# **Final Site Investigation Report**

# **Former Stimson Atlas Mill Property**

# Coeur d'Alene, ID

Tetra Tech Project# 102-RED-T38956 EDMS #2019BBD116 October 2, 2019

Ron Phillys

#### **PRESENTED TO**

# **Idaho Department of Environmental Quality**

1410 North Hilton Boise, Idaho 83706

#### **PRESENTED BY**

**Tetra Tech** 1212 N. Washington Street, Suite 208 Spokane, WA 99201 P +1-509-344-0262 tetratech.com

Prepared by:

Ron Phillips Project Scientist

October 2, 2019

Reviewed by:

Jon Welge

**Project Manager** 

October 2, 2019

# **TABLE OF CONTENTS**

| 1.0 | INTRODUCTION   | 1  |
|-----|--|----|
| 2.0 | BACKGROUND   | 2  |
| 3.0 | INVESTIGATION METHODS                                  | 3  |
|     | 3.1 Decision Units                                     | 3  |
|     | 3.1.1 Incremental Sampling Methodology                 | 3  |
|     | 3.1.2 Decision Unit - West                             | 4  |
|     | 3.1.3 Decision Unit - North                            | 4  |
|     | 3.1.4 Decision Unit - East                             | 4  |
|     | 3.1.5 Sample Collection – Decision Units               | 4  |
|     | 3.1.6 Sample Processing – Decision Units               | 5  |
|     | 3.1.7 Equipment Decontamination                        | 6  |
|     | 3.2 Berm Area  | 6  |
|     | 3.2.1 Berm Investigation Methods                       | 6  |
|     | 3.2.2 Soil Inspection and Screening                    | 6  |
|     | 3.2.3 Sample Collection                                | 6  |
|     | 3.2.4 Equipment Decontamination                        | 7  |
|     | 3.3 Shoreline Area                                     | 7  |
|     | 3.3.1 Sample Collection                                | 7  |
|     | 3.3.2 Equipment Decontamination                        | 7  |
|     | 3.4 Quality Assurance Sample Collection                | 7  |
|     | 3.4.1 Duplicate Samples                                | 7  |
|     | 3.4.2 Rinsate Blank Samples                            | 8  |
| 4.0 | INVESTIGATION RESULTS                                  | 9  |
|     | 4.1.1 DU-North   | 9  |
|     | 4.1.2 DU-East  | 9  |
|     | 4.1.3 DU-West  | 9  |
|     | 4.1.4 Berm Area  | 10 |
|     | 4.1.5 Shoreline Area                                   | 10 |
|     | 4.2 IDW Management                                     | 10 |
| 5.0 | QUALITY ASSURANCE REVIEW                               |    |
|     | 5.1 Stage 2A Data Review, Verification, and Validation | 11 |
|     | 5.1.1 Precision  | 11 |

| 7.0 REI | FERENCES                 | 18 |
|---------|--------------------------|----|
| 6.0 SUI | MMARY                    | 16 |
|         | Deviations from the QAPP |    |
|         | 5.1.7 Summary            |    |
|         | 5.1.6 Sensitivity        |    |
|         | 5.1.5 Completeness       |    |
|         | 5.1.4 Comparability      | 14 |
|         | 5.1.3 Representativeness | 12 |
|         | 5.1.2 Accuracy           |    |
|         |                          |    |

#### **APPENDICES**

#### **APPENDIX A - FIGURES**

Figure 1. Vicinity Map

Figure 2. Site Location Map

Figure 3. Site Map

Figure 4a. Decision Unit - West

Figure 4b. Decision Unit - North

Figure 4c. Decision Unit - East

Figure 4d. Berm and Shoreline

Figure 5. ISM Process Flow Chart – SVL Analytcal

#### **APPENDIX B - TABLES**

Table 1: Summary of Metals Analysis – Decision Units North, East and West

Table 2: Summary of PAH Analysis – Decision Units North and West

Table 3: Summary of Metals Analysis, Berm Samples

Table 4: Summary of Metals Analysis, Shoreline Samples

**APPENDIX C - FIELD NOTES** 

**APPENDIX D - BORING LOGS** 

APPENDIX E - LABORATORY ANALYTICAL REPORTS

**APPENDIX F - QUALITY CONTROL REVIEW DATA** 

APPENDIX G - PHOTOGRAPHS

# **ACRONYMS/ABBREVIATIONS**

| Acronyms/Abbreviations | Definition  |
|------------------------|---|
| °C                     | Degrees Celsius   |
| %                      | Percent   |
| μg/m <sup>3</sup>      | Micrograms per cubic meter  |
| bgs                    | Below Ground Surface  |
| DEQ                    | Idaho Department of Environmental Quality                           |
| DOT                    | Department of Transportation  |
| DU                     | Decision Unit   |
| EPA                    | U.S. Environmental Protection Agency                                |
| ESA                    | Environmental Site Assessment                                       |
| GC/MS                  | Gas Chromatography/Mass Spectrometry                                |
| GPS                    | Global Positioning System   |
| IDW                    | Investigation Derived Waste   |
| ISM                    | Incremental Sampling Methodology                                    |
| ITRC                   | Interstate Technology and Regulatory Council                        |
| LOD                    | Limit of Detection  |
| LOQ                    | Limit of Quantitation   |
| MCL                    | Maximum Contaminant Level   |
| mg/kg                  | Milligrams per Kilogram   |
| mg/L                   | Milligrams per Liter  |
| MS/MSD                 | Matrix Spike/Matrix Spike Duplicate                                 |
| PAH                    | Polynuclear (or Polycyclic) Aromatic Hydrocarbon                    |
| PPM                    | Priority Pollutant Metals   |
| Ppm                    | Parts per Million   |
| QAPP                   | Quality Assurance Project Plan                                      |
| QC                     | Quality Control   |
| RCRA                   | Resource Conservation and Recovery Act                              |
| RCRA Metals 8          | Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver |
| RPD                    | Relative Percent Difference   |
| RSL                    | Regional Screening Level  |
| RUSL                   | Residential Use Screening Level                                     |
| SOP                    | Standard Operating Procedure  |
| SSHP                   | Site Safety and Health Plan   |
| SVOC                   | Semi-Volatile Organic Compound                                      |

| Acronyms/Abbreviations | Definition                |
|------------------------|---------------------------|
| ТО                     | Task Order                |
| VCP                    | Voluntary Cleanup Program |
| VOC                    | Volatile Organic Compound |
| XRF                    | X-Ray Fluorescence        |

# 1.0 INTRODUCTION

Tetra Tech conducted a site investigation for the Idaho Department of Environmental Quality (IDEQ or DEQ) at the former Stimson-Atlas Mill Site (the Site) during June 2019. The Site is located between the Spokane River and West Seltice Way in Coeur d'Alene, Kootenai County, Idaho (see **Figure 1** and **Figure 2** in **Appendix A**).

The investigation was conducted as part of Task Order (TO) #28 of DEQ's Contract No. K158 with Tetra Tech. The work was conducted to evaluate potential impacts to soil and shoreline sediments related to historic uses at the Site.

Tetra Tech's scope of work for this project included:

- Preparing a Quality Assurance Project Plan (QAPP) and a site-specific Site Safety and Health Plan (SSHP);
- Obtaining soil samples from thee Decision Units;
- Obtaining soil samples from a berm adjacent to the Spokane River;
- Obtaining sediment samples from the northern shore line of the Spokane River; and,
- Preparing this summary report.

This report is organized as follows:

- Section 1 presents an introduction;
- Section 2 provides the project background and Site information;
- Section 3 describes the investigation methods;
- Section 4 provides the investigation results and IDW management;
- Section 5 discusses the quality assurance review;
- Section 6 provides a brief summary; and,
- Section 7 provides references.

This report includes a total of seven appendices. **Appendix A** contains Site figures and **Appendix B** is comprised of four tables that summarize laboratory results for sampling areas. **Appendix C** includes copies of the field notes. The lithologic logs of borings in the Berm Area are presented in **Appendix D**. **Appendix E** provides the laboratory analytical reports and laboratory QA/QC data. **Appendix F** includes the Tetra Tech quality control review data evaluation checklists, and **Appendix G** includes Site photographs.

# 2.0 BACKGROUND

A lumber mill was constructed on the Site in the early part of the twentieth century (Tetra Tech, 2017). A 1910 Sanborn Map depicts the original north-south oriented shape of the mill. The majority of the mill structures were located on a western central portion of the subject property at that time. Railroad uses were noted onsite and nearby. Other structures on the Site include dwellings, an oil house, and a wagon shed. The Northern Pacific railroad, the electric Spokane & Eastern Railway & Power Company railroad, Great Northern railroad, and the Chicago, Milwaukee, St. Paul & Pacific railroad are each onsite or nearby.

The early mill area was concentrated on a western-central portion of the subject property and railroad uses dominated the northern portion of the Site. Subsequent maps depict the mill operation expanding to include a planer building, shavings bins, sorting areas, a lunch room, a blacksmith, a boiler house, a refuse burner, an electric switch house, auto storage areas, a slash warehouse, lumber yards, and similar features.

The mill expanded through the years to the west when a large planer building was established in the 1940s, when the Atlas Building Center was constructed in the 1950s, and when the headquarters building was constructed in the 1960s on what is currently the north-adjoining property. On the maps it appears the entire western portion of the Site was used to support mill structures from the 1950s and beyond.

During the 1950s and 1960s the northeast portion of the Site was used for gravel extraction by the State of Idaho (highway district) to support local road construction projects such as Interstate 90. This resulted in the formation of pits on the northern central and northeastern portions of the Site. The pits were eventually filled in during the 1980s and the northeastern portion of the Site was used to store and load lumber. During mill closure operations in the 2000s the northeast corner of the Site was used to stockpile soil and wood debris, resulting in a local feature that has been dubbed Mt. Heinke. The former log storage yard immediately west of Mt. Heinke was paved at some unknown time. This area has recently been used as a loading area for trucks and for short-term materials storage supporting the recent reconstruction of Seltice Way to the north.

The southeastern portions of the Site did not appear frequently used until the late 1960s and 1970s, after the web of railroads on that portion of the Site and nearby had been removed. The southeastern portion of the Site supported lumber storage from the 1970s through 2006.

Aerial photographs and building department records suggest most of the total of 27 structures at the mill site were demolished from 2006 to 2009. The concrete from many of these areas remains in piles on the western portion of the Site. Top soil was removed from the western and eastern lower bench areas of the Site at that time and deposited elsewhere, including at the northeast corner of the Site (Mt. Heinke).

The southern boundary of the Site rests along the Spokane River. Shoreline areas of the Site have been flooded at least several times over the past 100 years. Historic mining operations along the Coeur d'Alene River to the northeast resulted in the release of metals-contaminated sediments to Lake Coeur d'Alene and to the Spokane River, the primary outlet of the lake.

Currently the Site includes the large Mt. Heinke stockpile, a former truck scale area and paved log yard to the north, crushed concrete piles to the west in immediate vicinity of former mill structures, a berm and shoreline areas along the Spokane River. The eastern lower half of the property was recently covered by thousands of cubic yards of fill from nearby earthwork along Interstate 90 (see **Figure 1** and **Figure 2**). Characterizing the quality of soil across the Site and along the Spokane River remains the primary goal of this investigation.

# 3.0 INVESTIGATION METHODS

The following section describes the methods used in the field investigation. It includes subsections for the three Decision Units, Berm, and Shoreline. Incremental Sampling Methodology (ISM) was used at the three decision units, and discrete sampling was conducted at the Berm and Shoreline areas. The investigation was guided by the project QAPP (Tetra Tech 2019).

#### 3.1 DECISION UNITS

Three Decision Units (DUs) were developed for investigation based on historical Site uses and proposed future Site use. The approximate boundaries of the three DUs (DU-West, DU-North and DU-East) are shown on **Figure 3**. The sizes and locations of decision units were previously determined through conferences between IDEQ, City of Coeur d'Alene staff, and Tetra Tech personnel.

The northern-central portion of the Site, west of the Mt. Heinke stockpile, was once a log storage area. This area, known as DU-North, includes wood waste and unconsolidated fill overlain by thick asphalt. The quality of soil beneath asphalt in this area is unknown and may include elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) and metals.

South of DU-North and the Mt. Heinke area is a long low-elevation bench stretching generally east to west across the Site. The western portion of this bench, known as DU-West, included numerous mill structures until these structures were removed in the mid-2000s. Broken concrete from former mill structures remains.

The eastern portion, known as DU-East, was primarily used as log storage by the mill. The topsoil was removed from across the bench in the mid-2000s. Within the past year the eastern portion of this area received fill originating from a nearby Interstate 90 improvement project.

The northeastern portion of the subject Site was historically used for stockpiling surface soil and woody debris that may have been affected by the mill and nearby railroad operations. This portion of the Site, including the stockpile known as Mt. Heinke, was not part of this limited site investigation.

