



Questa Decommissioning and Demolition Project

## Phase 1 Soil Sampling and Analysis Plan **PRELIMINARY DRAFT**



*Prepared for:*

### **Chevron Mining Inc.**

116 Inverness Drive East, Suite 207  
Englewood, CO 80112

*Prepared by:*

### **Tetra Tech, Inc.**

350 Indiana Street, Suite 500  
Golden, CO 80401

Document No. 850077-PLA-R0002-A  
Tetra Tech Project No. **114-850077**

August 2014



## TABLE OF CONTENTS

<b>1.0</b>	<b>INTRODUCTION</b> .....	<b>2</b>
<b>2.0</b>	<b>GENERAL SITE DESCRIPTION</b> .....	<b>3</b>
2.1	Phase 1 Activities.....	3
2.2	Historical Information .....	3
2.3	Current Land Use and Chemical Use.....	4
2.4	Climatological Data.....	5
2.5	Site Geology and Hydrogeology.....	5
2.6	Potential Contaminant Sources.....	5
<b>3.0</b>	<b>SAMPLING</b> .....	<b>6</b>
3.1	Objectives and Overview .....	6
3.2	Sampling Locations and General Approach .....	6
3.3	Sampling Designation .....	11
3.4	Sampling Procedures.....	12
<b>4.0</b>	<b>SAMPLE HANDLING AND ANALYSIS</b> .....	<b>16</b>
4.1	Sample Containers and Preservation.....	16
4.2	Sample Container Preparation and Shipment .....	16
4.3	Laboratory Receiving .....	17
4.4	Field and Laboratory Testing Methods .....	17
<b>5.0</b>	<b>REFERENCES</b> .....	<b>18</b>

## LIST OF TABLES

Table 1.	Sample Summary.....	8
Table 2.	Field Equipment Calibration Checklist.....	14
Table 3.	Sample Container Summary .....	16

## LIST OF FIGURES

Figure 1.	Site Location Map
Figure 2.	Phase 1 Facilities
Figure 3.	Proposed Historic Tailing Sampling Locations

## LIST OF APPENDICES

Appendix A:	Preliminary Phase 1 Building Inventories
Appendix B:	Laboratory Detection Limits
Appendix C:	Standard Operating Procedures

## 1.0 INTRODUCTION

Chevron Mining Inc. (CMI) is in the process of closing and decommissioning the Questa Mine (Site) located approximately 7 miles east of the Village of Questa, New Mexico (Questa), in Taos County along New Mexico Highway 38 and the adjacent Red River. The Questa Mine is a former underground and open pit molybdenum mine and milling operation owned by Chevron. The Questa Mine's Tailing Facility is located approximately 9 miles west of the mine, near Questa, NM. The locations of the major facility areas are shown on Figure 1. CMI announced the cessation of operations at the mine on June 2, 2014 and is planning to initiate closure/closeout activities with decommissioning and demolition of selected surface facilities at the Mill Area under Phase 1 activities. Decommissioning and demolition of remaining surface facilities at the Mill Area, Mine Area (Goat Hill), and Tailing Facility will occur under subsequent phases. This Soil Sampling and Analysis Plan (SAP) focuses on Phase 1 activities, which will occur in the southern portion of the Mill Area. The Phase 1 facilities are described in Section 2.1 and are shown on Figure 2. A later version of the SAP will incorporate planned soil sampling associated with future phases of demolition and decommissioning activities.

This document has been prepared as a guidance document for the field investigation at the Site. This Sampling and Analysis Plan (SAP) presents a description of potential site investigation activities and procedures to be performed as part of site investigation and confirmation sampling. The purpose of the SAP is to provide field protocols to ensure that field data are collected in a logical, sequential, and defensible manner. The SAP is the primary document to be used in the field and contains sufficient detail to answer questions that may arise relative to field protocol. The planned sample locations and analytes are included in the SAP.

This SAP presents a detailed description of Site investigation field methodologies and procedures to be followed as part of the field data collection efforts, as well as addressing analytical laboratory requirements. The sample types and analyses were selected based on background information and technical applicability to the Site. Background information will be developed based on previous and future field investigations at the Site, and current and historical use of chemicals and practices at the Site. The Mill Area (as well as other areas) of the Questa Mine site has been the subject of numerous previous investigations focused on identifying the nature and extent of contamination in soil and groundwater. The results of these investigations are documented in published reports, including the Molycorp Remedial Investigation Report (URS 2009), which formed the basis for the development of the EPA's selected remedy in the Record of Decision (EPA 2010). In addition, previous site investigative data and remediation efforts, relative to PCBs in soil, are presented in the Mill Area Removal Action Completion Report (URS, 2013).

## 2.0 GENERAL SITE DESCRIPTION

### 2.1 Phase 1 Activities

The Mill Area includes primary and secondary crushers, ore storage and conveyance structures, mill and concentrator buildings, thickeners, molybdenum storage building, assay lab, maintenance and warehouse facilities, guard house, decline shop, and portal surface facilities. The Phase 1 scope of demolition and decommissioning efforts, and the focus of the Phase 1 Plan, is limited to the removal of facilities within the southern portion of the Mill Area.

A new water treatment plant (WTP) is under construction at the east end of the Mill Area to support long-term treatment of collected water from various sources, including underground mine water, water captured by collection systems and groundwater withdrawal wells, and collected storm water. The decommissioning and demolition of facilities at the Mill Area as part of the limited Phase 1 activities will allow for installation of a new utility corridor to support the WTP, facilitate the abandonment and isolation of existing utilities within the Mill Area, and prepare the area for the future construction of a stormwater catchment pond and equalization basin for the WTP, referred to as the expanded 005 Catchment. The affected facilities for this phase are identified on Figure 2 and are listed below.

