertain to environmentally sensitive or historically significant areas. Action-specific ARARs may pertain to specific procedures or byproducts of a procedure.

3.2.1 Chemical-Specific ARARs

Resource Conservation and Recovery Act (RCRA)

RCRA Subtitle C, contained in 40 CFR, pertains to the characterization of hazardous waste. The laboratory data indicate that the soil to be managed would not likely be classified as hazardous waste with respect to the constituents analyzed. Therefore, RCRA Subtitle C is not considered to be applicable.

California Code of Regulations (CCR) Title 22

Section 66261 of CCR Title 22 pertains to the characterization of hazardous waste. The existing laboratory data indicate that the soil to be managed would not likely be classified as hazardous waste with respect to the constituents analyzed. Therefore, this section of CCR Title 22 is not considered to be applicable.

California Human Health Screening Levels (CHHSLs)

CHHSLs established by Cal/EPA are applicable to the proposed soil management activities as a screening tool. Arsenic concentrations, and some lead concentrations, detected at the site exceed the CHHSL values for arsenic and lead in soil. The management of arsenic in soil is typically based on background concentrations because background soil arsenic concentrations commonly exceed the CHHSL for arsenic.

California Water Code

Division 7 of the California Water Code establishes priorities for the California Regional Water Quality Control Board (RWQCB). RWQCB guidance and numerical limits are presented in various documents. The RWQCB Basin Plan, Designated Level Methodology for Waste Classification and Cleanup Level Determination, Antidegradation Policy, and A Compilation of Water Quality Goals establish policies, procedures and numerical limits for protection of surface water and groundwater quality. Given the relatively low concentrations of naturally-occurring metals in the soil, H&K's opinion is that water quality impact is not likely because the metals are relatively immobile in soil and best management practices for erosion control are to be implemented during the Project.

3.2.1 Location-Specific ARARs

National Historic Preservation Act

The National Historic Preservation Act, as set forth in Sections 65 and 800 of CFR Title 36, pertains to cultural resources and historic sites. H&K understands that the proposed improvement project is not expected to result in the disturbance of significant cultural resources or historic sites.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act, as set forth in Section 6.302 of CFR Title 40, pertains in part to wetlands protection and flood management. H&K understands that the construction Project has been designed with consideration of these regulations.

Clean Water Act

The Clean Water Act, as set forth in Section 230 of CFR Title 40, pertains to flood-prone areas and wetlands. H&K understands that the construction Project has been designed with consideration of these regulations.

3.2.3 Action-Specific ARARs

Air Resources Board Regulation 93105

Under California law, disturbance of soil and rock that contains ultramafic rock, serpentinite or naturally occurring asbestos (NOA) minerals must be handled as described in Cal/EPA Air Resources Board Regulation 93105, *Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations*. Based on the geology of the site, as described in the geotechnical

engineering report under separate cover, NOA does not likely occur at the site. This management plan includes a dust control plan.

3.2 MEDIA AND CONSTITUENTS OF CONCERN

The medium of concern at the site is soil, and the constituents of potential concern (COPCs) are naturally-occurring metals (arsenic and lead). Potential exposure pathways include dermal absorption through direct contact, incidental ingestion, and inhalation of soil dust.

3.3 VOLUME ESTIMATE

KPFF Consulting Engineers estimated that approximately 1,710 cubic yards of soil will be excavated from the Williams and Crosby locations and transported to an adjacent road fill within the Project site. This volume estimate includes an estimated 350 cubic yards of soil from the Williams location and an estimated 1,360 cubic yards of soil from the Crosby location.

3.4 SOIL MANAGEMENT GOALS

The goal of the soil management activities is to place the soil as engineered fill beneath a proposed paved roadway in accordance with the following restrictions:

- Covered with at least one foot of clean soil, baserock and pavement;
- Outside of areas that are to contain underground utilities;
- Outside of areas that may contact groundwater or surface water;
- At locations that are protected from erosion; and
- Above the highest groundwater elevation.