# 3.1.1 Incremental Sampling Methodology

Surface soil sampling was conducted in each of the three DUs described above using direct push technology (GeoProbe) provided by Northern Lights Drilling. The sampling procedures followed the principles of the Interstate Technology Regulatory Council (ITRC) guidance on Incremental Sampling Methodology (ITRC 2012) and EPA SW-846 Method 8330B, Appendix A (USEPA 2006). Sampling was completed using a systematic random method of grid-based sampling in accordance with the QAPP (Tetra Tech 2019).

Grid layers were created for each of the three DUs. Each DU grid layer was sized to include at least 30 soil aliquot or increment collection points (grid cells). Each of the grid cells in each DU layer were then subdivided into nine (9) sub cells, and a random number generator was used to determine which sub cell within each grid in each 30-grid layer would be sampled. A total of 30 increments were collected per each DU sample, where two of the three DUs were sampled in *triplicate* (x3) for a total of seven DU samples and 210 total collection points. The spread of sampling was consistent with ISM systematic-random sampling protocols to reduce distributional heterogeneity.

The increment collection points for all three DUs were uploaded into a Juniper Systems GPS receiver using ARC View so that 210 aliquot collection points (the total from all DUs) could be located in the field using this GPS. In some cases, the selected boring locations were adjusted due to physical obstructions or access issues. The locations of the replacement points were uploaded into the GPS receiver. Duplicated sub cell sampling was avoided.

In accordance with the project QAPP, sampling was completed in triplicate in DU-East and DU-West. A total of 90 ISM points were sampled within each of these two DUs. This triplicate effort was conducted to verify that results truly represent each DU.

#### 3.1.2 Decision Unit - West

DU-West represents the western proposed residential area on the Site. It is an irregularly shaped area with approximate dimensions of 1,700 feet in an east-west direction and 700 feet in a north-south direction (**Figure 4a**). It encompasses an area of approximately 20 acres. This area once included many of the mill structures on the Site.

Soil sub-sample increments were collected from ninety (90) shallow borings as part of the ISM characterization program. Samples were collected from designated locations within the DU using direct-push drilling techniques. This DU was sampled in triplicate using ISM methods. A single soil sample comprised of sub-samples from approximately 30 shallow (approximately 12" deep) borings was collected, processed, and analyzed. This sample collection phase was conducted three times across the DU to produce three ISM samples total for statistical and QA/QC purposes. The three ISM samples collected were each analyzed for RCRA Metals 8 and PAHs.

#### 3.1.3 Decision Unit - North

DU-North represents the northern proposed residential area on the Site. It is a roughly square-shaped area with approximate dimensions of 450 feet in an east-west direction and 450 feet in a north-south direction that encompasses an area of approximately 5 acres (**Figure 4b**). This area was once a pit that later was backfilled and used for log storage. The area has since been capped with asphaltic concrete. Concrete and soil fill materials was subsequently stored on the asphalt over much of the south-central portion of the DU.

Direct-push drilling techniques were used to advance 30 shallow borings at DU-North as part of the ISM soil sampling program. DU-North is covered with a thick layer of concreted asphalt. The depth of sampling was adjusted to three-foot depths in the field to accommodate initial low retrieval volume. The 30 sub-samples were processed in the field in accordance with the project QAPP to create a single ISM sample from DU-North. The ISM sample collected was analyzed for RCRA Metals 8 and PAHs.

#### 3.1.4 Decision Unit - East

DU-East represents the eastern proposed residential area on the Site. It is an irregularly shaped area with approximate dimensions of 800 feet in an east-west direction and an average of 600 feet in a north-south direction, encompassing an area of approximately 10 acres (**Figure 4c**). This area was primarily used for a log storage during mill operations. Fill from a nearby Interstate 90 construction project was recently spread across this area of the Site.

Soil sub-samples were collected from ninety (90) shallow borings as part of an ISM characterization program. Using direct push drilling techniques, sub-samples were collected from designated locations within the DU. This DU (like DU West) was also sampled in triplicate using ISM methods. A single soil sample comprised of sub-samples from approximately 30 shallow (approximately 12" deep) borings was collected, processed, and analyzed. This sample collection phase was conducted three times across the DU to produce three ISM samples total for statistical and QA/QC purposes. The three ISM samples collected were each analyzed for RCRA Metals 8.

# 3.1.5 Sample Collection - Decision Units

Soil collected in each of the three decision units was conducted using direct push drilling techniques. The sample locations identified in the QAPP were marked using a global positioning system receiver with sub-meter accuracy. A small number of sample locations needed to be adjusted due to access issues (e.g. steep slopes or areas inaccessible because of large amounts of fill).

The direct push borings at DU-North were advanced an additional three feet deep so that enough sample could be collected for sample processing (described below). This was necessary because of the thick asphalted concrete paving and the relatively coarse texture of the material; much of the material did not pass through the ¼" screening sieve. The borings at DU-West and DU-East were extended to one foot deep as per the QAPP. The material was withdrawn from the borings in 1.75-inch diameter PVC (or Macrocore) liners or sleeves that were cut open to allow access to the soil. Soil was processed, as further described below, and then sealed within the sample container, assigned a unique name, appropriately labeled, and eventually hand-delivered to SVL.

# 3.1.6 Sample Processing – Decision Units

Sample processing in the three decision units included sieving the retrieved material, containerizing a portion of the sieved soil, collecting a representative portion as needed depending on the analysis, and containerizing the soil for shipment to the laboratories. These steps are further described below.

- The PVC (Macrocore) sleeves retrieved by the direct push drill rig were opened to allow access to soil.
- Asphalt and large rocks, often present in the upper material from DU-North, were removed by gloved hand.
- The remaining material was taken from the PVC sleeve and placed into a ¼" test sieve. This pan was placed over a stainless-steel bowl to capture the soil that was processed through the sieve.
- The gloved field crew gently worked the soil to break up larger consolidated pieces and allow them to pass through the screen of the sieve.
- At each DU, approximately one 8 oz jar of the sorted soil was removed from the stainless-steel bowl and placed into a clean, dedicated laboratory-supplied plastic bucket for homogenization and eventual shipment to the lab. The outside of the bucket was labeled with the sample designation.
- The lid was placed on the bucket between sample locations.
- The remaining soil in the stainless-steel bowl and the material that did not pass through the sieve were placed into a 55-gallon DOT drum pending the laboratory results.
- After each of the 30 increments were collected and placed into the bucket, the soil within the bucket was homogenized using a clean stainless-steel spoon.
- Once the homogenization was complete the bucket was sealed for later delivery to the laboratory (SVL Analytical) for metals analysis as per the project QAPP. However, DUs North and West also included PAH sampling.
- For PAH sampling at DU North and DU West, after homogenization of the subsamples was completed, the soil within the bucket was placed upon clean six-mil poly plastic sheeting. A cone of the soil was created. A quarter of the cone was segregated from the remainder of the soil, and a portion of this quarter was placed into an 8 oz sample jar for PAH analysis. The jar was labeled with the sample designation, date and time of collection, required analysis, and was then placed on ice in a cooler. The samples were later shipped to the laboratory that performs PAH analysis (Pace National).
- The remainder of the homogenized soil samples from DU-North and from DU-West was placed back into
  the sample buckets from each decision unit and sealed for eventual delivery to the laboratory (SVL
  Analytical). All 7 metals samples were later hand delivered to SVL and the PAH samples were later
  overnighted via FedEx to Pace National.

The sample collection and processing was completed twice more for a total of three natural samples each from DU-East and DU-West. Collection of these triplicates and also the duplicate samples for QA/QC purposes is described in **Section 3.4** below.

SVL Analytical completed additional required ISM processing of the DU samples before conducting its metals analysis. SVL processing included air drying, final sieving using a #80 (180  $\mu$ m) sieve, and creation of a two-dimensional Japanese slab cake to create 10-gram aliquots. The laboratory ISM preparation process is shown as **Figure 5** located in **Appendix A**.

# 3.1.7 Equipment Decontamination

The sampling equipment was decontaminated after each set of samples was collected (one time for DU-North, and three times each for DU-East and DU-West). This included scrubbing the sieve, stainless steel bowl, stainless steel spoon, drill rods, and drive point with a soap and water solution, then rinsing them with clean water.

#### 3.2 BERM AREA

The berm area is adjacent to the Spokane River shoreline and rests along the southern border of the Site (**Figure 4d**). It is a linear, slightly arc-shaped area that is approximately 3,800 feet long separating a former railroad bed from the Spokane River. Prior to this investigation, the berm soil content was unknown, and there was concern that contaminated sediments from historic sediment deposition may have come to rest in this area. The overall area was examined to help determine the best management practices and techniques for soils that may be removed for shoreline modification and stabilization under an Army Corps of Engineers permit. Examination of shallow and deep soils helps to determine berm contents. The deeper soils sampled from the berm investigation also help to characterize sediments that may have been historically deposited along the bank of the Spokane River. These sediments were suspected of being impacted with metals from historic mining activities in the Silver Valley to the east. Evaluating berm soils relative to risks involved with physical contact was an objective of this investigation.

## 3.2.1 Berm Investigation Methods

The berm investigation consisted of obtaining soil samples from 10 locations using direct push drilling techniques. The locations of borings identified in the QAPP were adjusted in the field with input from IDEQ and Northern Lights Drilling personnel based on field observations and access considerations. The latitude and longitude of the adjusted points were recorded with a Juniper Systems Geode GPS receiver with sub-meter accuracy. Each boring and sample was assigned a unique name (SAM-Berm-1 through SAM-Berm-10).

The soil was retrieved from each boring in four-foot cores encapsulated in 1.75-inch diameter PVC sleeves. The total depth of the borings ranged from 8 to 16 feet, depending on observations made of the soil and the surface elevation relative to the ordinary high-water mark (OHWM) of the river and Lake Coeur d'Alene.

# 3.2.2 Soil Inspection and Screening

The PVC sleeves from each sampling interval were cut open to allow inspection and screening of the soil. The Tetra Tech field geologist used the observations of soil type and characteristics to create a lithologic log for each of the borings. A Thermo Scientific Niton XL3t x-ray fluorescence (XRF) analyzer was used to screen the soil from several depths in each boring for the presence of arsenic, lead, mercury, and zinc. A standardized process was used for each test so that the results would be reproducible. In each test, the sensor of the instrument was placed upon or within a few millimeters of the soil, the instrument was activated for ten seconds, and the results were recorded on the field lithologic log. The values from the XRF analyzer should be considered qualitative rather than quantitative, where the actual values were used to guide sampling only.

# 3.2.3 Sample Collection

Two soil samples from each of the ten berm area borings were submitted for laboratory analysis. In general, the samples were collected from the upper three feet of each boring and from three feet of soil near the terminus of each boring. The lower sample collection interval was supplanted with soil from a higher interval within the boring when screening by the XRF analyzer indicated that elevated concentrations of metals may be present at shallower depths.

The samples were collected by taking the selected (approximate 3-foot) interval of soil from the PVC sleeve, placing it into a stainless-steel bowl, thoroughly mixing it, then filling clean, laboratory-supplied glass jars with soil. The jars were labeled with the designation (boring number and depth), date and time of collection, and required analysis (RCRA Metals 8). The samples were then placed on ice in a cooler pending delivery to SVL Analytical.

The remaining soil in the PVC sleeves was placed into a 55-gallon DOT drum for eventual appropriate disposal.

# 3.2.4 Equipment Decontamination

The sampling equipment was decontaminated after each sample was collected (twenty times total for the berm investigation). This included scrubbing the stainless-steel bowl, drill rods, and drive point with a soap and water solution, then rinsing them with clean potable water.

#### 3.3 SHORELINE AREA

The shoreline area represents the Spokane River shoreline located along the southern border of the Site (**Figure 4d**). It is a linear, slightly arc-shaped area that is approximately 3,800 feet long resting proximal to the seasonal high-water mark of the Spokane River. Shoreline areas in the vicinity are inundated or flood annually. Historic mining operations along the Coeur d'Alene River to the east resulted in the release and transport of metals-impacted sediments into Lake Coeur d'Alene, and into the Spokane River, which is the primary outlet of Lake Coeur d'Alene. Future development may include areas that promote public access to the shoreline area, so evaluating these sediments relative to physical contact was a primary goal of this investigation.

## 3.3.1 Sample Collection

Soil samples were collected from 10 locations along the shoreline area. The sampling process included wading into the shallow water as needed, finding a location with minimal vegetation and rocks slightly above the water line at the time of the sampling, collecting sediment with a stainless-steel trowel, and placing the sample directly into laboratory-supplied glass containers. Suitable soil was not present above the edge of the water at location SAM-Shore-2 because of vegetation and the topography. Alternatively, this sample was collected from beneath approximately six inches of water. The GPS unit was used to collect location information for each sampling point. Each point was identified with a unique name (SAM Shore-1 through SAM Shore-10). The sample jars were labeled with the designation (boring number and depth), date and time of collection, and required analysis (cadmium, lead, and zinc). The samples were then placed on ice in a cooler pending delivery to SVL Analytical. These samples were submitted as discrete samples.