- Thickener 175 (formerly tailing thickener) and pump house
- Mill warehouse complex
- Mill maintenance shop
- Decline maintenance shop
- Moly storage building (potential relocation and reuse)
- Mill administration building/assay lab
- Guard house

### 2.2 Historical Information

The facility was constructed in 1919. Since that time, mining has taken place in three phases – 1919 to 1958 included mining using conventional underground methods, 1964 to 1983 included mining using open pit methods, and 1983 to present including block-caving underground mining. The majority of the present mill facilities were constructed in the 1960s. The potential exists for soil contamination resulting from nearly 100 years of operations. Although no known releases or spills have occurred which have not already been addressed during previous remedial actions, the potential for soil contamination exists from historic activities including, but not limited to:

- Leaks or spills from storage tanks;
- Leaks or spills from equipment or equipment maintenance;

- Leaks or spills associated with material storage, including petroleum products and other chemicals (solvents, acids, etc.); and

In addition, the presence of a historic tailing deposition area in the Mill area is known, but the full nature and extent has not been identified.

Soil investigation and sampling will be focused in areas with evidence of contamination. Investigation and sampling will be tailored based on knowledge of the activities conducted in these areas and products used. To aid in guiding these investigations, current information regarding use and storage of chemicals in the portion of the Site associated with Phase 1 activities has been compiled. This preliminary building inventory information is presented in a Table included as **Appendix A**. More detailed inventories of both facility contents and building materials will be developed as part of the detailed planning and design of decommissioning and demolition activities, currently underway. Updated inventories will be provided following the completion of detailed facility inspections. In the Phase 1 area, no underground storage tanks (USTs) are known to exist or to have existed historically. Three aboveground storage tanks (ASTs) currently exist including:

- two ASTs associated with the Lube Oil and Fuel Canopy near the Decline Maintenance Shop; and
- one AST associated with solvent storage at the Mill Maintenance building.

Polychlorinated biphenyls (PCBs) in soil were removed in 2012 from select areas near Phase 1 buildings. As identified in the Phase 1 Building Demolition and Cleanup Plan, an area of previously identified PCB impacted soil remains near the 175 Thickener. Removal and confirmation soil sampling will be conducted, prior to the demolition of the 175 Thickener foundation, following the protocols established in the previously-approved, Mill Area Removal Action Work Plan, dated June 15, 2012, and is not addressed further in this SAP.

### 2.3 Current Land Use and Chemical Use

Current land use in the area of the Phase 1 buildings is industrial, and the Phase 1 buildings include support structures for mining and milling operations. In these buildings, chemical use has included the following:

- Solvents
- Acids and bases
- New and used oils, lubricants and associated petroleum products
- Diesel fuel
- Compressed gases

As discussed previously, a comprehensive inventory of chemicals used historically and currently has not been developed at this stage of the project; however, sampling of soil with evidence of

contamination will be guided by the knowledge of general categories (petroleum products, volatile organic compounds (VOCs), heavy metals, etc.) of chemicals used in the area where evidence of contamination is observed or suspected. The analyte list may be amended following the completion of more detailed facility inspections and building surveys.

## 2.4 Climatological Data

The site is semi-arid with variable precipitation between the mine, mill, and tailing facility due to impacts of elevation and mountain ridges. Climatological data from Red River, NM is referenced as this is the nearest station with an elevation similar to the mine and mill site (Red River elevation 8680). The mean summer temperatures in Red River, NM range from 51 to 59 degrees Fahrenheit (°F) while the mean winter temperature ranges from 20 to 30°F. The mean annual precipitation from 1915 to 2005 was approximately 20.6 inches. Typically, summer is the wettest season and winter the driest (URS, 2009 and <http://www.wrcc.dri.edu/>).

## 2.5 Site Geology and Hydrogeology

The Site is located in Taos County along New Mexico Highway 38 and the adjacent Red River (**Figure 1**), and is situated in the Taos Range of the Sangre de Cristo Mountains. The mill site is located at an approximate elevation of 8,200 feet. The facility is located within the Southern Rocky Mountains physiographic province, north of the Red River (which flows to the east).

Phase 1 buildings are located in the mill area, which is largely underlain with alluvial sediments and an alluvial aquifer system. The alluvial soils generally consist of sub-rounded to rounded coarse-grained sand as well as gravel, cobbles, and boulders. As documented in the 2009 RI, the alluvial water table level is approximately 80 feet below ground surface near Mill Wells 1 and A1 and fluctuates 20 to 40 feet annually (URS 2009).

The groundwater flow direction, in the vicinity of the mill, is to the southwest, based on measured water levels in wells (URS 2009).

## 2.6 Potential Contaminant Sources

Potential contaminant source locations (PCSLs) that have been identified at the Site include the:

- Historic mine site tailing area;
- tank storage areas;
- areas surrounding and beneath building slabs where petroleum or chemical products were stored or used; and
- the septic tank and leach field near the Lab Assay building.

During demolition, should other potential areas of concern be identified, they will be investigated following the protocols and approaches as outlined in this SAP.



## 3.0 SAMPLING

### 3.1 Objectives and Overview

The overall sampling objective for the field investigation(s) is to collect a sufficient quantity and quality of data from the impacted and surrounding media to adequately evaluate the presence or absence of contaminants of concern. This section describes the details of the field investigation including the selection of sampling locations, the procedures used to collect the samples, and the justification for sampling the specific media at those locations. **Table 1** summarizes the sampling locations, the number and types of samples at each location and the laboratory analyses that will be completed for each sample and the laboratory analytical methods proposed for the project. A level 2 quality control package for the laboratory work will be provided by the analytical laboratory.