4 EVALUATION OF SOIL MANAGEMENT ALTERNATIVES

H&K reviewed potentially applicable alternative soil management methods, including no management, onsite placement, and off-site disposal. The three alternatives were reviewed with respect to effectiveness, implementability and cost. The evaluation is summarized below. On-site soil placement is the preferred soil management method.

Alternative	Effectiveness	Implementability	Cost
No Management	Does not provide adequate protection of human health.	Administratively infeasible.	No direct costs, unknown future costs.
On-Site Placement	Burial and cover effectively eliminates potential exposure pathways. Short-term impacts reduced by provisions set forth in DMP and contractor's health and safety plan.	Readily implemented. Labor, material and equipment readily available. Requires cover with clean soil and pavement to reduce the chance of future contact.	Low direct costs associated with excavation, dust control, placement, compaction and quality assurance.
Off-Site Disposal	Landfill disposal effectively reduces the chance of future contact. Short-term impacts reduced by provisions set forth in DMP and contractor's health and safety plan.	Readily implemented. Labor, material and equipment readily available.	High direct costs associated with landfill disposal, estimated to be \$50 to \$75 per ton. No ongoing costs anticipated.

On-site placement is the preferred soil management alternative because this option is significantly more cost effective and is considered to be protective of human health and the environment.

5 HEALTH AND SAFETY

The contractor is responsible for health and safety, and must develop a site specific health and safety plan to protect their workers, other site personnel, site visitors and neighbors from potential exposure to contaminants in soil during the Project. The health and safety plan should conform to requirements of Hazardous Waste Operations and Emergency Response, Title 8 CCR, Section 5192 and Title 8 CCR, Section 5155. During the soil management activities, soil moisture content is to be maintained to reduce the potential for dust generation and the need for respiratory protection.

6 SOIL MANAGEMENT PROCEDURES

Soil management activities associated with the Project are expected to include:

- Excavation of approximately 1,710 cubic yards of soil from the Williams and Crosby locations.
- Dust control during excavation and other activities that cause soil disturbance.
- Post-excavation verification sampling and analysis at the excavation locations to confirm that the mineralized soil was removed.
- Transport of the soil less than 500 feet and placement as engineered fill beneath a proposed roadway.

Upon completion of the soil management activities, a report is to be prepared documenting compliance with this management plan, presenting the results of verification sampling and analysis, and documenting the fate of the excavated material.

The NCEHD must be allowed to review any proposed ground disturbing activities if the activities are to be performed prior to the implementation of the recommended soil management procedures.

6.1 EXCAVATION, TRANSPORT AND PLACEMENT

Soil excavation includes mechanical excavation using a rubber-tired or track-mounted excavator. During excavation, loading, transport, placement and compaction, soil shall be moistened as necessary to avoid dust generation using water trucks or hoses.

Before removing the mineralized soil, vegetation shall be cut off at the ground surface, segregated, and removed from the work area. Removal of vegetation is to be performed using hand-held mechanical equipment to minimize disturbance of soil before removal.

Soil shall be transported by truck to the proposed placement areas, which are shown on Figures 3 and 4, prepared by KPFF Consulting Engineers (January 2014). The two placement areas are areas of engineered fill for a proposed paved internal road. The northern area is estimated by KPFF to have a capacity of 1,500 cubic yards, and the southern area is estimated to have a capacity of 500 cubic yards. A typical cross section for mineralized soil placement is depicted on Figure 3.

Truck speed is to be limited to 15 miles per hour to reduce the chance of dust generation. The truck loading area shall be adjacent to the excavation area, so that no soil is tracked from the excavation area by trucks or other equipment.

Subgrade preparation for the placement location is to be performed pursuant to the Project geotechnical recommendations prior to soil transport. Soil placement and compaction is to be performed by conventional means, in accordance with the Dust Mitigation Plan (Appendix E), the Project plans, and the Project geotechnical specifications.

After placement and compaction as engineered fill, the mineralized soil is to be covered with clean soil and pavement, and erosion controls are to be installed pursuant to the Project plans and specifications.