# 3.3.2 Equipment Decontamination

The stainless-steel spoon used to collect the sediments was cleaned between sample locations. This was accomplished by rinsing it with distilled water. The spoon was then wrapped in foil to keep it clean until the next sampling location.

#### 3.4 QUALITY ASSURANCE SAMPLE COLLECTION

Samples were collected for QC purposes. These included duplicate samples of the soil and sediment, and rinsate blank samples from equipment that had been cleaned between sample locations.

# 3.4.1 Duplicate Samples

Duplicate samples were collected to provide a way of checking laboratory accuracy and variations in field sample collection. The duplicate sample method used at decision units was to split samples, meaning that the duplicate sample was taken from the same initial volume of matrix. The duplicate sample from berm investigation was also a split because these samples were a composite collected over several feet of the soil in the PVC sleeve. The

7

duplicate sample from the shoreline sample was a replicate, meaning that it was collected immediately after the natural sample, but from the same location as the natural sample. The natural sample locations were documented in the field notes (**Appendix C**).

The following duplicate samples were collected in the field:

- SAM-DU-SD-1: A duplicate of SAM-DU-East-2, analyzed for RCRA Metals 8;
- SAM-DU-SD-1: A duplicate of SAM-DU-West-1, analyzed for PAHs.
- SAM-Berm-SD-1: A duplicate of SAM-Berm-7 (11-14), analyzed for RCRA Metals 8.
- SAM-Shore-SD-1: A duplicate of SAM-Shore-7, analyzed for cadmium, lead, and zinc.

SVL also prepared a laboratory duplicate by splitting one of the samples Tetra Tech submitted and analyzing that sample separately from the parent sample. This procedure was completed by SVL for internal QAQC purposes related to sample processing. SVL selected SAM-DU-1 as the parent sample for this analysis. They designated their duplicate sample as SAM-DU-SD-1 (DUP). This sample was processed and analyzed using techniques consistent with the rest of the ISM samples.

# 3.4.2 Rinsate Blank Samples

Five aqueous rinsate blanks were generated to verify the effectiveness of the sampling equipment decontamination. The rinsate blank samples from the decision units were collected by using deionized water supplied by the laboratory and pouring across the drill drive point, through the sieve, and collecting it in the stainless-steel bowl. The water that collected in the bowl was then poured into the sample container(s). The rinsate blank sample from the shoreline sample was taken by pouring deionized water from the lab over the stainless-steel sampling trowel and catching it in the sample container. The rinsate blank samples from the berm area sampling was collected by placing the drill drive point into the stainless-steel mixing bowl and partially filling the mixing bowl with deionized water supplied by the laboratory. The water in the bowl was then poured into the sample container. The rinsate blanks were collected after each DU and after each of the other samples had been collected. Rinsate samples included the following:

- DU-North-1: Rinsate blank sample designation DU-North-1-RB. Submitted to SVL for analysis of RCRA Metals 8 and to Pace National for PAHs.
- DU-East-1: Sample designation DU-East-1-RB. Submitted to SVL for analysis of RCRA Metals 8.
- DU-West-3: Sample designation DU-West-3-RB. Submitted to SVL for analysis of RCRA Metals 8 and to Pace National for PAHs.
- SAM-Shore-10: Sample designation SAM-Shore-10 (RB). Submitted to SVL for analysis of chromium, lead, and zinc.
- SAM-Berm-1(9-12): Sample designation SAM-Berm-1(9-12) RB. Submitted to SVL for analysis of RCRA Metals 8.

# 4.0 INVESTIGATION RESULTS

The results of the investigation are presented in this section of the report. It includes a discussion of the laboratory results for the Decision Units, Berm Area, and Shoreline Area. The **Tables** in **Appendix B** present the analytical results. Thirty-seven (37) soil samples were collected during this site investigation effort. This includes 30 discrete soil samples and seven ISM soil samples. Three split samples were collected (including two of the ISM soil samples and one discrete sample) for QA/QC purposes, and one replicate of a discrete sample was collected. The laboratory also spilt a sample for internal QA/QC purposes, making a total of 41 samples that were analyzed. The soil samples were analyzed for various metals and chemicals of interest depending on the decision unit or area.

Analytical results have been compared to Risk Based Screening Levels for unrestricted use (from the IDEQ Risk Evaluation Manual for Petroleum Releases, DEQ, 2018), and to Regional Screening Levels for Residential Soil from the EPA (EPA, 2019). Analytical results were also compared to known background concentrations of metals where applicable. The results are discussed below.

#### 4.1.1 DU-North

ISM sampling was conducted singularly in DU-North, where 30 subsample locations were composited into a single ISM sample. This ISM sample was analyzed for RCRA Metals 8 by SVL Analytical and for PAHs by Pace National.

Four metals were detected during analysis. The metals results are presented in **Table 1**. A comparison of the results to EPA RSLs for residential soil indicates that none of the concentrations except arsenic exceed applicable screening levels for direct contact. A comparison of the results to EPA RSLs for residential soil indicates that none of the concentrations except arsenic exceed applicable screening levels for direct contact. However, arsenic concentrations appear to represent naturally occurring background concentrations in the area, and similar to those levels stated within the Letter Health Consultation provided by the Idaho Department of Health and Welfare in 2017 (IDHW, 2017).

Eight PAHs were detected during analysis. The PAH results are presented in **Table 2.** A comparison of the results to IDEQ minimum screening levels indicates that none of the concentrations exceed applicable screening levels.

#### 4.1.2 **DU-East**

ISM sampling was conducted in triplicate in DU-East, where each of the three samples were comprised of 30 subsamples. Each ISM sample was analyzed for RCRA Metals 8 only by SVL Analytical. Sampling was limited to RCRA Metals 8 due to this area receiving fill materials over the past year, where the materials originated from a nearby Interstate 90 improvement project.

Five metals were detected in one or more of the three ISM samples. The results are presented in **Table 1.** A comparison of the results to EPA RSLs for residential soil indicates that none of the concentrations except arsenic exceed applicable screening levels for direct contact. However, arsenic concentrations appear to represent naturally occurring background concentrations in the area, and similar to those levels stated within the Letter Health Consultation provided by the Idaho Department of Health and Welfare in 2017 (IDHW, 2017).

#### 4.1.3 **DU-West**

ISM sampling was conducted in triplicate in DU-West, where each of the three samples were comprised of 30 subsamples. Each ISM sample was analyzed for RCRA Metals 8 by SVL Analytical and for PAHs by Pace National.

Five metals were detected in one or more of the three ISM samples. The metals results are presented in **Table 1.** A comparison of the results to EPA RSLs for residential soil indicates that none of the concentrations except

arsenic exceed applicable screening levels for direct contact. However, arsenic concentrations appear to represent naturally occurring background concentrations in the area, and similar to those levels stated within the Letter Health Consultation provided by the Idaho Department of Health and Welfare in 2017 (IDHW, 2017).

Ten PAHs were detected during analysis. The PAH results are presented in **Table 2**. The results have been compared to Idaho DEQ minimum screening levels. None of the concentrations exceed DEQ screening levels.

#### 4.1.4 Berm Area

Twenty (20) soil samples were collected from 10 soil borings advanced within the berm at the southern site boundary, proximal to the Spokane River. Soil samples were collected from upper and lower portions of each soil boring. Each soil sample was analyzed for RCRA Metals 8 by SVL Analytical.

Screening of soil for arsenic, lead, mercury, and zinc from selected intervals at each boring was performed in the field using an XRF analyzer. The results from this screening guided the selection of sample intervals targeted for laboratory analysis. The results of screening are presented on the boring logs in **Attachment D**.

The XRF detected generally low concentrations of arsenic, lead, and zinc in soil collected from each of the 10 borings. Mercury was not detected during any screening. The XRF indicated that soil from an approximate 7-foot depth at boring SAM-Berm-5 exhibits elevated concentrations of lead and zinc. Therefore, the soil sample that includes this portion of the boring was selected for laboratory analysis [sample SAM-Berm-5 (5-8)].

The metals arsenic, barium, cadmium, chromium, and lead were detected during laboratory analysis of berm soil. Selenium, silver, and mercury were not detected in any of the berm samples. The results of analysis are summarized in **Table 3**.

A comparison of the results to EPA RSLs for residential soil indicates that none of the concentrations except arsenic exceed applicable screening levels for direct contact. However, arsenic concentrations appear to represent naturally occurring background concentrations in the area, and similar to those levels stated within the Letter Health Consultation provided by the Idaho Department of Health and Welfare in 2017 (IDHW, 2017).

#### 4.1.5 Shoreline Area

Ten (10) discrete soil samples were collected from 10 shallow subsurface locations along the northern shoreline of the Spokane River. Each sample was analyzed for the presence of metals cadmium, lead, and zinc by SVL Analytical. The results are summarized in **Table 4**.

Screening of soil from each sample location for arsenic, cadmium, lead, mercury, and zinc was performed in the field using an XRF analyzer. This qualitative screening provided preliminary data. The results of screening are presented in **Appendix D**. Significantly elevated concentrations were not identified in soil during this exercise.

A comparison of the laboratory analytical results to EPA RSLs for residential soil indicates that none of the concentrations exceed applicable screening levels for direct contact.

#### 4.2 IDW MANAGEMENT

Excess soil generated during drilling was placed into a 55-gallon drum pending laboratory analysis. Water that was used or generated during the decontamination of the drilling and sampling equipment was placed into a second 55-gallon drum. Based on the results of this limited site investigation, the investigation derived soil and water waste was not considered to be hazardous. In accordance with the QAPP, Able Cleanup Technologies transported the IDW from the Site in early July 2019 for eventual disposal at Waste Management's Graham Road Landfill located in Medical Lake, Washington. The soil was disposed on July 25, 2019.

# **5.0 QUALITY ASSURANCE REVIEW**

Quality assurance review was completed to ensure data quality. This information is summarized below and is presented in entirety in the report appendices. **Appendix E** provides laboratory analytical data and laboratory QAQC data. **Appendix F** includes Data Review, Data Verification and Data Validation checklists, and copy of Tetra Tech's Data Validation Checklist for the Stage 2A data review.

### 5.1 STAGE 2A DATA REVIEW, VERIFICATION, AND VALIDATION

A review of chain of custody forms and laboratory case narratives indicates that proper chain of custody procedures were maintained. Appropriate preparation and analytical methods were performed on the samples based on the intended use of the data. Collected samples were shipped by overnight courier to Pace National and were hand delivered to SVL Analytical. The samples shipped to Pace were packed in a cooler containing ice, and the interior temperatures was measured upon laboratory receipt and was found within control limits. All samples were received intact, preserved if needed, and in good condition. All samples were analyzed within method holding time requirements.

Laboratory quality control (QC) sample analyses performed for each analytical method are summarized as part of the laboratory analytical package, located as **Appendix E** of the project report.

The following Stage 2A verification and manual validation checks were performed as part of this project

- 1. Requested methods were performed;
- 2. Method dates for handling, preparation and analysis were present, as appropriate;
- Sample-related QC data and QC acceptance criteria were provided in the laboratory report and linked to the project samples including the field QC samples;
- 4. Requested spike analytes were added, as appropriate;
- 5. Sample holding times were evaluated;
- 6. Frequency of QC samples was checked; and
- 7. Sample results were evaluated by comparing holding times and sample-related QC data to EPA and project data validation guidelines.

#### 5.1.1 Precision

Precision is the measure of agreement among individual measurements of the same property under similar conditions. Precision for this project has been expressed in terms of the relative percent difference (RPD) between two samples. Duplicate samples can be evaluated quantitatively for precision only when contaminants are detected in both the sample and the duplicate. Duplicates with RPDs within the control limits indicate adequate sampling practices and/or good analytical precision. Duplicates with RPDs outside the control limits may result from inappropriate sampling procedures, matrix interferences, or non-homogeneity of the sample matrix. In addition, poor precision can be attributed to deviations from the analytical methodology or to poor reproducibility of target analyte concentrations at or near the detection limits.

Precision was evaluated for this project by comparing field duplicate results, laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD results, and matrix spike/matrix spike duplicate (MS/MSD) RPD results for project samples. If the laboratory duplicate or MS/MSD analysis was performed by the laboratory on samples for another client's project within the same method batch, any qualifiers applied to the data are not applicable to this project's samples.

All soil LCS/LCSD, laboratory duplicate, field duplicate, and MS/MSD RPDs for soil were within the QC limits or did not require qualification. Exceptions include:

The LCS/LCSD RPD for naphthalene in Pace National batch WG1304606 was outside the acceptable
control limits for precision. The sample results for naphthalene this batch were flagged by the laboratory
as "(J3) - The associated batch QC was outside the established quality control range for precision."