### 3.2 Sampling Locations and General Approach

This section presents a description of known sampling locations, as well as a discussion of how sampling locations will be determined for areas of suspected contamination not yet identified. The proposed frequency of field activities, field methods and sampling procedures are also presented. Soil sample locations and categories were selected based on consultation with CMI personnel and our current understanding of the Phase 1 area.

In general soil samples will be collected from the following areas:

- Beneath building foundations and slabs, if removed as part of the demolition activities;
- At pre-determined locations to characterize the nature and extent of the historic mine site tailing; and
- Areas discovered during the demolition or subsequent earthmoving/site grading activities with observed visual or olfactory evidence of contamination.

For all sampling other than the tailing area investigation, a phased investigation approach will be followed, with the initial phase including near surface samples to determine the approximate lateral extent and nature of contamination. The first phase of investigation will include collecting surface samples from the 0 to 6-inch depth interval and the 12 to 24-inch interval. Sample frequency will be based on the observed size of the contamination and will be selected to identify the lateral extent of the impacted area.

If results from the initial investigation indicate that contamination extends to 24", the second phase of the investigation will be initiated, including advancing soil borings. If the contamination is limited to near-surface, the material will be excavated, segregated on a visquine (or equivalent) liner, and sampled for waste profiling for off-site disposal. Confirmation sampling will be conducted in the base of the excavation to ensure that the impacted material has been fully removed.

If the second phase of investigation is determined necessary, subsurface borings will be advanced to determine vertical extent of the contamination. A hollow-stem auger drill rig is proposed for subsurface samples to advance the borings and collect the subsurface soil samples.

The number of borings will vary based upon the initial estimation of lateral extent of contamination, but will include a minimum of three borings. Final boring depths will be determined in field based on site conditions encountered. Borings may be terminated at depths when vapor concentrations are less than 100 whole instrument units as measured using the PID.

The soil borings will be continuously sampled from ground surface to the maximum depth of the borings. The soil samples will be collected in a 5-foot long, solid steel sampler lined with a polyethylene liner. The liner will be extracted from the spoon, opened, and the entire interval will be observed for indications of contamination. Observations will include performing headspace analyses utilizing a photo-ionization detector (PID).

Based on the soil observations, representative samples will be collected from each boring for laboratory analysis. At least one sample will be obtained from each boring from intervals where evidence of contamination is observed or if the PID reading is greater than 100 whole instrument units, for characterization purposes. Multiple samples of suspected contaminated soils may be obtained if the suspected contaminated interval extends greater than 10 feet or if visual material characteristics change. For verification of the vertical extent of contamination, one suspected clean sample (no evidence of contamination and PID reading less than 100 whole instrument units) will be collected for laboratory analysis. Soil sampling procedures are outlined in Section 3.4.2.

Laboratory analyses will be selected based on whether sufficient information is known regarding the potential source. **Table 1** provides sample details for tailing investigation samples, suspected petroleum contaminated soils and unknown sources.



**Table 1. Sample Summary**

PCSLs	Sample ID	Sample Type	Depth <sup>1</sup>	Number of Samples	Analyses									
					Moly EPA 6010B	Other Metals (As, Fe, Pb, Vn) EPA 6010B	PAH 8270D	SVOC 8270	VOC 8260B	TPH-GRO 8015B	TPH-DRO 8015B	Saturated Paste pH & Sturated Paste Electrical Conductivity	ABA EPA 600/2-78-054	BTEX, MTBE, Naphthalenes 8260B
Historic Tailing Area	TBD	Boring, Grab	SS, SB	2 per location (min)	X							X	X	
Suspected PCS	TBD	Boring, Grab	SS,SB	TBD	X	X (Lead, method EPA 6010C)	X				X	X		X
Unknown Source	TBD	Boring, Grab	SS,SB	TBD	X	X (Lead, method EPA 6010C)	X	X	X		X	X		X
QAQC <sup>2</sup>	Varies	Varies	Varies	Varies	X	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies

Notes:

1. SS: Surface; SB: Subsurface; V = Various depths
2. A level 2 quality assurance quality control reporting level will be requested for all laboratory analyses.
3. Detection limits for laboratory analyses are included in **Appendix B**.

### **3.2.1 Tailing Area Investigation**

Historically (prior to the construction of the current mill facilities), tailing material was deposited in the Mill area, in the vicinity of the Phase 1 facilities. Tailing samples will be analyzed for the following constituents:

- molybdenum;
- acid base accounting (ABA);
- paste pH; and
- electrical conductivity

It is expected that all tailing material encountered during Phase 1 activities will be disposed of on-site either in the open pit or in the existing Tailing Facility west of the Village of Questa. Consistent with the historic tailing spill removals performed under the Removal Actions Administrative Order on Consent (AOC).

Proposed sampling locations to determine the nature and extent of the historic mine site tailing are identified on Figure 3. Also illustrated on this figure is the approximate extent of the tailing deposition area, as identified on Figure 4.1-2 from the RI Report (URS, 2009). A total of seven soil borings and three test pits are planned to be advanced at the site. None of the borings are to be completed as monitoring wells. Borings will be advanced to the base of the tailing, if encountered, anticipated to be on the order of 30 feet deep, based on previous geotechnical investigations of the area. Based on the characterization of groundwater in the area from the RI Report, groundwater is not expected to be encountered.