6.2 POST-EXCAVATION SOIL SAMPLING AND ANALYSIS

After excavation of the mineralized soil, verification soil samples will be obtained from the base and perimeter of the excavations to confirm that the underlying soil is representative of local background conditions.

Soil samples will be obtained using a pre-cleaned hand trowel or individually wrapped disposable scoops, and placed in re-sealable plastic bags or glass containers provided by the analytical laboratory. Laboratory total arsenic and lead analysis will be performed by EPA Method 6010B.

The minimum sample frequency will be one soil sample per 400 square feet of footprint area. In addition, soil samples will be obtained from the perimeter of the excavation area at a maximum spacing of one sample per 50 feet.

Numerical cleanup goals for arsenic and lead in soil are set forth in the table below:

Soil Cleanup Goals for Unrestricted Land Use

Constituent	Cleanup Goal	Reference
Total Arsenic	17 mg/kg	95 th percentile, regional background
Total Lead	80 mg/kg	Residential CHHSL

CHHSL = California Human Health Screening Level
mg/kg = milligrams per kilogram

The lateral and vertical extent of the excavations may be increased locally to facilitate removal of soil containing metals concentrations that exceed the target

cleanup levels. Additional samples will be obtained if needed to achieve the minimum sample frequency, based on the actual footprint area of the excavation.

If the verification sample analysis indicates target cleanup levels have been attained, no further excavation will be conducted. If the results of verification sample analysis indicate target cleanup levels have not been attained, further excavation will be conducted. Excavation will continue until the results of further verification sampling and analysis indicate that the cleanup goals are achieved.

Characterization of affected soil was performed as part of the site investigation. Affected soil that is to be placed on-site will not require further characterization.

6.2.1 Quality Control Procedures for Soil Sampling and Analysis

The following procedures are specified in an effort to maintain consistent quality of field and laboratory data.

Samples will be identified with the following information:

- Project number;
- Date and time of sample collection; and
- Sample identification number.

Individual sample containers will be placed in sealed plastic bags to prevent intrusion of moisture and damage to sample labels. Sample will be transported in a plastic container at ambient temperature under chain-of-custody documentation. Chain-of-custody forms will include the following information:

- Sample identification number;
- Signature of collector;
- Date and time of collection;
- Site name and project number;
- Sample matrix;
- Sample container description;
- Analyses requested;
- Special analytical procedures requested, if applicable;
- Remarks (expected interferences, hazards, unusual events at the time of sampling), if applicable;

- Preservatives added, if any;
- Special sample preparation, if applicable;
- Destination of samples (laboratory name);
- Signature of persons involved in chain of possession (relinquished by and received by); and
- Date and time of sample receipt at laboratory.

When transferring samples, the individuals relinquishing and receiving the samples will sign, date, and record the time on the chain-of-custody form. A separate chain-of-custody form will accompany each sample shipment. The method of shipment and courier name(s) will be entered on the chain-of-custody form.

Special Trainings and Certifications

The contractor is responsible for compliance with applicable health and safety regulations and for training construction personnel who are to perform soil management tasks. Personnel performing soil sampling shall be certified under OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910). Analytical laboratories will be certified by the State of California.

Documentation and Records

The project manager will distribute this plan to the project staff. Project staff will review the pertinent sections of the plan prior to performing the relevant tasks. Chain-of-custody documentation, field maps and photographs will be maintained for a period of five years following the project completion. Sample location maps, sample collection methodology and quality control procedures, laboratory reports, chain-of-custody documentation, as-built drawings of on-site soil placement locations will be included in a summary report.

Laboratory Quality Control

The laboratory will perform laboratory quality control procedures such as method blanks and matrix spike samples to assess accuracy and bias. The laboratory reporting limits will be lower than the corresponding benchmark values as set forth in this plan.

Data Validation

Data review will be performed to assess the accuracy of data recording, processing and transmittal. Field and laboratory quality control data will be reviewed for

completeness. Sample preservation and holding times will be verified. Based on a review of the quality control data with respect to the data quality objectives (precision, bias, accuracy, representativeness, comparability, completeness, and sensitivity), the laboratory data will be accepted, accepted with qualification, or rejected. If data are rejected, additional verification sampling and analysis will be performed to address any data gaps.