Overall the level of precision for the Project sampling meets QAPP objectives for all constituents analyzed except for the noted naphthalene laboratory precision on LCS/LCSD samples from batch WG1304606, which indicate the estimated results from the rinsate blanks may be biased low. The bias was discovered to be negligible with respect to the reported concentrations and no results adjustment was required.

## 5.1.2 Accuracy

The assessment of accuracy is evaluated by comparing the percent recoveries (%R) computed from the known concentration of analyte spikes and their recovered concentration versus the analytical method acceptance criteria. Spike recoveries provide an indication of bias, where the reported data may either overestimate or underestimate the actual concentration of detected compounds and/or the detection limits. Accuracy was assessed using surrogate recovery data, LCS/LCSD recovery data, and MS/MSD recovery data for project samples. All LCS/LCSD, MS/MSD, surrogate recoveries, and internal standard response and retention times were within control limits with the following exceptions:

The LCS sample percent recovery for naphthalene for Pace National batch WG1307549 and the LCSD sample percent recovery in batch WG1304606 were outside the QC control limits. The naphthalene sample results for were flagged by the laboratory as "(J4) - The associated batch QC was outside the established quality control range for accuracy."

Overall the level of accuracy for the Project sampling meets QAPP objectives for all constituents analyzed except for the noted naphthalene laboratory LCS/LCSD samples which indicate the estimated naphthalene results may be biased low. The bias was discovered to be negligible with respect to the reported concentrations and no results adjustment was required.

# 5.1.3 Representativeness

Representativeness of the environmental sample analytical data was assessed by evaluating holding times, trip blank, and laboratory method blank results.

- Holding Times: All samples were analyzed within the method-required preparation and analytical holding times.
- Method Blanks: The method blank sample associated with Pace National batch WG1304606 contained naphthalene at a concentration of 0.000012 mg/l, which was between the MDL and RDL and flagged by the laboratory as (J), estimated. Consequently, the two rinsate blank sample results in batch WG1304606 were flagged by the laboratory as (B), the same analytes were found in the associated blank. Because both rinsate blank samples (SAM-DU-WEST-1-RB and SAM-DU-WEST-3-RB) contained naphthalene detected between the MDL and RDL (similar to the laboratory blank result) the rinsate blank results should both be flagged "(UJ) The analyte was analyzed for but was not detected due to the reported quantitation limit being approximate and may be inaccurate or imprecise."
- Field Equipment Rinsate Blanks:
  - The rinsate blanks analyzed by Pace National contained naphthalene above the MDL but lower than the RDL. They were reported by the lab as (*J*), estimated. Laboratory QC method blank sample analysis from this batch of analytes indicate that naphthalene may be present as a laboratory contaminant. Because both samples (SAM-DU-WEST-1-RB and SAM-DU-WEST-3-RB) contained naphthalene detected between the MDL and RDL (similar to the laboratory blank result) the rinsate blank results were flagged "(*B*) The same analyte is found in the associated blank."

O Low concentrations of barium and lead were detected in rinsate sample SAM-DU-WEST-3-RB (SVL Analytical Report X9F0708). One sample from SVL Analytical Report X9F0708 had the total lead result adjusted to match the equipment rinsate blank contaminant concentration based on comparison of the field sample concentration to the rinsate blank concentration. The sample result was adjusted to match the rinsate blank sample result adjusted for mg/kg and flagged as estimated J+.

| Blank Analyte | Sample           | Result      |
|---------------|------------------|-------------|
| Barium        | SAM-DU-WEST-3-RB | 0.0049 mg/L |
| Lead          |                  | 0.507 mg/L  |

Concentrations observed in the rinsate blank were converted to mg/kg using the following equation:

$$Blank \; Result \; in \frac{mg}{kg} = \frac{\left(Blank \; Result \; in \frac{mg}{L} x \; Initial \; Sample \; Volume \; in \; mL\right)}{Initial \; Sample \; Weight \; in \; g} \; x \; \frac{1}{1000 \; mL} \; x \; \frac{1000 \; g}{1 \; kg}$$

#### Where:

- Blank Result in mg/L = Blank result
- Initial Sample Volume in mg/L = Sample volume used by the laboratory to run sample
- Initial Sample Weight in g = Sample weight used by the laboratory for soil sample run
- 1/1000 mg/L \* 1000 g/1 kg = Conversion factor from mg/L to mg/kg

The laboratory provided the following information for the rinsate blank and X9F0708 samples. Based on the data provided, Tetra Tech used 1 g weight for EPA 6010D and 100 mL sample volume for soils metal digestion to provide an equivalent concentration rinsate blank results in mg/L to mg/kg.

| SOIL EQUIPMENT RINSATE BLANK RESULTS |                                   |            |  |  |  |  |  |  |  |
|--------------------------------------|-----------------------------------|------------|--|--|--|--|--|--|--|
| Analyte                              | Converted Blank<br>Result (mg/kg) |            |  |  |  |  |  |  |  |
|                                      | (mg/L)                            |            |  |  |  |  |  |  |  |
| Barium                               | 0.0049 mg/L                       | 0.49 mg/kg |  |  |  |  |  |  |  |
| Lead                                 | 0.0507 mg/L                       | 5.07 mg/kg |  |  |  |  |  |  |  |

The barium result in sample SAM-DU-WEST-3 was greater than the MRL and greater than 10X the adjusted blank result, therefore no qualification was made. The lead result in SAM-DU-WEST was greater than the MRL but less than 10X the blank result; therefore, the lead result (40.4 mg/kg) is qualified with J+ as the result is an estimated quantity that may be biased high due to associated laboratory QA/QC result being outside the control limit. The actual lead concentration is likely lower than reported concentration of 40.4 mg/kg for this sample.

 Two constituents were detected in the rinsate blank associated with the ISM area (SAM-DU-EAST-1-RB).

| Blank Analyte | Sample           | Result      |
|---------------|------------------|-------------|
| Barium        | SAM-DU-EAST-1-RB | 0.0050 mg/L |
| Lead          |                  | 0.0204 mg/L |

Using the process described above, concentrations observed in the rinsate blank were converted to mg/kg. All barium and lead results in the samples collected from the ISM methodology were greater than 10x the converted blank results from SAM-DU-EAST-1-RB; therefore, no qualifications were made.

# 5.1.4 Comparability

All samples were analyzed using appropriate EPA analytical methods. Sample results were reported in appropriate units. The analytical methods are considered acceptable for generating analytical data for the purpose of this project.

# 5.1.5 Completeness

Completeness is the quantitative measure of the amount of data obtained from a measurement process compared with the amount expected to be obtained under the conditions of measurement. The overall data quality objective for completeness is >80%; completeness for the project has been met.

# 5.1.6 Sensitivity

Reporting limits and method detection limits were below the screening levels. If a compound was detected below the reporting limit, but above the MDL, Pace National qualified the value as estimated and assigned a (*J*) qualifier. These laboratory-assigned (*J*) qualified results are considered estimated results. SVL Analytical reported values below the detection limits as non-detect.

The laboratory-assigned notations/qualifiers are often for informational purposes. The laboratory-assigned notations/qualifiers do not necessarily indicate that the results should be considered estimated but may help in evaluating whether results should be considered estimated through this data validation effort. However, exceptions include those samples that were specified by the laboratory to be estimated due to issues or concerns identified within the data package.

# **5.1.7 Summary**

Overall the analytical data are considered acceptable and have met the quality control and quality assurance objectives and goals of this project. No data were rejected. All results, as qualified, are considered usable for meeting project objectives. Qualifications made during this project are discussed above.

#### 5.2 DEVIATIONS FROM THE QAPP

Deviations from the QAPP identified during this review include the following:

 The QAPP specified the preparation of one MS/MSD sample from an ISM sample where the sample shall be designated on the chain of custody. Field personnel instead communicated directly with the lab (SVL) regarding which ISM sample will undergo MS/MSD analysis.

- For the Pace National group of samples, the laboratory prepared the MS/MSD QC samples from a non-project-specific sample. This deviation resulted in no qualifications being made based on the MS/MSD %REC and RPDs alone being outside control limits.
- For SVL Analytical report X9F0708, consultation with Dianne Gardner (the laboratory project manager), it
  was determined that the MS/MSDs were prepared for total metals sample batch X928221 from SAMBERM-5 (0-3) and for total metals sample batch X928222 from SAM-BERM-8 (0-3). Total recoverable
  metals samples MS/MSD samples from batch X927072 were prepared from another non-Project-specific
  set of samples. In addition, total metals mercury MS/MSD samples under EPA Method 74770A
  methodology was prepared from sample batch X929046. No data were qualified based on the MS/MSD
  analyses from this report.
- For SVL Analytical report X9F0660, based on consultation with field sampling personnel, it was determined that MS/MSDs were prepared for the ISM metals sample area from SAM-DU-EAST-3 and for the shore area from SAM-SHORE-5 (0.5).
- SVL laboratories prepared and analyzed two internal sample preparation blanks UNPROCESSED SILICA SAND BLANK and PROCESSED SILICA SAND BLANK. This procedure was not specifically called out in the QAPP and the results were incorrectly listed as client-submitted samples on laboratory report sample summary sheet. It should be noted this blank procedure is part of laboratory ISM processing.
- The interior temperature of the cooler shipped to Pace National was measured to be 5.5 degrees C when
  it arrived at the laboratory. The temperature goal listed in the QAPP was ≤ 4 degrees C. However, this
  result is below 6.0 degrees C limit for cooler temperature.
- The QAPP specified that the soil samples would be collected from the upper 12 inches, and 8 ounces of the screened material from each subsample location would be used to make the composite ISM sample. Due to the coarse-grained nature of the soil at DU-North, sample recovery was poor. The decision was made to advance the borings in DU-North to 3 feet deep total in order to collect sufficient sample volume. In a few cases, slightly less than 8 ounces of screened material was obtained from the DU-North subsample locations. Additional drilling was not conducted at these locations to collect more soil.
- The use of an XRF to guide sampling was not included in the QAPP but was added later. Field personnel followed EPA standard operating procedures for field XRF measurements.

# **6.0 SUMMARY**

Tetra Tech completed limited site investigation activities at the former Stimson Atlas Mill in June 2019. The site investigation was conducted for the purposes of evaluating near surface soils in three decision units, evaluating near surface and subsurface soils in a berm area between the former mill and the Spokane River, and evaluating shallow soils along the north bank of the Spokane River.

Incremental sampling methods (ISM) were implemented across three decision units (DUs) that together occupy the majority of the site. The single ISM sample from DU-North was comprised of 30 increments or collection points. DU-East and DU-West were each sampled in triplicate, where each sample was comprised of 30 increments, and where each DU included 90 collection points total. The single ISM sample from DU-North and the triplicate of samples from DU-West were analyzed for RCRA Metals 8 by SVL Analytical and for PAHs by Pace National. The triplicate of samples from DU-East were analyzed for RCRA Metals 8 by SVL.

Berm composite samples (consisting of soil representing three feet of depth) were collected from two depths within each of 10 boring locations on the southern berm area of the site. A total of 20 soil samples were collected. These samples were analyzed for RCRA Metals 8 by SVL.

Shoreline soil sampling was conducted at 10 surficial locations along the north shore of the Spokane River. A single discrete sample was collected from each point for a total of 10 soil samples. These samples were analyzed for cadmium, lead, and zinc by SVL. The following summarizes results of this investigation.

#### **DU-North**

Concentrations of metals and PAHs in soil on DU-North were not found to exceed risk-based values for direct contact of residential soil except for arsenic. Arsenic concentrations were similar throughout the site and appear to represent naturally occurring background concentrations. The concentrations of PAHs were not found to exceed Idaho DEQ minimum screening levels.

#### DU-East

Concentrations of metals in soil on DU-East were not found to exceed risk-based values for direct contact of residential soil except for arsenic. Arsenic concentrations were similar throughout the site and appear to represent naturally occurring background concentrations.

#### **DU-West**

Concentrations of metals and PAHs in soil on DU-West were not found to exceed risk-based values for direct contact of residential soil except for arsenic. Arsenic concentrations were similar throughout the site and appear to represent naturally occurring background concentrations. The concentrations of PAHs were not found to exceed Idaho DEQ minimum screening levels.

#### Berm

The concentrations of metals in berm soil were not found to exceed risk-based values for direct contact of residential soil by laboratory analysis, with exception to arsenic. Arsenic concentrations were similar throughout the berm and appear to represent naturally occurring background concentrations.

#### Shoreline

The concentrations of metals in shoreline soil were not found to exceed risk-based values for direct contact of residential soil by laboratory analysis.

In conclusion, a comparison of the results to EPA RSLs for residential soil indicates that none of the concentrations of the chemicals of interest exceed applicable screening levels for direct contact with exception to arsenic. However, arsenic concentrations appear to represent naturally occurring background concentrations in

the area, and similar to those levels stated within the Letter Health Consultation provided by the Idaho Department of Health and Welfare in 2017 (IDHW, 2017).