A hollow-stem auger drill rig will be used to advance the borings into the tailing material and collect the subsurface soil samples. For logging purposes, samples will be collected from each exploratory boring from zero to two feet, at 5 feet, and then at approximately 5 foot intervals to the total depth drilled. Split spoon drive samples will be collected at 5 feet, and at subsequent 5 foot intervals or if varying soil conditions are encountered. Drive sampling will be conducted in general accordance with ASTM D1586. The number of blows required to drive the sampler 12 inches, N, will be recorded.

Cuttings and samples will be examined in the field by Tetra Tech's geologist or engineer, and a graphical log will be prepared for each boring, to identify the extent of tailing, based on visual observation, at each location.

Representative samples for analytical testing will be selected from each boring or test pit. At a minimum, one sample of tailing material, if encountered, will be collected from each sampling location. Additional tailing samples may be collected for analytical testing if physical characteristics of the material change. Soil sampling procedures are outlined in Section 3.4.2.

### **3.2.2 Sampling Beneath Foundations**

Soil sampling will be performed beneath building foundations and slabs, if removed as part of the demolition activities. A minimum of two samples, from the zero to six inch depth interval, will be obtained from beneath each of the removed building slabs. If the area beneath the removed foundation or slab exceeds 10,000 square feet (sf), additional sample locations will be selected to represent each additional 5,000 sf area. If visual evidence of contamination is observed, the sampling frequency will be adjusted in accordance with Section 3.2.3. Collected samples will be subjected to head space readings using a PID. If no visual or olfactory evidence of contamination exists and the PID reading is less than 100 ppm, no additional analyses will be performed. If visual evidence is observed or if the PID reading is greater than 100 ppm, samples will be subjected to laboratory analyses. In areas with visual evidence of contamination, or where the PID reading is greater than 100 ppm, a second sample will be obtained from the 12 to 24-inch depth interval and submitted for laboratory analyses.

If information is known regarding the source of contamination, the analyses may be targeted to that product. If the source of contamination is not known, a full suite of analyses should be run as presented in Table 1, including:

- Gasoline range organics (GRO) total petroleum hydrocarbons (TPH)
- Diesel range organics (DRO) TPH
- Benzene, toluene, ethylbenzene, xylene (BTEX)
- Methyl tert-butyl ether (MTBE)
- Naphthalenes
- Polyaromatic hydrocarbons (PAHs) (including heavy fuels, oils, mineral oil)
- Arsenic, iron, lead, molybdenum, and vanadium
- VOCs
- SVOCs

### **3.2.3 Other Soil Samples**

Areas discovered during the demolition or subsequent earth-moving/site grading process with observed visual or olfactory evidence of contamination will be verified through sampling and laboratory analysis, aided by the use of a PID. The lateral and vertical extent of contamination will be assessed initially as practicable, and sampling locations will be selected to determine the extent of contamination. If practicable, a grid-based approach will be employed to collect samples representative of an area of approximately 2,500 sf (50 foot x 50 foot grid). Initially, samples will be collected from the 0 to 6-inch depth interval and the 12 to 24-inch interval. These samples will be screened using a PID, and if PID readings greater than 100 ppm are observed, samples will be submitted for laboratory analyses. If evidence of contamination

extends below 24 inches, an additional investigative phase will be performed as described above.

If information is known regarding the source of contamination, the analyses may be targeted to that product. If the source of contamination is not known, a full suite of analyses should be run as presented in Table 1, including:

- GRO TPH
- DRO TPH
- BTEX
- MTBE
- Naphthalenes
- PAHs (including heavy fuels, oils, mineral oil)
- Arsenic, iron, lead, molybdenum, and vanadium
- VOCs
- SVOCs

### 3.3 Sampling Designation

Soil samples will be labeled using the same systematic approach as defined in the RI (URS 2009). This designation approach includes six components:

1. Component 1: Location ID (i.e., Mill Tailings Area 1 MTA1)
2. Component 2: Fraction (for soil samples, T is entered for "Total")
3. Component 3: Sequence Number, such as sample depth from surface to depth in feet, where zero to one foot is labeled as 01
4. Component 4: Sample type, with "N" for normal (primary) samples and "d" for duplicate samples
5. Component 5: Sample matrix, "SOL" represents soil.
6. Component 6: Sample date in MMDDYY format

Compiled, these components result in a sample designation similar to MTA1-T01N-SOL-081014.

### 3.4 Sampling Procedures

At each sample collection and location, the following information will be recorded in the field logbook or on a designated field form:

- Names of field personnel;
- Date/time of measurement;
- Measurement identification location;
- General weather conditions (e.g. hot, windy, precipitation);
- Soil description, including color and texture, and relative moisture content;
- Soil sample identification, sample collection location, and collection time;
- Any problems encountered or deviation in sample collection methods;
- Description of any unusual circumstances; and
- Photo documentation details, if necessary

The following subsections describe field procedures that will be followed during the performance of the field investigation(s).

#### 3.4.1 Decontamination Procedures

Decontamination procedures will be conducted in accordance with the guidance provided in SOP-1, Equipment Decontamination in **Appendix C**. Reusable sampling equipment will be decontaminated between each sample collection utilizing the following procedure:

- Set up a decontamination zone upwind from the sampling area;
- Use a stiff brush to remove all visible material from the sampling equipment;
- Wash equipment with Liquinox® (or equivalent) solution;
- Rinse equipment with deionized water; and
- Triple rinse equipment with tap water.