6.3 DEED RECORDATION

The soil placement area, and the open space around the New Shaft location, are to be recorded with the County of Nevada to prevent future disturbance of the soil at these locations. The following information should be recorded:

1. No activities that will disturb the affected soil within the on-site placement area and New Shaft location (e.g., excavation, grading, removal, trenching, filling, earth movement) shall be allowed on the property without a soil management plan approved by the County of Nevada.
2. Prior to the sale, lease or sublease of the property containing the on-site placement area, the owner, lessor, or sublessor shall give the buyer, lessee, or sublessee notice that mineralized soil conditions are located in the area.
3. The land use controls shall be incorporated by reference in each and all deeds and leases for the property.
4. The owner shall provide notice to the County of Nevada not later than 30 days after any conveyance of any ownership interest in the property (excluding mortgages, liens, and other non-possessory encumbrances). The County of Nevada will not, by reason of the covenant, have authority to approve, disapprove, or otherwise affect proposed conveyance, except as otherwise provided by law or by administrative order.
5. The terms of the deed restriction run with the land and will continue in perpetuity unless a variance is granted or unless terminated.

6.4 REPORTING

A report shall be prepared to describe the soil management activities and document compliance with this plan. The report shall present:

- A summary of soil management activities;
- A description and basis for deviations, if any, from this plan;
- Approximate limits of excavation and volume of soil excavated;

- Results of sampling and analysis;
- As-built drawings depicting the location of on-site soil placement; and
- A summary of quality control activities performed during soil management.

The following operation and maintenance (O&M) procedures pertain to long-term maintenance and monitoring of the soil placement area and the New Shaft location. These O&M procedures are to be implemented upon completion of the soil management tasks described above.

The primary goal of the O&M procedures is to prevent uncontrolled exposures to the naturally mineralized soil and to protect the health of future residents, visitors and workers by minimizing disturbances of the naturally mineralized soil, to establish a routine inspection program, and to provide a means for timely repair if the engineering controls are damaged.

7.1 PERIODIC INSPECTION

7.1.1 Quarterly Inspection

Periodic inspections of the engineering controls will be conducted quarterly (January, April, July, and October) and will be performed by Tech Center staff. A checklist to be completed for each inspection is presented in Appendix F.

Periodic inspection reports will be maintained in the Tech Center administrative files and must be available for review upon request. All inspection records will be available for NCEHD and public review.

The Tech Center will be responsible for identification of any required repairs, documentation of changes in property conditions or usage, descriptions of any onsite construction activities, or any other significant information relating to effectiveness of the engineering controls. Examples of such conditions include cracks in the pavement, soil movement, or soil erosion or disturbance.

The Tech Center will be responsible for follow-up review to ensure that identified repairs are completed on schedule, and will sign-off in the completion blocks of the inspection reports.

7.1.2 Inspection for Unplanned Events

The property owner will also conduct inspections immediately following unplanned events such as fires, floods, seismic events, etc., where mineralized soil may be exposed. Inspections for unplanned events will be recorded using the checklist in Appendix F.

7.2 INTRUSIVE WORK ACTIVITIES

Intrusive activities are prohibited unless conducted in accordance with specific soil management procedures that have been approved by NCEHD. Intrusive work includes any construction or maintenance work activities that disturb mineralized soil, including but not limited to digging, drilling, excavating, grading, repairing, removing, trenching, filling, and other soil movement that may penetrate or otherwise compromise the pavement and underlying soil. The property owner will provide advance notice of scheduled work to NCEHD in accordance with Section 7.3 below.

Construction, repair and/or maintenance activities at the Property are restricted only at the mineralized soil placement location and at the New Shaft location, and only when exposures of mineralized soil are reasonably anticipated. Notification to NCEHD of construction, repairs, and maintenance activities is not required unless mineralized soil is expected to be disturbed, or is inadvertently disturbed.