# 7.0 REFERENCES

- Idaho DEQ, 2018. Idaho Risk Evaluation Manual for Petroleum Releases, August.
- Idaho Department of Health and Welfare (IDHW), 2017. "Letter Health Consultation, BSNF Railway Corridor Site: Soil Arsenic Coeur d'Alene, Idaho. Prepared for E. Traynor (Brownfields Program Manager, Idaho Department of Environmental Quality) prepared by M. Willming (PhD Toxicologist/Health Assessor, Idaho Department of Health and Welfare). October 11.
- Tetra Tech, 2017. Phase I Environmental Site Assessment, Stimson Atlas Mill Property, Coeur d'Alene, Idaho. Dated September 19, 2017.
- Tetra Tech, 2019. Quality Assurance Project Plan, Limited Site Investigation, Stimson Atlas Mill Property, Coeur d'Alene, Idaho. Document Submitted to the Idaho Department of Environmental Quality, Dated June 5, 2019.
- U.S. Environmental Protection Agency (EPA), 1996. Method 5035, Revision 1, December 1996, Final Update III to the Third Edition of the Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA publication SW 846
- U.S. Environmental Protection Agency (EPA), 2002. Guidance on Environmental Data Verification and Data Validation. EPA/240/R-02/004. Dated November 2002.
- U.S. Environmental Protection Agency (EPA), 2009. Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use. EPA-540-R-08-005. Dated January 13, 2009.
- U.S. Environmental Protection Agency (EPA), 2016. National Functional Guidelines for Superfund Organic Methods Data Review. EPA-540-R-2016-002. Dated September 2016.
- U.S. Environmental Protection Agency (EPA), 2018. Regional Screening Levels (RSLs) Generic Tables, Tables as of: May 2019. Available at <a href="https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables">https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables</a>. Accessed August 2019.
- U.S. Geological Survey (USGS), 2017. USGS National Geochemical Survey by County, Available at <a href="http://mrdata.usgs.gov/geochem/doc/averages/countydata.htm">http://mrdata.usgs.gov/geochem/doc/averages/countydata.htm</a>. The data on the web page is part of U.S. Geological Survey Open-File Report 2004-1001. Last modified February 28, 2017. Accessed August 2019.

# APPENDIX A - FIGURES





# ☐ Approximate Boundaries of the Subject Property

# **Site Location Map**

Stimson Site Coeur d'Alene, ID Figure 1

0 2,000 Feet

Source: ESRI Z:\GeoServ\Stimson\Report\Figure1\_Overview.mxd





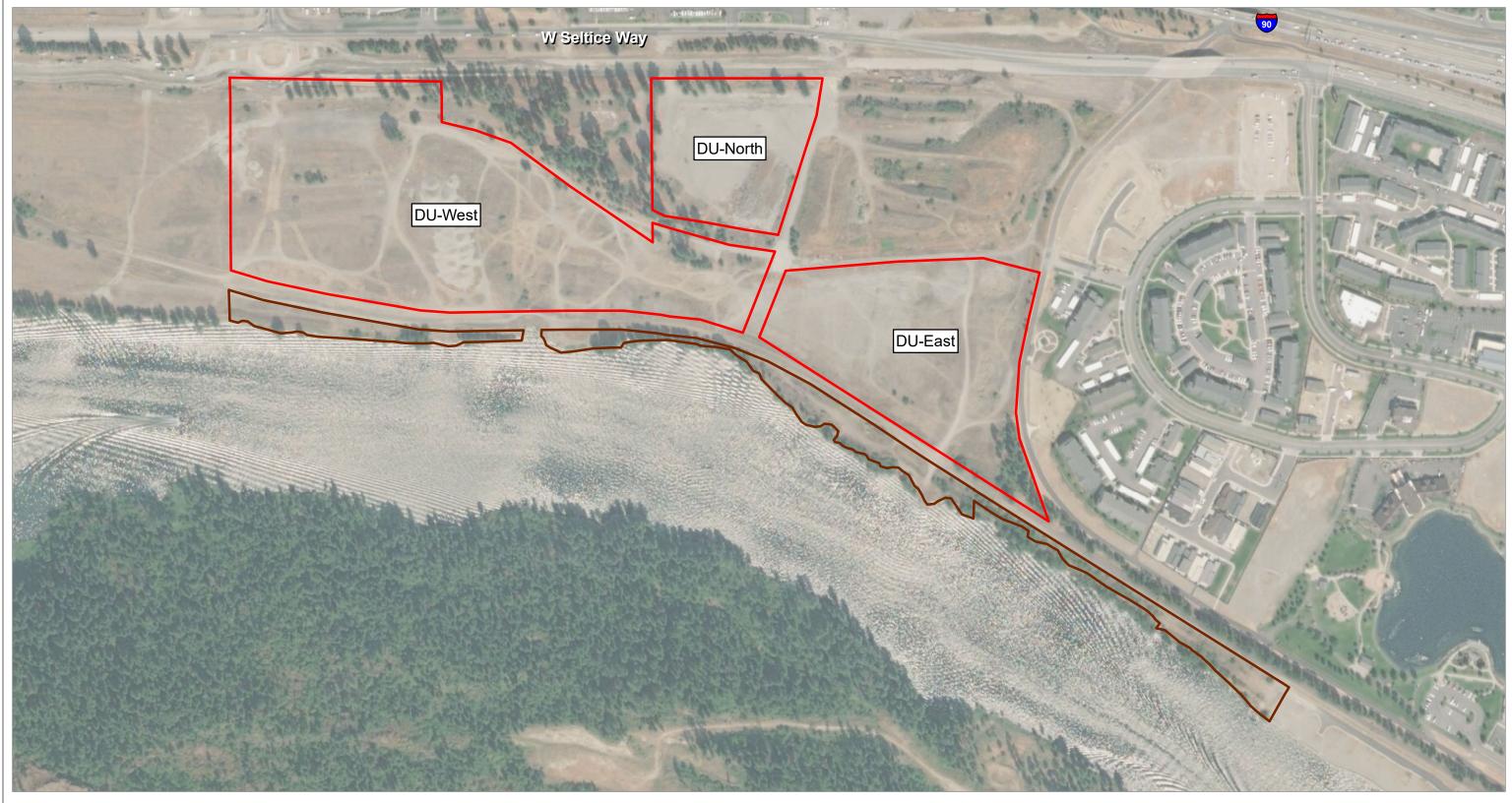
Source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Approximate Boundaries of the Subject PropertyContour Lines of the Subject Property



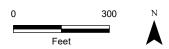
Site Map Stimson Site Coeur d'Alene, ID Figure 2

Z:\GeoServ\Stimson\Report\Figure2\_SiteMap.mxd



Decision Unit

Shoreline Area

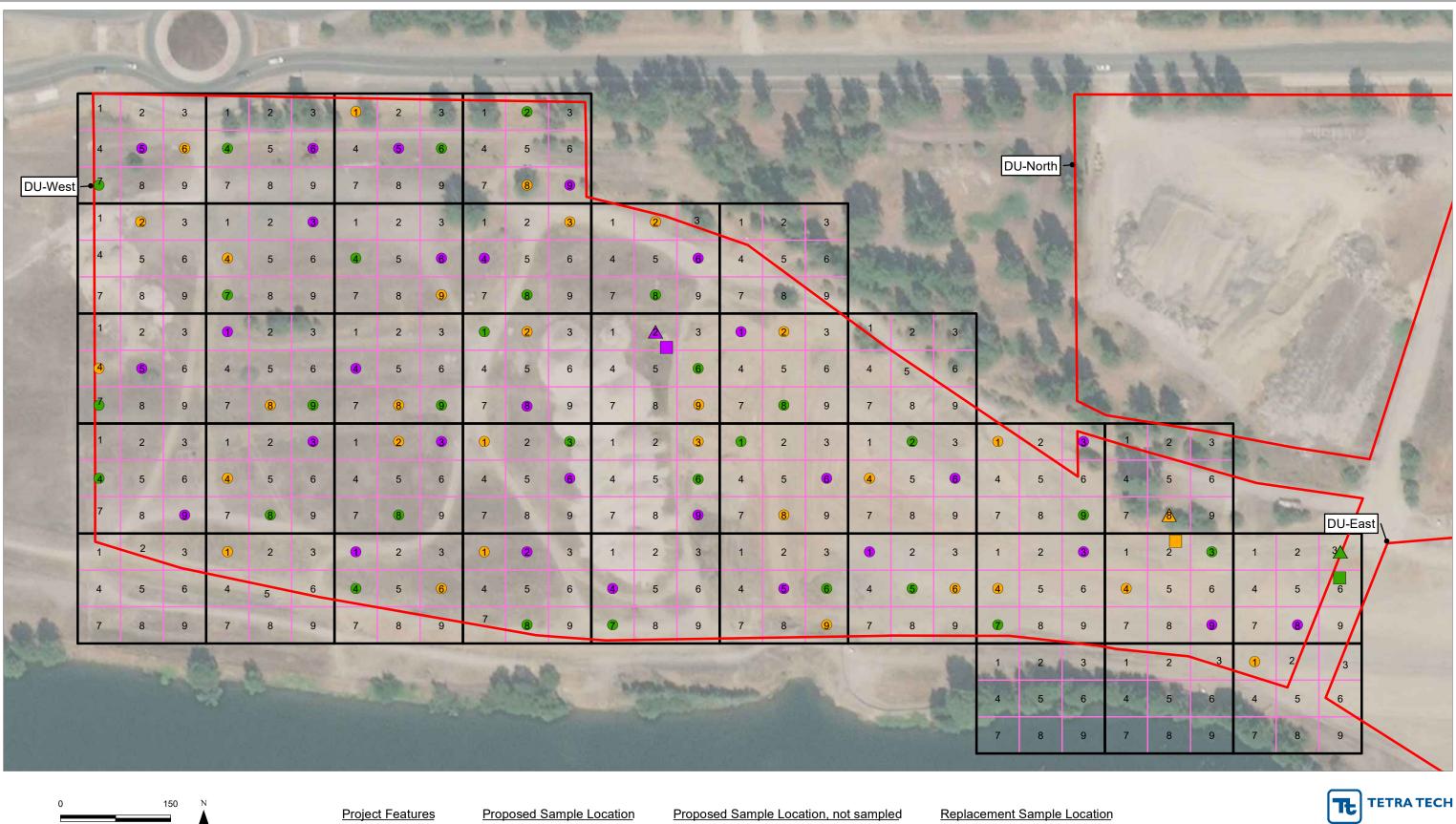


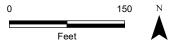
Source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

 $Z: \label{lem:condition} Z: \label{lem:condition} Z: \label{lem:condition} In cremental Sampling \label{lem:condition} Figure 3\_Site Map.mxd$ 