Decontamination procedures will be carefully conducted to ensure that contamination is neither introduced externally during the sampling process nor transferred by cross-contamination between sample locations. Cleaned equipment will be bagged between sampling stations to avoid environmental contamination. Personnel involved in sampling equipment preparation and sample collection and processing will wear nitrile gloves to protect themselves and to minimize the opportunity for sample contamination.

### **3.4.2 Soil Sampling**

The following subsections outline general procedures to be followed for surface and subsurface soil sampling. See also SOP-2 in **Appendix C**.

#### **3.4.2.1 Surface Soil Sampling**

Surface soil samples will be collected with a stainless steel trowel or dedicated plastic trowel (excluding samples to be analyzed for VOC compounds) and placed directly into the laboratory sample container. A shovel, hand spade, or pick may be used if needed to loosen the surface material. The sample will be collected from an approximate one foot by one foot area from ground surface to a depth of six inches. A soil description will be recorded on a field sampling form or logbook using the Unified Soil Classification System. Each sample container will be labeled with the sample identification number, sampler's initials, and the date and time of sample collection. The above information will also be recorded in the log book. General decontamination procedures for the equipment are described in Section 3.4.1 as well as SOP-1 (**Appendix C**). Sample information will be recorded on a chain-of-custody form and the sample will be placed under the custody of the sampler. The sampling procedure described here will be superseded by an analytical specific procedure (such as for volatile analyses) as presented in SOP-2, Soil Sampling Collection, presented in **Appendix C**.

#### **3.4.2.2 Soil Samples to be Analyzed for VOCs**

Soil samples to be analyzed for VOCs shall be collected by placing soil into a laboratory provided glass jar. The sample will be transferred from the sample probe liner to the glass jar and sealed immediately to avoid loss of VOCs. The procedures outlined in SOP-3, Soil Sample Collection – Volatile Compounds, presented in **Appendix C**, which corresponds to EPA Method 5035 will be implemented. The general procedure for collecting soil samples to be analyzed for VOCs involves exposing a fresh surface using a clean trowel, collecting a sample using a coring device (such as a modified syringe or Encore™ Sampler), and immediately capping the sample. New sample equipment (Encore™ Sampler) will be used for each sample location or (if using modified syringe type sampler) will be decontaminated prior to sample collection following procedures set forth in Section 3.4.1.

#### **3.4.2.3 Subsurface Soil Sampling**

Subsurface soil samples will be collected utilizing either a hollow-stem auger drill rig or a truck or tractor mounted Geoprobe® direct push drill rig. A two-inch inside diameter continuous boring will be advanced from the ground surface to the total depth as determined by field conditions, bedrock or sampler advancement refusal. An experienced geologist or engineer will log the borings following protocols set forth in ASTM D5434-93, Standard Guide for Field Logging of Subsurface Explorations of Soil and Rock. The number of samples to be collected from each boring is shown in **Table 1**. Sampling procedures using direct push technology are described in SOP-3, Soil Sampling Using Direct Push Technology, presented in **Appendix C**. Sample material will be placed directly into laboratory containers. For VOC samples, sample collection procedures will follow SOP-3 (**Appendix C**) using an Encore™ Sampler or other appropriate apparatus.



Subsurface soil samples in each boring will be collected using decontaminated equipment. The samples will be collected in the appropriate laboratory sample container. Each sample container will be labeled with the sample identification number, sampler's initials, and the date and time of sample collection. The above information will also be recorded in the log book. General decontamination procedures for the equipment and hollow stem auger or Geoprobe® are described in Section 3.4.1 as well as SOP-1, Equipment Decontamination.

The borings will be abandoned by sealing the boring with granular bentonite or other approved sealing agents.

Any excess soil that remains following the filling of the sample containers will be containerized in 55 gallon steel drums and held at the Site until results of the laboratory analyses are received. Disposal recommendations will be made based on laboratory findings.

Field measurement of volatile organic compounds (headspace measurements) will be conducted on all collected soil samples. The procedure for headspace measurements is presented in SOP-5, Field Measurement of Volatile Organic Compound Headspace presented in **Appendix C. Table 2** presents a field equipment calibration checklist for several instruments that may be used during the field investigation, a PID may be used to collect headspace measurements.

**Table 2. Field Equipment Calibration Checklist**

Instrument	SOP	Task	Frequency
Photo-ionization Detector (PID)	Manufacturer's Literature	After instrument has warmed up and has been zeroed (see below), attach calibration gas cylinder to probe with flexible tubing. Set instrument to appropriate range for the calibration gas, and start the flow of gas. Adjust the span knob so that the instrument reads the exact value of the calibration gas printed on the cylinder	Prior to each sampling event
		Zero Check – With instrument in standby setting, set indicator to zero with the zero adjust knob.	Before each test
Temp-Cond-pH	Manufacturer's Literature	Calibrate the specific conductivity probe against a prepared standard by placing the conductivity and temperature probes in the standard solution and adjusting the calibration knob until the indicator reads the temperature corrected conductivity of the standard.	Prior to each sampling event

Soil samples will be collected using the following procedures:

- Locate and record on the site map the actual sampling location. It will be the responsibility of the Site Manager to choose the most desirable location in consideration of safety and accessibility, while meeting the location requirements.

- Clear any surface vegetation as required from the locations designated for sampling. Do not disturb the sample location/media.
- Obtain and record organic vapor measurements (PID) of ambient background air quality in the vicinity of the sampling location and in the breathing zone.
- For direct-push boreholes, soil cores will be collected continuously in a polyethylene liner. Standard 1.125 inch inner diameter liners will be used to collect the subsurface soil samples.
- New, disposable gloves will be worn by sampling team members for each sample collected.