7.2.1 Standard Operating Procedures

The following procedures should be followed when performing intrusive construction, repair or maintenance activities:

- Provide information regarding location of mineralized soil to selected contractors.
- Verify that selected contractors and their employees will comply with federal and state OSHA requirements.
- Require that construction and maintenance work be performed in accordance with these O&M procedures and NCEHD-approved soil management procedures.
- Require reasonable restrictions to the work area to reduce exposures to non-workers.
- Implement dust control practices that utilize water. Typical procedures are set forth in the Dust Mitigation Plan presented in Appendix E.
- Prevent soil erosion and retain sediment within the work area by using storm water Best Management Practices (BMPs).
- Manage any mineralized soil brought to the surface in accordance with the approved soil management procedures and in compliance with applicable, relevant and appropriate provisions of state and federal law.

7.2.2 Health and Safety Requirements

All personnel performing O&M activities will be responsible for operating in compliance with the most current requirements of:

- Title 8, California Code of Regulations, §5192 (8 CCR 5192), General Industry and Construction Safety Orders
- Title 29, Code of Federal Regulations, 0.120 (29 CFR 191 0.120), "Standards for Hazardous Waste Operations and Emergency Response (HAZWOPER)"
- Title 29, Code of Federal Regulations, 5 1926 (29 CFR 1926), Construction Industry Standards
- 40 Code of Federal Regulations (CFR) Part 745
- OSHA Publication 3142-09R, 2003, "Lead in Construction"
- Other pertinent requirements (e.g., local ordinances, etc.)

Site-specific health and safety requirements will be identified under the supervision of a certified industrial hygienist in accordance with current health and safety standards as specified by the federal and California OSHA agencies. These requirements will be addressed in a Health and Safety Plan (HSP) that identifies proposed intrusive work activities.

7.3 NOTIFICATION

7.3.1 Unforeseen Exposure of Mineralized Soil

The property owner will notify NCEHD of any pavement failure or mineralized soil exposure within 14 days of discovery. Such notifications will include a proposed schedule for completion of required repairs and maintenance.

7.3.2 Intrusive Work Proposed

The property owner will notify NCEHD at least 30 days prior to any proposed intrusive work activity, and will obtain approval from NCEHD for the work intrusive work prior to commencing the work.

7.3.3 Intrusive Work Completed

Within 60 days of completion, the property owner will document the work that has been performed, including:

- The date that the work was performed;
- The work location, with maps and figures as appropriate;
- A summary of the work performed, including any restoration of cover soil and pavement performed;
- Any variance or modifications of the approved work plan; and
- A description of finished site conditions.

The intrusive work completion report will be submitted to NCEHD and will be maintained in the property owner's administrative records.