Site Map Atlas Site Coeur d'Alene, ID Figure 3





Source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User

Decision Unit DU Main Grid

DU Grid Cells

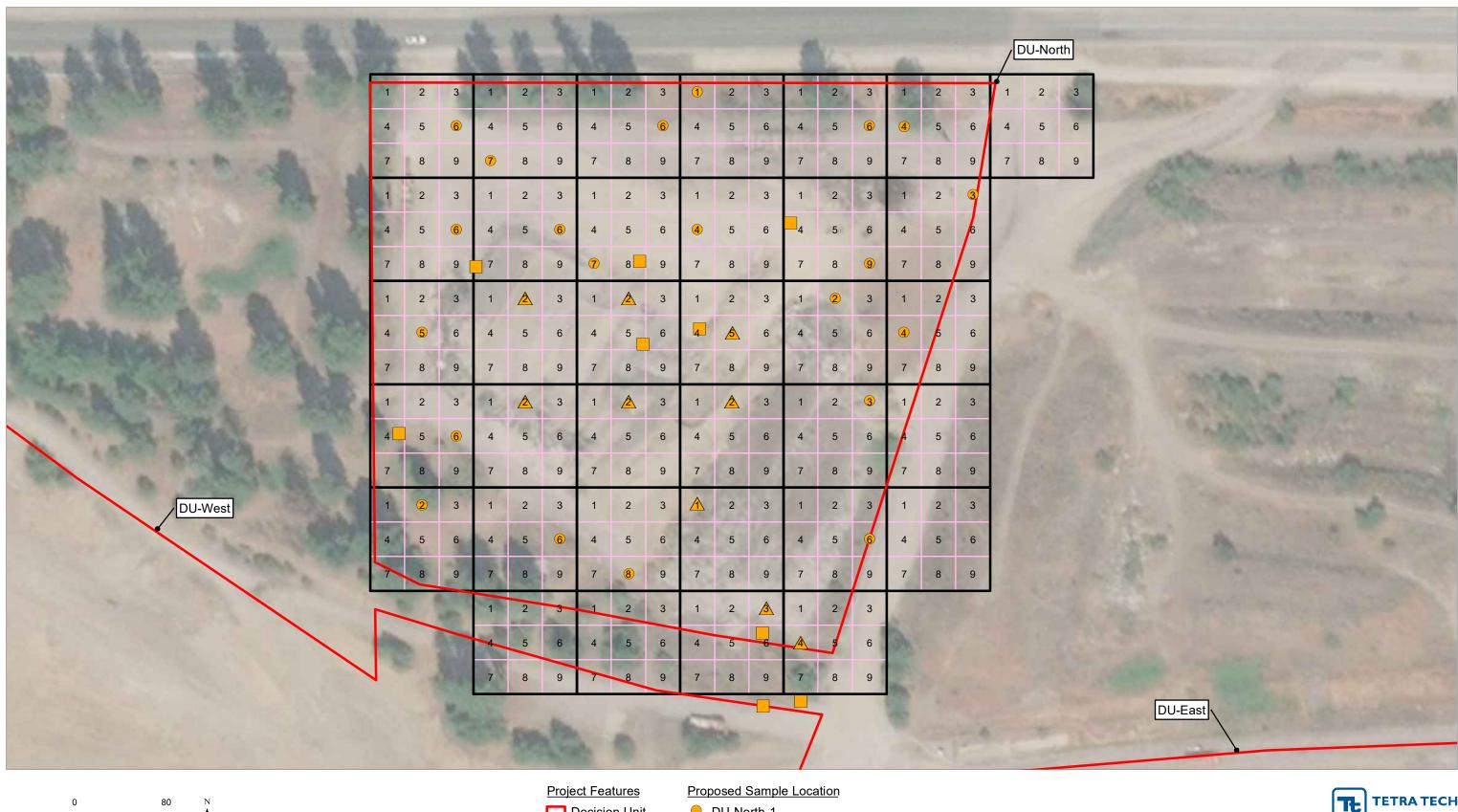
DU-West-1 DU-West-2

DU-West-3

△ DU-West-1 △ DU-West-2 ▲ DU-West-3 DU-West-1 DU-West-2 DU-West-3

TETRA TECH **Sample Location Map DU-West** 

Atlas Site Coeur d'Alene, ID Figure 4a



Source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Decision Unit

DU Main Grid

DU-North-1

Proposed Sample Location, not sampled

DU Grid Cells △ DU-North-1

Replacement Sample Location

DU-North-1



**Sample Location Map DU-North** 

> Atlas Site Coeur d'Alene, ID Figure 4b



Source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Decision Unit DU Main Grid DU Grid Cells

DU-East-1

DU-East-3

△ DU-East-1 DU-East-2

DU-East-1

Sample Location Map **DU-East** 

Atlas Site Coeur d'Alene, ID Figure 4C





Source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Project Features

Shoreline Area

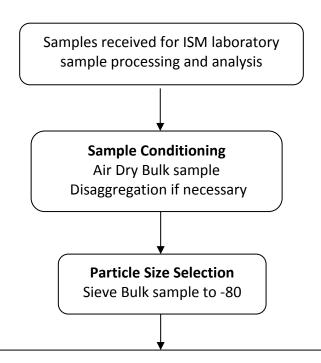
Sample Location

SAM-Berm-X

SAM-Shore-X

Berm and Shoreline
Sample Location Map

Atlas Site Coeur d'Alene, ID Figure 4d



#### **Analytical Subsampling**

Riffle Spit sample if required to fit on tray 2-D Japanese Slabcake on sample to  $10 \text{ g} \pm 0.1 \text{ g}$ 

#### Procedure:

- Spread sample evenly on a tray with a resulting depth of no more than 1-2.5 cm.
- Divide surface into 30 sections.
- Using an appropriate scoop, collect a 0.33 g increment from each section, ensuring equal collection from both the top and bottom of the sample.
- Repeat collection for client specified duplicate.
- Repeat collection for % solids.

#### **RCRA 8 analysis**

(1 g of sample per 6010C digestion) (0.6 g of sample per 7471B digestion)

Quality Control Samples for 6010C and 7471B

- Method Blank
- Laboratory Control Sample
- Laboratory Duplicate Sample on replicate sample
- Matrix Spike and Matrix Spike Duplicate

# APPENDIX B – TABLES

# TABLE 1 Summary of Metals Analysis Stimson Atlas Mill Decision Units North, East, and West

|                             | Collection           | Results in mg/kg |        |         |          |        |          |        |         |
|-----------------------------|----------------------|------------------|--------|---------|----------|--------|----------|--------|---------|
| Sample Designation          | Date                 | Arsenic          | Barium | Cadmium | Chromium | Lead   | Selenium | Silver | Mercury |
| SAM-DU-North-1              | 6/27/2019            | 15.3             | 153    | < 0.4   | 28.3     | 21.3   | < 4.0    | < 1.0  | <0.033  |
| SAM-DU-East-1               | 6/24/2019            | 24.1             | 152    | < 0.4   | 21.5     | 33.3   | < 4.0    | < 1.0  | 0.035   |
| SAM-DU-East-2               | 6/25/2019            | 24.8             | 134    | < 0.4   | 20.7     | 29.9   | < 4.0    | < 1.0  | < 0.033 |
| SAM-DU-East-3               | 6/25/2019            | 25.9             | 140    | < 0.4   | 22.1     | 34.4   | < 4.0    | < 1.0  | < 0.033 |
| SAM-DU-West-1               | 6/25/2019            | 18.0             | 176    | < 0.4   | 24.7     | 45.6   | < 4.0    | < 1.0  | 0.045   |
| SAM-DU-West-2               | 6/26/2019            | 18.2             | 199    | < 0.4   | 23.4     | 47.3   | < 4.0    | < 1.0  | 0.232   |
| SAM-DU-West-3               | 6/26/2019            | 20.8             | 170    | < 0.4   | 22.9     | 40.4   | < 4.0    | < 1.0  | 0.035   |
| SAM-DU-SD-1                 |                      |                  |        |         |          |        |          |        |         |
| (Duplicate of               |                      |                  |        |         |          |        |          |        |         |
| SAM-DU-East-2               | 6/25/2019            | 28.2             | 136    | 1.4     | 22.2     | 32.4   | < 4.0    | < 1.0  | < 0.033 |
| SAM-DU-SD-1 (DUP)           |                      |                  |        |         |          |        |          |        |         |
| (Laboratory Split of        |                      |                  |        |         |          |        |          |        |         |
| SAM-DU-SD-1)                | -                    | 26.6             | 137    | 0.62    | 22.5     | 32.6   | < 4.0    | < 1.0  | < 0.033 |
| EPA Screening Levels        | Contact <sup>1</sup> | 0.68             | 15000  | 71      | 120000   | 400    | 390      | 390    | 11      |
| Background                  | Mean                 | 7.876            | -      | 1       | 42       | 30.740 | 0.208    | -      | 0.053   |
| _                           | Std. Dev.            | 2.419            | -      | -       | -        | 7.925  | 0.087    | -      | 0.018   |
| Concentrations <sup>2</sup> | Maximum              | 21.038           | -      | -       | -        | 61.115 | 0.738    | -      | 0.115   |

Notes:

2 - Lead, selenium, and mercury for Kootenai County from USGS, Cadmium and Chromium from State of Washington

<sup>1 -</sup> For Residential Receptors. RSLs for Total Chromium are compared to Chromium (III) levels. Hexavalent Chrominum is not suspected.

# TABLE 2 Summary of PAH Analysis Stimson Atlas Mill Decision Units North and West

|                                    |            |            | Results in mg/kg |            |            |              |              |           |           |            |           |           |
|------------------------------------|------------|------------|------------------|------------|------------|--------------|--------------|-----------|-----------|------------|-----------|-----------|
|                                    | Collection |            | Acenaph-         | Benzo(a)-  | Benzo(a)-  | Benzo(b)-    | Benzo(k)-    |           | Fluoran-  |            | Naph-     |           |
| Sample Designation                 | Date       | Anthracene | thene            | anthracene | pyrene     | fluoranthene | fluoranthene | Chrysene  | thene     | Fluorene   | thalene   | Pyrene    |
| SAM-DU-North-1                     | 6/27/2019  | 0.0142 J   | < 0.00323        | 0.177      | 0.111      | 0.069        | < 0.00323    | 0.189     | 0.0506    | 0.00549 J  | < 0.0108  | 0.289     |
| SAM-DU-West-1                      | 6/25/2019  | 0.0011 J   | < 0.000619       | 0.00216 J  | 0.00432 J  | 0.00575 J    | 0.00158 J    | 0.00246 J | 0.00641   | < 0.000619 | 0.00331 J | 0.00496 J |
| SAM-DU-West-2                      | 6/26/2019  | 0.00582 J  | < 0.000648       | 0.00961    | 0.0111     | 0.0233       | < 0.000648   | 0.00857   | 0.0193 J  | 0.00106 J  | < 0.00216 | 0.0153    |
| SAM-DU-West-3                      | 6/26/2019  | 0.00115 J  | < 0.000679       | 0.00263 J  | < 0.000679 | 0.00546 J    | < 0.000679   | 0.00258 J | 0.00576 J | < 0.000679 | < 0.00226 | 0.00453 J |
| SAM-DU-SD-1                        |            |            |                  |            |            |              |              |           |           |            |           |           |
| (Duplicate of                      | 6/25/2019  | 0.00124 J  | < 0.000622       | 0.00245 J  | 0.00422 J  | 0.00535 J    | 0.00140 J    | 0.00215 J | 0.00627   | < 0.000622 | 0.00331 J | 0.00538 J |
| SAM-DU-West-1)                     |            |            |                  |            |            |              |              |           |           |            |           |           |
| IDEQ Screening Levels <sup>1</sup> |            | 3200       | 200              | 0.68       | 0.14       | 1.4          | 14           | 69        | 1400      | 240        | 0.12      | 1000      |

Notes: 1 - Minimum for soil exposure pathways

# TABLE 3 Summary of Metals Analysis - Berm Samples Stimson Atlas Mill Berm Area

| Sample Designation          | Collection           | Results in mg/kg |        |         |          |        |          |        |         |
|-----------------------------|----------------------|------------------|--------|---------|----------|--------|----------|--------|---------|
| (Location / Depth)          | Date                 | Arsenic          | Barium | Cadmium | Chromium | Lead   | Selenium | Silver | Mercury |
| SAM-Berm-1 (0-3)            | 6/27/2019            | 7.9              | 93.8   | 0.57    | 11.3     | 15.1   | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-1 (9-12)           | 6/27/2019            | 19.7             | 79.0   | < 0.4   | 13.3     | 16.4   | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-2 (0-3)            | 6/27/2019            | 18.7             | 300    | < 0.4   | 27.1     | 21.5   | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-2 (7.5-10.5)       | 6/27/2019            | 22.0             | 154    | < 0.4   | 21.8     | 10.3   | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-3 (0-3)            | 6/27/2019            | 1.8              | 101    | 0.54    | 10.2     | 15.4   | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-3 (5.5-8)          | 6/27/2019            | 6.5              | 72.9   | < 0.4   | 16.0     | 13.2   | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-4 (0-3.2)          | 6/27/2019            | 12.1             | 101    | 0.44    | 14.9     | 30.2   | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-4 (8-11)           | 6/27/2019            | 7.3              | 85.1   | 1.28    | 7.46     | 13.8   | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-5 (0-3)            | 6/27/2019            | 11.2             | 92.1   | < 0.4   | 15.3     | 13.8   | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-5 (5-8)            | 6/27/2019            | 21.1             | 87.0   | 3.46    | 13.8     | 249    | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-6 (0-3)            | 6/27/2019            | 7.8              | 56.5   | < 0.4   | 9.49     | 10.5   | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-6 (8.5-11.5)       | 6/27/2019            | 9.3              | 130    | < 0.4   | 10.5     | 9.3    | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-7 (0-3)            | 6/27/2019            | 14.2             | 156    | < 0.4   | 16.3     | 23.7   | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-7 (11-14)          | 6/27/2019            | 14.8             | 163    | < 0.4   | 20.7     | 17.5   | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-8 (0-3)            | 6/27/2019            | 7.0              | 70.2   | < 0.4   | 11.1     | 8.1    | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-8 (13-16)          | 6/27/2019            | 5.9              | 48.4   | < 0.4   | 9.1      | 5.4    | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-9 (0-3)            | 6/27/2019            | 7.9              | 92.9   | 0.52    | 11.1     | 27.4   | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-9 (12.5-13)        | 6/27/2019            | 7.8              | 63.6   | < 0.4   | 11.1     | 20.2   | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-10 (0-3)           | 6/26/2019            | 12.5             | 497    | < 0.4   | 16.9     | 12.9   | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-10 (9-12)          | 6/26/2019            | 10.6             | 124    | < 0.4   | 15.6     | 10.8   | < 4.0    | < 1.0  | < 0.033 |
| SAM-Berm-SD-1               |                      |                  |        |         |          |        |          |        |         |
| (Duplicate of               |                      |                  |        |         |          |        |          |        |         |
| SAM-Berm-7 (11-14)          | 6/27/2019            | 11.2             | 131    | < 0.4   | 20.7     | 19.6   | < 4.0    | < 1.0  | < 0.033 |
| EPA Screening Levels        | Contact <sup>1</sup> | 0.68             | 15000  | 71      | 120000   | 400    | 390      | 390    | 11      |
|                             | Mean                 | 7.876            | -      | 1       | 42       | 30.74  | 0.208    | -      | 0.053   |
| Background                  | Std. Dev.            | 2.419            | -      | -       | -        | 7.925  | 0.087    | -      | 0.018   |
| Concentrations <sup>2</sup> | Maximum              | 21.038           |        | -       | -        | 61.115 | 0.738    | -      | 0.115   |

Notes:

<sup>1 -</sup> For Residential Receptors. RSLs for Total Chromium are compared to Chromium (III) levels. Hexavalent Chrominum is not suspected.