The following information will be recorded in the field log book or sampling record form for each sample location:

- Date and time sample was taken;
- Weather conditions;
- Personnel present;
- Location and depth of sample;
- Sample identification number and case number;
- Visual observations of sample; and
- Other data or observations as required.

### **3.4.3 Quality Control Samples**

Approximately ten percent of samples submitted to the laboratory for analyses will be quality control samples. Those quality control samples will include field blanks, trip blanks, duplicate samples, and rinseate blanks.

### **3.4.4 Investigation Derived Waste**

Investigation derived waste (IDW) will be handled as follows: Soil cuttings with visible or FID (or PID) vapor indications of impacts will be containerized in 55 gallon steel drums and left in an area designated by CMI. Disposal options will be presented to CMI, based on the laboratory findings. Following assessment of laboratory findings, permitting, profiling, transporting, and disposal will be conducted. IDW handling procedures are outlined in more detail in SOP-14, Management of Investigation-Derived Waste, presented in **Appendix C**.

### **3.4.5 Surveying**

The location of borings and other sample points will be recorded using a Trimble GPS unit to the nearest meter in accuracy. The mapped location of the sample points will be transferred to an Auto CAD dwg file or GIS shape file of the Site.

## 4.0 SAMPLE HANDLING AND ANALYSIS

To preserve the quality and integrity of samples from the time of collection until the time of analysis, sample preparation, preservation, storage, and shipment procedures have been established. Procedures and methods for accomplishing these tasks are described below.

### 4.1 Sample Containers and Preservation

The appropriate type and number of sample containers and method of preservation will be used for each class of contaminants. **Table 3** provides a summary of sample containers for each sample type. The laboratory will provide all sample containers cleaned in accordance with standard EPA cleaning protocols. SOP-15, Sample Packaging and Shipping presented in **Appendix C**, provides additional details regarding the sample containers.

**Table 3. Sample Container Summary**

Sample Media	Analyses	Sample Container	Preservative
Soil/Other Solid	TPH-DRO (8015B)	(1) 4 - ounce [clear]	No Preservative
Soil/Other Solid	BTEXN (8260B)	(1) 2 - ounce [clear]	No Preservative
Soil/Other Solid	VOCs (8260B)	(1) 2 - ounce [clear]	No Preservative
Soil/Other Solid	SVOCs (8270B)	(1) 4 - ounce [clear]	No Preservative
Soil/Other Solid	Metals (6010B)	(1) 2 - ounce [clear]	No Preservative
Soil/Other Solid	ABA (EPA 600/2-78-054)	(1) 8 - ounce [clear]	No Preservative

### 4.2 Sample Container Preparation and Shipment

Sample bottles will be prepared and packaged for shipment to minimize bottle breakage and ensure adequate sample temperature. Samples will be hand delivered or shipped via overnight carrier to all laboratories in large, metal or rigid plastic coolers. The sample chain-of-custody will be documented starting with the sample collector and continuing through to the receiving personnel at the chemical laboratory. The following procedures will be followed for the transport of the samples.

- Bottles will be placed into a cooler in an upright position. Packing material will be placed around bottles such that they will not touch during shipment.
- Ice (or blue ice when appropriate) will be placed around and among the sample bottles.
- Adequate packing material will be placed within empty spaces to prevent potential movement of bottles during shipment.
- The completed chain-of-custody form will be transported with the samples.

### 4.3 Laboratory Receiving

Upon the receipt of the sample coolers at the appropriate laboratory, the laboratory will be requested to complete the following items.

- Contents of cooler(s) will be compared with the chain-of-custody to verify that all sample numbers and requested analyses match and that no samples are missing.
- Bottles will be inspected for breakage or leakage and the Site Manager shall be notified if damage is observed.
- The temperature of the cooler contents will be measured (when appropriate) and recorded to verify that the contents of the cooler were kept at appropriate temperatures.
- Any discrepancies between cooler contents and chain-of-custody forms will be noted and/or comments provided in the "Remarks" section of the chain-of-custody form regarding damaged samples or problems.
- The date, time, and signature should be recorded on the chain-of-custody form acknowledging the condition and receipt of samples.

Once the laboratory has signed the chain-of-custody, it has assumed responsibility for the proper storage, analysis, and disposal of the samples. The analytical laboratories will complete the sample analyses in accordance with the laboratory's latest SOPs, which are consistent with EPA SW-846 analytical protocols.

### 4.4 Field and Laboratory Testing Methods

Soils will be sampled and transmitted to the laboratory for analysis under the field investigation to be completed for this project. Laboratory analytical methods are outlined in **Table 1**.

## 5.0 REFERENCES

EPA 2010. Record of Decision, Molycorp, Inc., Questa, New Mexico. CERCLIS ID NO: NMD002899094. December 20, 2010.

URS 2009. Molycorp Remedial Investigation Report, Revision No. 2. July 3, 2009.

URS 2013. Mill Area Removal Action Completion Report. Chevron Questa Mine Superfund Site. Prepared for Chevron Mining Inc. March 6, 2013.