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FIGURES

Figure 1 Location Map and Site Map

Figure 2 Sample Location Map

Figure 3 Mineralized Soil Placement Area, South

Figure 4 Mineralized Soil Placement Area, North

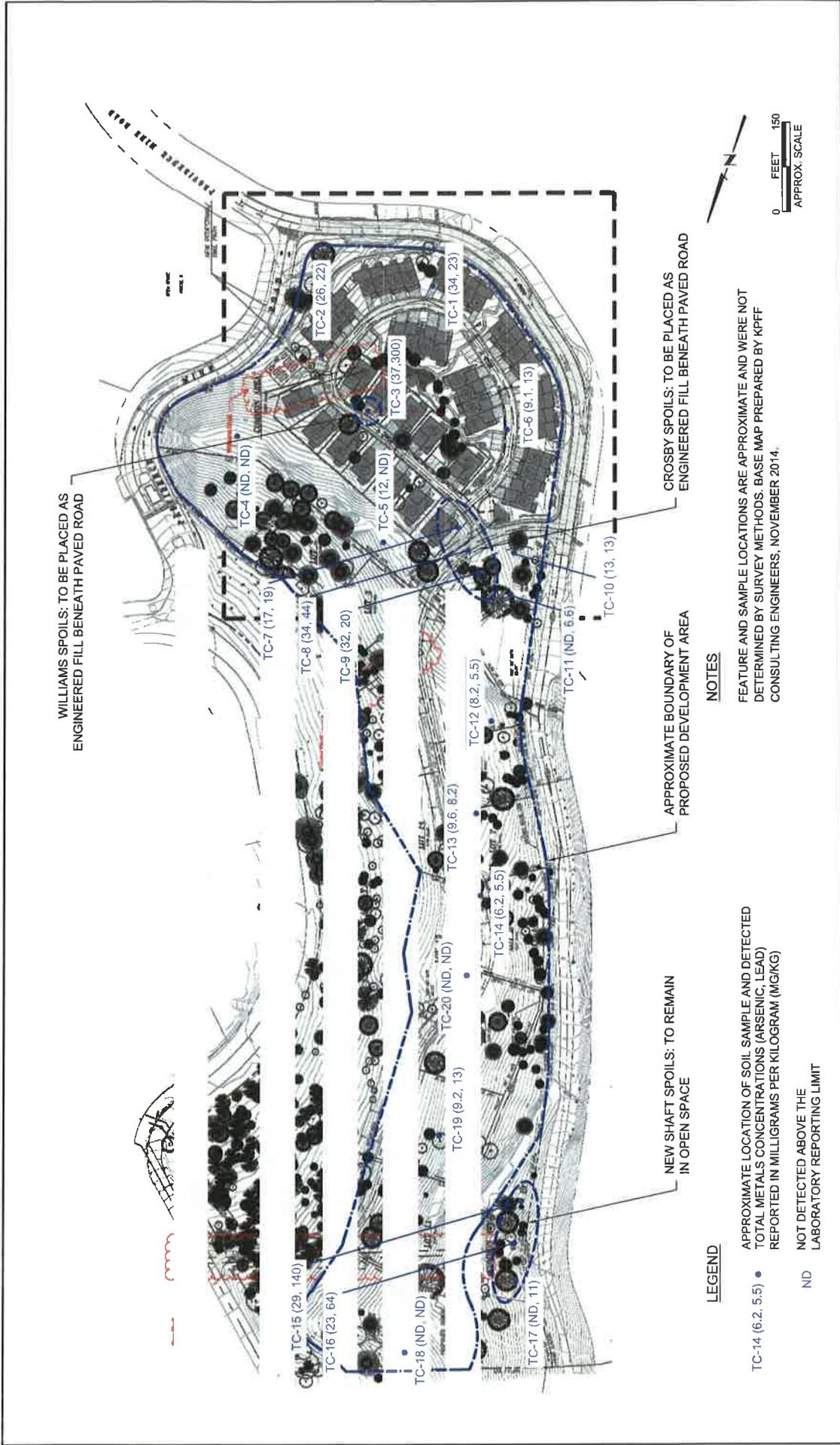


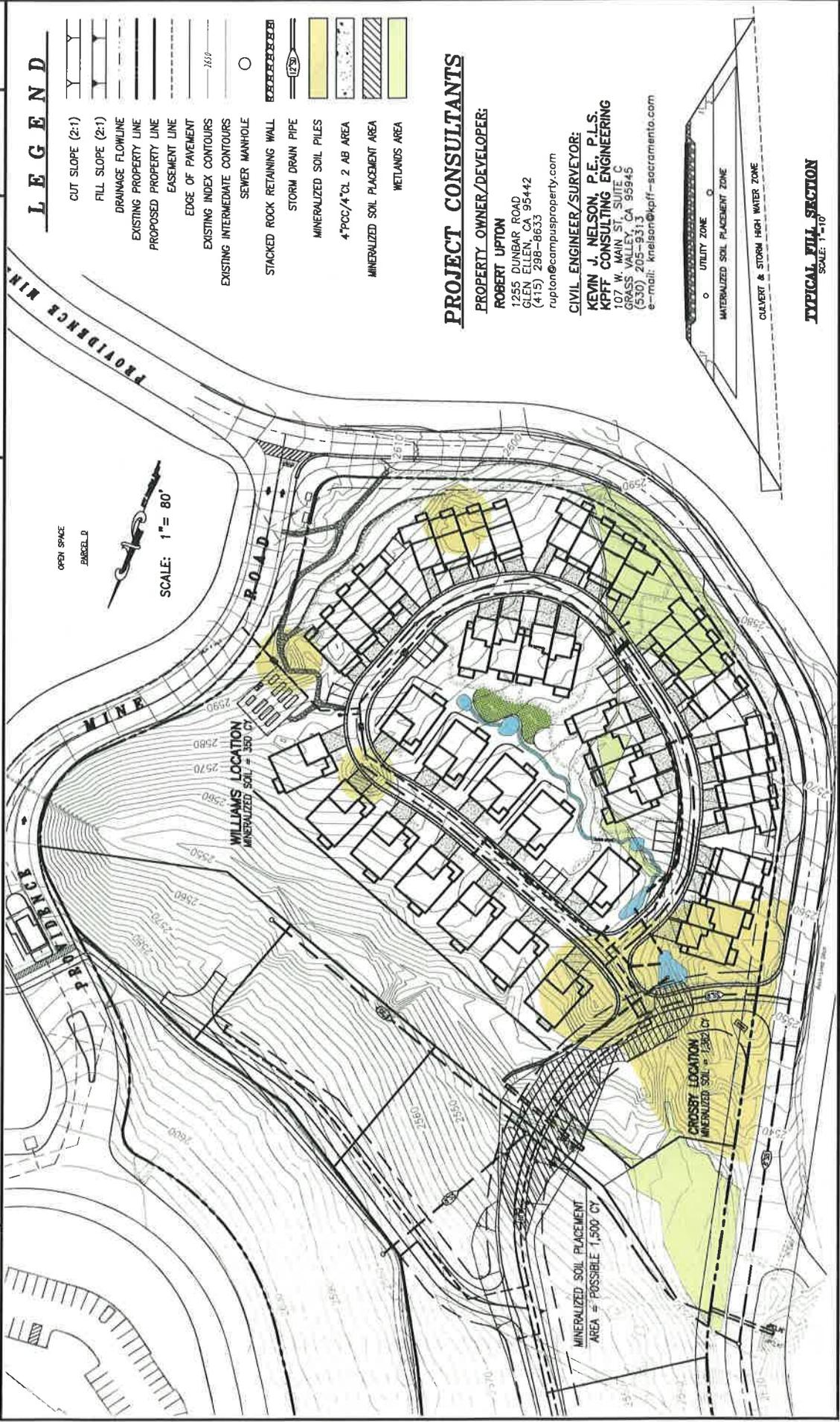
FIGURE 2
JANUARY 2014

SAMPLE LOCATION MAP
 THE GROVE AT NEVADA CITY
 NEVADA CITY TECH CENTER
 NEVADA COUNTY, CALIFORNIA

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FIGURE 3. MINERALIZED SOIL PLACEMENT AREA, SOUTH

Project	THE GROVE AT NEVADA CITY	Drawn by	RAIL	Sheet No.	1 of 2
Location	NEVADA CITY, CALIFORNIA	Date	11/JAN/14	Job No.	212-530
Client	ROBERT UPTON	By			



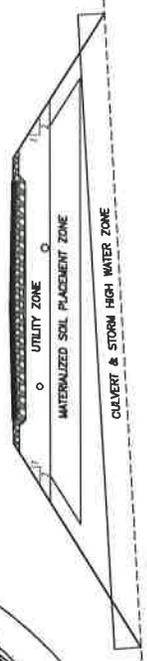
LEGEND

- CUT SLOPE (2:1)
- FILL SLOPE (2:1)
- DRAINAGE FLOWLINE
- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- EASEMENT LINE
- EDGE OF PAVEMENT
- EXISTING INDEX CONTOURS
- EXISTING INTERMEDIATE CONTOURS
- SEWER MANHOLE
- STACKED ROCK RETAINING WALL
- STORM DRAIN PIPE
- MINERALIZED SOIL PILES
- 4" PCC/4" CL. 2 AB AREA
- MINERALIZED SOIL PLACEMENT AREA
- METLANDS AREA

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TYPICAL FILL SECTION
 SCALE: 1"=10'