<sup>2 -</sup> Lead, selenium, and mercury for Kootenai County from USGS, Cadmium and Chromium from State of Washington

# TABLE 4 Summary of Metals Analysis - Shoreline Samples Stimson Atlas Mill Shoreline Area

| Sample Designation                                   |                      |         | Results in mg/kg |                |
|--|----------------------|---------|------------------|----------------|
| (Location / Depth)                                   | Collection Date      | Cadmium | Lead             | Zinc           |
| SAM-Shore-1 (0.5)                                    | 6/25/2019            | 0.48    | 10.6             | 146            |
| SAM-Shore-2 (0.5)                                    | 6/25/2019            | 0.46    | 20.9             | 128            |
| SAM-Shore-3 (0.5)                                    | 6/24/2019            | 0.5     | 11.5             | 160            |
| SAM-Shore-4 (0.5)                                    | 6/25/2019            | 0.93    | 15.4             | 167            |
| SAM-Shore-5 (0.5)                                    | 6/25/2019            | < 0.4   | 7.7              | 84.9           |
| SAM-Shore-6 (0.5)                                    | 6/25/2019            | < 0.4   | 11.9             | 102            |
| SAM-Shore-7 (0.5)                                    | 6/25/2019            | < 0.4   | 6.9              | 64.2           |
| SAM-Shore-8 (0.5)                                    | 6/25/2019            | < 0.4   | 12.0             | 72.0           |
| SAM-Shore-9 (0.5)                                    | 6/25/2019            | 1.25    | 41.8             | 354            |
| SAM-Shore-10 (0.5)                                   | 6/25/2019            | < 0.4   | 11.5             | 146            |
| SAM-Shore-SD-1<br>(Duplicate of<br>SAM-Shore-7 (0.5) | 6/25/2019            | < 0.4   | 7.6              | 81.5           |
| EPA Screening Levels                                 | Contact <sup>1</sup> | 71      | 400              | 23000          |
| Background   | Mean<br>Std. Dev.    | 1 -     | 30.74<br>7.925   | 84.69<br>26.21 |
| Concentrations <sup>2</sup>                          | Maximum              | -       | 61.115           | 216.11         |

Notes: 1 - For Residential Receptors

2 - Lead and zinc for Kootenai County from USGS, Cadmium from State of Washington

## **APPENDIX C – FIELD NOTES**

Project: Strmson/Atlas Mill pg 1 Date: June 24, 2019 Activity: 5ite Investigation Tt Prersonnel: Jon Welge, Shannon Brattelo, Ron Phillips Contractor: Northern Lights Drilling - JR Cantrell DEQ Personnel: Steve Gill Weather: AM: ~50°, Mixed sunwy (cloudy, ~ 700F I arrived at the site at 7:45 am. JR Eastrell arrived a few minuters, later, then steve Gill, then Jone shanon. we discussed the overall project, then had a safety then used the meeting. Jon JR, a steve walked to the shoreline area to discuss logistics for that sampling. Shannon and I worked to Rite in the Rain:

Mark the boring locations within DU-North.

A few of the borrys were moved to avoid abstructions.

I assigned numbers to the main grid boxes to help each keep track of the locations. Each of the sub-units (or cells) already have numbers.

The following locations were moved in DU-North (main grid-sub cell): 9-7, 15-2, 14-2, 27-1, 28-6, 16-5, 29-3, 30-4.

I then used the toblest tablet/GPS unit to record the new locations of most of these (28,29,930 still need to be done).

We (Shannon + I) worked with the driller to get started with the sampling.

Started drilling at 12-3 at ~ 10:30. Very little recovery below the asphalt & base course.

IR tried to drill a pilot hole through the asphalt. still not enough recovery.

steve a Jon came bock. Decided to drill to 3'. This produced enough sample.

JR left to get an asphalt corer.

steve, Jon, Shannon, 9 I walked to the central part of DU-North to pick out replacement & spots for cells 20,21, 422. The

recorded the spots with the Tablet/GPS unit.

The decision was made that all borings in DU-North go to 3', even if no asphalt is present. This will keep the procedure consistent.

equipment. While was setting up. I walked to cells 28-29-30 a recorded the replacement locations.

Returned to drill area. As phalt coring not working, Back to drilling.

Jon traes up a concrete coring company for tomorow.

The plan develops to dril

Atlas Mill 6/24/19 Pg 5 ocations on DU-North without asphalt, then go to DU-East. (Also-see supplementary note at end) We end up getting 10 locations on DU-North (my box numbers 4, 5, 6, 11, 12, 24, 25, 26, 27 a the replacement for IR washes the drill rod, I wash the screen & mixing bowl, a shannon pocks up equipment. We move to DU-East. Lay out ~ 8 locations. Shannon continves to mark spots, and I work with JR to start drillong. Begin drilling at 14:50.

Drill to 12", in this order: 23,3%,32,31,20,21,19

18, 17 (had to move 15' south), 27, 28, 29, 30, 34 (moved 12' North), 35 (moved 17'Na 10'E) 36 (moved 3'N), 7, 8 (moved "5' west), 3, 5, 1, and finally 4.

JR transported the soil cores back to our DU-East staging area. Jon, Shamon a I then processed the soil through the sieve and put the soil into a bucket provided by the lab.

Sample DU-East-1, sampletrue 17:14. Shannon applied a label.

We packed up equipment and discussed a plan for tomorrow morning (lab logistics, contractors, etc).

Jon and I put the equipment

rinsate water into the water drum on the north side of DU-North. We left the site at 5:45.

Supplemental Note for DU-North: Because the recovery was inconsistent, the decision was made + agreed to by steve, Joh, shannon, & myself to collects up to 8 or of soil from 3-ft borrng, but if less soil is retureved sieved we will use whatever is produced by that boring. The borings drilled today that did not yield at least 8 ounces were the one from Grid box 6 (60%) and the one from Grid box 26 (702).

QAPP Deviations: As described above, the boring depths for DU-North were adjusted so

6/24/19 10 Atlas Mill that an acceptable amount of soil would be generated to account for poor recovery. It was also decided that less than 8 ounces of soil would be used from a boring if the recovery was poor. Ron Phillps Leginszeb el Ismorforus (1940) Thos North was sweet which will

locations with orange prn flags. This takes us until a little after 8.

IR arrives about the time we finish. We give him a map and he starts collecting the samples.

Jon and I then mark the triplicate locations with white pin flags.

Shannon arrives just after we finished (~930).

I then go to the western area to mark the initial layer. While I am doing this, JR finishes the second layer at DU-East. Jon a shannon process the sample and take a metals duplicate.

Sample time = 10:11.

Lithology overall was sandy loan with some gravel

I finish marking DU-west initial layer a return to the stuging area, arrive ~ 11:10.

Jon + I discuss remaining work and a possible order. I then work on notes.

Steve Gill arrives ~ 11:20. Jon leaves a little later to get the XRF instrument. JR continues to work on the thord layer of DU-East.

Steve, Shannon, and I go to the river area to collect the shore samples.

We start at SAM-shore-1 and move westward from

there. #3 had been done yesterday.

The process involved Shannon Using a starrless steel.

trowel to dig into the section to dig into the section to dig into the water line. She removed gravel so that the samples were sand or silt. The holes were up to 6" deep. Location # 2 had water about 6-8" deep, other-wise the samples were taken at the water's edge.

Shannon cleaned the trouble after each sample by rinsing it with DI water (or distilled water?) then wrapping it it in fort.

I used the GPS unit to record the locations of

We returned to the staging area and processed the Cores from DU-East-3.

received the soil from the

Sample time = 14:05.

we collected a rinsate blank sample. Did this by placing a drill dur drive point inside the mesh steve roside the Stumless steel bowl. DI water from the lab was porred over them and collected in the bowl. This water was then poured Into a 500 ml HDPE sample container. Niture acid was added. Sample time = 14:16. SAM-DU-East-IRB

Shannon then went to mark The second set of locations For Du-West. I went to check on JR. He was just finishing up the last point.

He a I went back to the Staging area. Jon and I processed the soil from the thirty cells. Sample time
13 15:52. Sample name: SAM-DUWest-1. Meanwhile JR
went to work on the remaining
borings in Du-North.

Shannon arrived back from marking the second layer for Du-west, She and Jon work to collect the PAH sample from Du-west-1. They do this with the "cone and quarter" technique and fill a 4 oz glass jar. Sample time = 16:04. Sample name:

SAM-DU-west-1.

Shannon packs up some of the equipment and leaves the site.

DU about 16:30. He has finished four of the borings

(from Grd boxes 17, 18, 23, 428). 5/0W going because of asphalt a hard material. Jon a I process the 50:1 Into the DU-North bucket.

We clean up the staging area and pack up we drive to the north part of the project a drop off decon rinselwash water into drum.

Plan for Tomorrow: I will arrive early + begin marking 3rd layer on Du-west. IR will begin working on DU-west second layer, then third. Jon & Shannon will arrive 1930-10. After Du west we will work on shoreline berm area.

Left the site at 5:20 pm Referres from the North of

QAPP Deviations: DU-North sampling plan was adjusted

Atlas Mill 6/25/19 to account for poor recovery (see explanation from June 24 notes). The metals rinsate blanks used HDPE containers (supplied by the (ab) rather than glass as written in the QAPP. Ron Philtips Rite in the Rain.

| 20 Atlas Mill  |
|--|
| Site Investigation Day 3<br>June 26, 2019  |
| June 26, 2019  |
|  |
| Tt Personnel: Ron Phillips.  |
| Tt Personnel: Ron Phillips.<br>Shannon Brattebo, Jon Welge   |
|  |
| DED: None  |
|  |
| Contractor: Northern Lights Drilling<br>(JR Cantrell, Greg)  |
| (JR Cantrell, Greg)  |
|  |
| Weather: AM- Sunny ~ 60°<br>PM: Cloudy, late thunderstorm, ~ 70°                                   |
| PM: Cloudy, late thunderstorm, ~70°  |
| 그 사람들이 가격을 잃는 얼마나 그래요 그리고 그렇게 하는 사람이 하는 것이 그래요?  |
| Equipment Used: XRF, Thermo<br>screntific Niton XL3t, serial<br>34885 (Rented from Premier Sufety) |
| Screntific Niton XL3t, serral  |
| 34885 (Rented from Premier Sufety)   |
|  |
| .I arrived at the site at  |
| 7:25. JR's helper was  |
| already there.   |
|  |
| I began flagging the third   |
| (triplicate) locations for DU-   |
| West.  |
|  |

the third layer of DU-West. Shannon left the site.

After JR & Grey Fromsh

DU-West troplocate, the

go to DU-North to complete

more of the borrngs there,

Jon and I process DU-west-3, including a PAH sample. We then decon the sampling equipment and take rinsate blank samples for metals and PAHs.

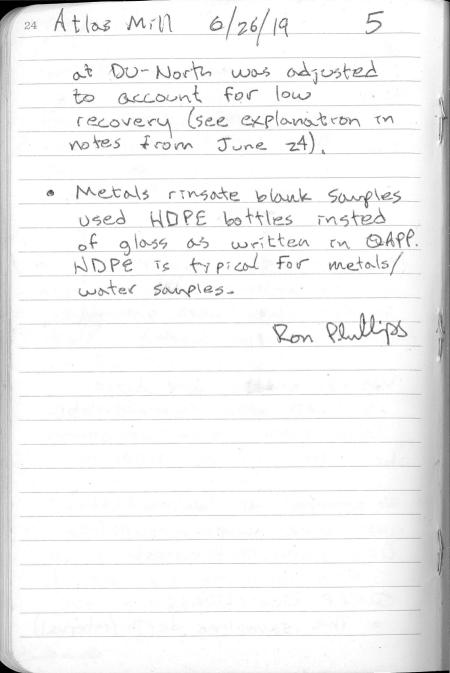
Jon and I then process the soil from the eight borrings that JR & Greg had finished on DU-North.

berm sample location (5AMberm-10).

Drilled to 12'. Probably still in fill. Tried to go deeper, but material was too soft to push bit into tube. Hole then sloughed.