DRAFT

## FIGURES

DRAFT



A

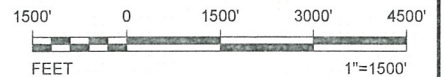
B

C

D

E

F



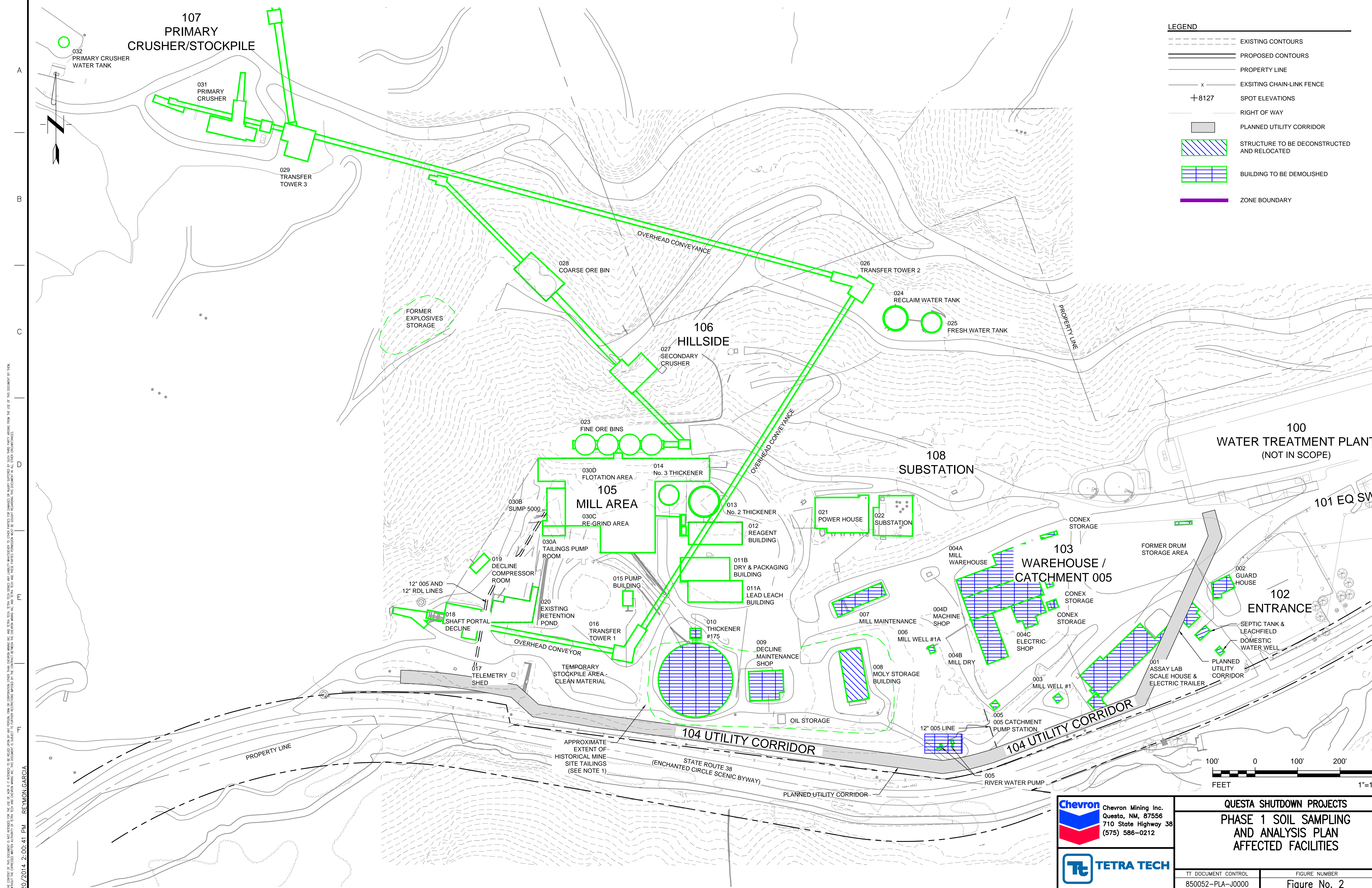
**Chevron** Chevron Mining Inc.  
Questa, NM, 87556  
710 State Highway 38  
(575) 586-0212



QUESTA SHUTDOWN PROJECTS		
PHASE 1 SOIL SAMPLING AND ANALYSIS PLAN		
OVERALL SITE PLAN		
TT DOCUMENT CONTROL	FIGURE NUMBER	REV.
850077-PLA-J0001	Figure No. 1	A

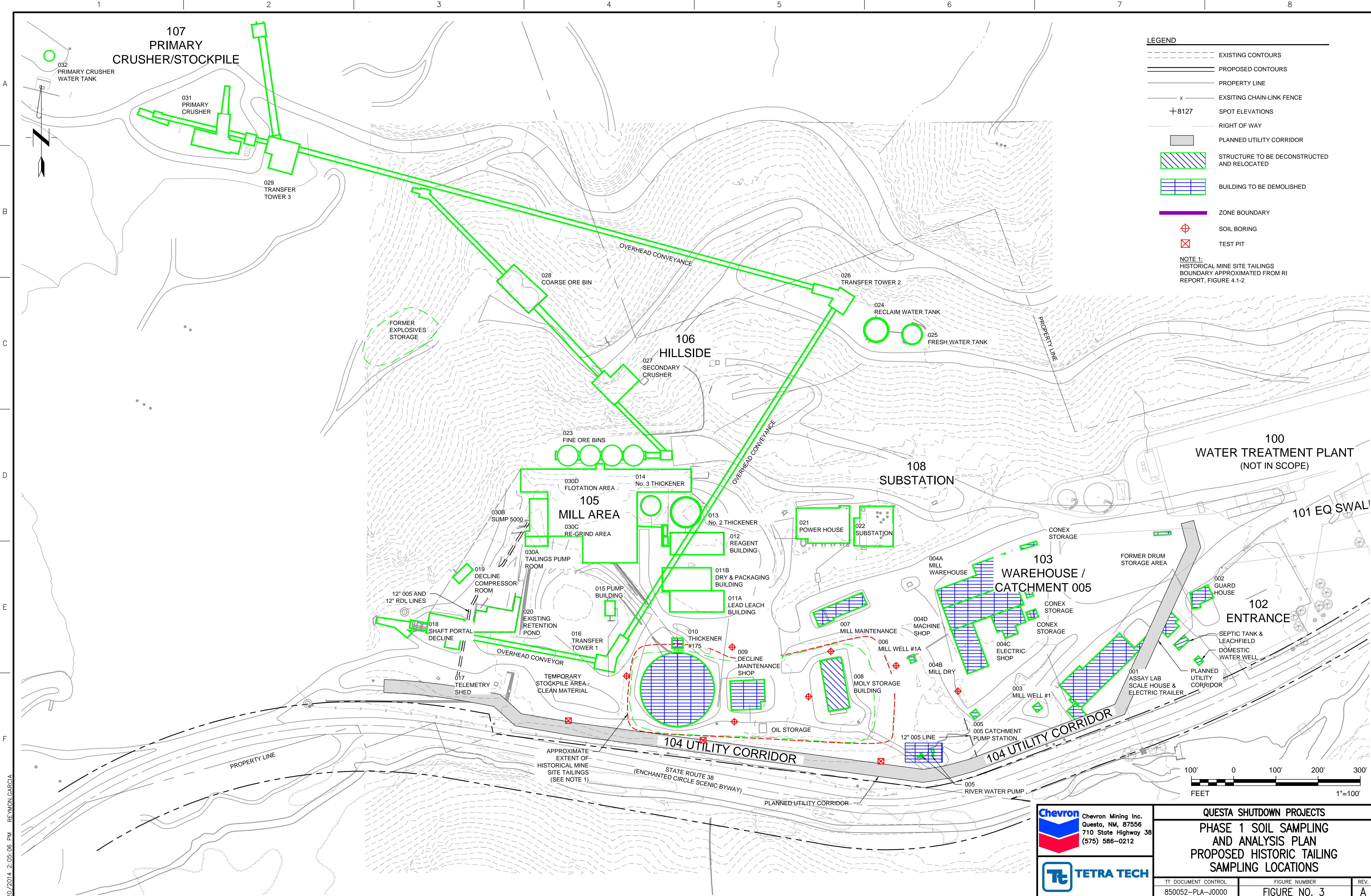
MARCO HERRANZ  
7/22/2014 3:04:38 PM





8/20/2014 2:00:41 PM REYMON GARCIA  
 THE CONTENT OF THIS DOCUMENT IS NOT INTENDED FOR THE USE OF ANY PERSON OTHER THAN THE CLIENT AND IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN CHEVRON MINING INC. AND TETRA TECH. THIS DOCUMENT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE EXPRESS WRITTEN PERMISSION OF CHEVRON MINING INC. AND TETRA TECH. ANY SUCH REPRODUCTION OR TRANSMISSION IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN CHEVRON MINING INC. AND TETRA TECH.

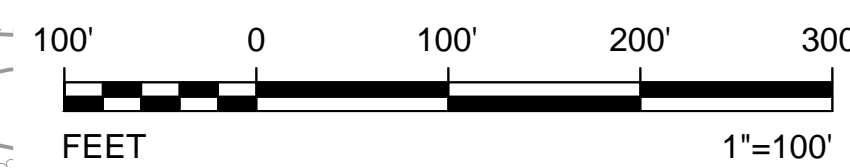




**LEGEND**

- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPERTY LINE
- x- EXISTING CHAIN-LINK FENCE
- +8127 SPOT ELEVATIONS
- RIGHT OF WAY
- PLANNED UTILITY CORRIDOR
- [Blue Hatched Box] STRUCTURE TO BE DECONSTRUCTED AND RELOCATED
- [Green Hatched Box] BUILDING TO BE DEMOLISHED
- ZONE BOUNDARY
- ⊕ SOIL BORING
- ⊠ TEST PIT

**NOTE 1:**  
HISTORICAL MINE SITE TAILINGS BOUNDARY APPROXIMATED FROM RI REPORT, FIGURE 4.1-2



**Chevron** Chevron Mining Inc.  
 Questa, NM, 87556  
 710 State Highway 38  
 (575) 586-0212

**Tetra Tech**

<b>QUESTA SHUTDOWN PROJECTS</b>		
<b>PHASE 1 SOIL SAMPLING AND ANALYSIS PLAN</b>		
<b>PROPOSED HISTORIC TAILING SAMPLING LOCATIONS</b>		
TT DOCUMENT CONTROL 850052-PLA-J0000	FIGURE NUMBER FIGURE NO. 3	REV. A

8/20/2014 2:05:06 PM REYMON GARCIA  
 THE CONTENT OF THIS DOCUMENT IS NOT INTENDED FOR THE USE OF ANY OTHER PARTY. IT IS THE PROPERTY OF CHEVRON MINING INC. AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE EXPRESS WRITTEN PERMISSION OF CHEVRON MINING INC. THIS DOCUMENT IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN CHEVRON MINING INC. AND THE USER. ANY REPRODUCTION OR TRANSMISSION OF THIS DOCUMENT IN ANY OTHER MANNER WITHOUT THE EXPRESS WRITTEN PERMISSION OF CHEVRON MINING INC. IS STRICTLY PROHIBITED.



**APPENDIX A**

**PRELIMINARY PHASE 1 BUILDING INVENTORIES**

DRAFT

## **APPENDIX B**

### **LABORATORY DETECTION LIMITS**

DRAFT

## **APPENDIX C**

### **STANDARD OPERATING PROCEDURES**

**DRAFT**