@ APP Devrations:

• The sampling deith (interval)



Project: Stimson Atlas Mill 125 Site Investigation Day 4 June 27, 2019 Tt staff: Jon Welge, Ron Phillips Subcontractor: Northern Lights Drilling (IR & Greg) Weather: AM: showers until ~ Noon, ~ 60° PM - Cloudy, breeze, 700 Egurpment Used: XRF, Thermo Screntific Niton XL3t, Serral # 34885, Rented from Premier Safety. I arrived at the site at 7:55 and began to set up for sampling. Took the GPS point for Berm-9. JR & Grey arrived about 8:00. Rite in the Rain.

They set up on Berm- and began drilling at ~ 8:15. The sampling process at each of the berm soring sites was similar. Each four-foot section of I scanned Zite 3 places along it with the XRF device. I recorded the values for Zinc, Augenic, Mercury, & Lead on a log sheet. I then recorded the soil type and depths of lithologic changes on the log sheet.

I collected samples for laboratory analysis of metals from two zones at each boring. The First Zone was from 0-3 feet. The second zone was from a 3' section that generally

The highest levels were found in a thin layer (~5") of clay in borrny #5, ~7'/z ft deep. The Zinc reading was 1557 and the lead reading was 1469.

The drillers fruished the berm borrings at ~2 pm.

I sent them to DU-North while I finished processing the surples from Berm-2 and Berm-1.

After the berm sampling

was finished, I collected a rinsate blank sample, vising the mixing bowl and the drive shoe. (sample \$ SAM-Berm-1-RB, £me 15:08) For we talk.

A duplicate sample was collected from the deeper interval of Berm 7 (11-14:).

I then went to DU-North and began processing the samples that had been collected. The drillers collected the last sample at ~ 16:10. I processed them.

Then I mixed the accumulated soil in the bucket, and collected a PAH sample using the cone and quarter technique. I put the remaining soil back in the

bucket for SVL. The bucket was labeled with the sample name (SAM-DU North-1), date (6/27/19) and time (17:02).

I then cleaned the sampling equipment and collected a rinsate blank for metals and PAHs.

All samples from today were placed on the after collection and labeling.

Jon arrived I dumped the left over soil from today's cores into the IDW soil drum. Water from my decon activities (and from the driller) was placed in the IDW water drum.

Each drum is ~ 1/4 full.

I secured and labeled the

# APPENDIX D – BORING LOGS



| r: <u> </u>        | 02-RED-T38956                                    | Project Name   | : Stir  | mson Atlas Mill  |  |
|--------------------|--|--|---|--|--|
| Coeur d'Ale        | ne State:  | Idaho  | Boring Name:  | SAM-Berm-  | 1  |
| JTM 11):           | Northing:  | Northing: 5282413.0371   |   | ing: 513875.72   | 231  |
| 6/27/20            | Date Completed                                   | d: <u>6/27/2019</u>  | Logged By:  | Ron Phillips   | 3  |
| ny:                | Northern Lights Drilling                         | Driller Na   | ıme:  | JR Cantrall  |  |
| :                  | Direct Push                                      | Boring Diameter  | (in.): 2.5  | Depth Drilled (ft.):   | 12   |
| e Interval:        | 0 - 3 f  | eet  | Time Collect  | ted: 14:09   |  |
| Interval: 9 - 12 f |  | eet Time Colle   |   | ted: 14:20   |  |
| Depth (ft.         |  |  | (Depth in   | ft, Results in ppm)  | <del></del>  |
|                    | Doeur d'Ale  JTM 11):  6/27/20  ny:  e Interval: | Coeur d'Alene State:  UTM 11): Northing:  6/27/2019 Date Completed  ny: Northern Lights Drilling  Direct Push  e Interval: 0 - 3 f | Coeur d'Alene         State:         Idaho           JTM 11):         Northing:         5282413.0371           6/27/2019         Date Completed:         6/27/2019           ny:         Northern Lights Drilling         Driller Na           :         Direct Push         Boring Diameter           e Interval:         0 - 3 feet | Coeur d'Alene State: Idaho Boring Name:  UTM 11): Northing: 5282413.0371 East 6/27/2019 Date Completed: 6/27/2019 Logged By:  ny: Northern Lights Drilling Driller Name:  : Direct Push Boring Diameter (in.): 2.5  e Interval: 0 - 3 feet Time Collect  nterval: 9 - 12 feet Time Collect  XRF Se (Depth in | Coeur d'Alene State: Idaho Boring Name: SAM-Berm- UTM 11): Northing: 5282413.0371 Easting: 513875.72 6/27/2019 Date Completed: 6/27/2019 Logged By: Ron Phillips ny: Northern Lights Drilling Driller Name: JR Cantrall : Direct Push Boring Diameter (in.): 2.5 Depth Drilled (ft.): e Interval: 0 - 3 feet Time Collected: 14:09 nterval: 9 - 12 feet Time Collected: 14:20  XRF Screening Results (Depth in ft, Results in ppm) |

| T                          |  |   |         | '       |         |      |
|----------------------------|--|---|---------|---------|---------|------|
| Depth (ft.<br>below ground |  | XRF Screening Results (Depth in ft, Results in ppm) |         |         |         |      |
| surface)                   | Lithologic Description                         | Depth   | Arsenic | Lead    | Mercury | Zinc |
| 0                          | FILL - Silty GRAVEL with sand, dry, brown      | 1   | ND      | 32      | ND      | 341  |
|                            |  | 3.5   | ND      | ND      | ND      | 55   |
| 4.5                        | Clayey GRAVEL with sand; moist, brown          | 5   | 27      | ND      | ND      | 67   |
|                            |  | 7   | ND      | ND      | ND      | 42   |
|                            |  | 9   | ND      | 33      | ND      | 52   |
| 9.5                        | Poorly graded SAND; fine grained, moist, brown | 9.8   | ND      | ND      | ND      | 53   |
| 10                         | back into clayey GRAVEL with sand              | 11  | ND      | ND      | ND      | 57   |
| 12                         | Bottom of Boring                               |   |         |         |         |      |
|                            |  |   |         |         |         |      |
|                            |  |   |         |         |         |      |
|                            |  |   |         |         |         |      |
|                            |  |   |         |         |         |      |
|                            |  |   |         |         |         |      |
|                            |  |   |         |         |         |      |
|                            |  |   |         |         |         |      |
|                            |  |   |         |         |         |      |
|                            |  |   |         |         |         |      |
|                            |  |   |         |         |         |      |
|                            |  |   |         |         |         |      |
|                            |  |   |         |         |         |      |
|                            |  |   |         |         |         |      |
|                            |  |   |         |         |         |      |
|                            |  |   |         |         |         |      |
|                            |  |   | ND =    | Not Det | ected   |      |



|   |              | EXP         | LORATOR         | Y BORING LITHO   | LOGIC L                | OG                      | TŁ                   | TETRA                 | TECH |  |
|---|--------------|-------------|-----------------|------------------|------------------------|-------------------------|----------------------|-----------------------|------|--|
| Project Number  | r: <u> </u>  | 02-RED-T3   | 38956           | Project Name     | ne: Stimson Atlas Mill |                         |                      |                       |      |  |
| City: C   | Coeur d'Aler | ne          | State:          | Idaho            | Borin                  | g Name:                 | S                    | AM-Berm               | -2   |  |
| Coordinates (U  | JTM 11):     |             | Northing:       | 5282485.5089     |                        | Easting:                |                      | : 513779.04           |      |  |
| Date Started:   | 6/27/20      | 19 Da       | te Complete     | ed: 6/27/2019    | Lo                     | Logged By: Ron Phillips |                      |                       |      |  |
| Drilling Compar   | ny:          | Northern L  | ₋ights Drilling | g Driller Na     | ame:                   |                         | JR Can               | trall                 |      |  |
| Drilling Method:  |              | Direct Pu   | sh              | Boring Diameter  | (in.):                 | 2.5                     | Depth Di             | rilled (ft.):         | 12   |  |
| Shallow Sample Interval: 0 - 3 feet Time Collected: 13:38 |              |             |                 |                  | 3                      |                         |                      |                       |      |  |
| Deep Sample Interval: 7.5 - 10.5 feet                     |              |             |                 | Tin              | ne Collect             | ed:                     | 13:50                | )                     |      |  |
| Depth (ft.  |              |             |                 |                  |                        |                         | reening<br>ft, Resul | Results<br>ts in ppm) |      |  |
| surface)  |              | Litholo     | ogic Descript   | ion              | Depth                  | Arsenic                 | Lead                 | Mercury               | Zinc |  |
| 0   | Fill - SILT  | with sand a | ınd small gra   | avel, dark brown | 1                      | ND                      | 33                   | ND                    | 152  |  |
| 1.4   | Fill - CLAY  | with sand   | and small gr    | avel, dark       | 2                      | 27                      | ND                   | ND                    | 99   |  |
|   | brown        |             |                 |                  | 3                      | ND                      | ND                   | ND                    | 75   |  |
|   |              |             |                 |                  | 5                      | ND                      | ND                   | ND                    | 66   |  |
|   |              |             |                 |                  | 7                      | 24                      | ND                   | ND                    | 63   |  |
| 7.5   | Lean CLA     | Y with sand | l; moist, a fe  | w small gravels, | 8                      | 31                      | ND                   | ND                    | 76   |  |
|   | brown        |             |                 |                  | 9                      | ND                      | ND                   | ND                    | 59   |  |
| 9.5   | Clayey SA    | ND with gra | avel, moist to  | wet, brown       | 10                     | ND                      | 25                   | ND                    | 45   |  |
|   |              |             |                 |                  | 11.5                   | ND                      | ND                   | ND                    | ND   |  |
| 12  | Bottom of    | Boring      |                 |                  |                        |                         |                      |                       |      |  |

ND = Not Detected



| Project Number   | r: <u>1</u>    | 02-RED-T38956                    | Project Name: St        |                     |            | timson Atlas Mill |               |             |
|--|----------------|----------------------------------|-------------------------|---------------------|------------|-------------------|---------------|-------------|
| City: C  | Coeur d'Alei   | ne State:                        | Idaho                   | Borin               | ng Name:   | e: SAM-Berm-3     |               | -3          |
| Coordinates (L   | JTM 11):       | Northing:                        | 5282623.8086 Eas        |                     |            | ting: 513542.4702 |               | 702         |
| Date Started:  | 6/27/20        | 19 Date Complete                 | d: 6/27/2019 Logged By: |                     |            | Ron Phillips      |               |             |
| Drilling Compar  | ny:            | Northern Lights Drilling         | g Driller Na            | ame:                |            | JR Can            | trall         |             |
| Drilling Method:   | :              | Direct Push                      | Boring Diameter         | · (in.):            | 2.5        | Depth D           | rilled (ft.): | 8           |
|  |                | 0 - 3                            | _                       |                     |            |                   | 12:50         |             |
| Deep Sample Interval: 5.5 - 8  |                |                                  |                         | <del>—</del><br>Tin | ne Collect | <br>ed:           | 13:02         | 2           |
| Depth (ft.   |                | Lith also is Describe            | st                      |                     |            |                   | ts in ppm)    |             |
| surface)<br>0  | Fill - Silty 9 | Lithologic Descript Sandy Gravel | lion                    | Depth<br>1.5        | ND         | ND                | Mercury<br>ND | Zinc<br>106 |
| 2  | · ·            | •                                | nd gravel pine          | 3                   | ND<br>ND   | ND                | ND<br>ND      | 58          |
| 2 Organic material with sand, silt, and odor, dark grey (almost black) |                |                                  | ria graver, pine        |                     | IND        | IND               | ND            | - 00        |
| 5.5  |                | ded SAND with gravel;            | moist to wet,           | 5.5                 | ND         | ND                | ND            | 92          |
|  | grey           | <u> </u>                         | ·                       | 7.5                 | ND         | 26                | ND            | 53          |
| 8  | Bottom of      | Boring                           |                         |                     |            |                   |               |             |
|  |                |                                  |                         |                     |            |                   |               |             |
|  |                |                                  |                         |                     |            |                   |               |             |
|  |                |                                  |                         |                     |            |                   |               |             |
|  |                |                                  |                         |                     |            |                   |               |             |
|  |                |                                  |                         |                     |            |                   |               |             |
|  |                |                                  |                         |                     |            |                   |               |             |
|  |                |                                  |                         |                     |            |                   |               |             |
|  |                |                                  |                         |                     |            |                   |               |             |
|  |                |                                  |                         |                     |            |                   |               |             |
|  |                |                                  |                         |                     |            |                   |               |             |
|  |                |                                  |                         |                     |            |                   |               |             |
|  |                |                                  |                         |                     |            |                   |               |             |
|  |                |                                  |                         |                     |            |                   |               |             |
|  |                |                                  |                         |                     |            |                   |               |             |
|  |                |                                  |                         |                     |            |                   |               |             |
|  |                |                                  |                         |                     |            |                   |               |             |

ND = Not Detected



|                  |                 |                          |                     |          |            |                       | )                     |      |
|------------------|-----------------|--------------------------|---------------------|----------|------------|-----------------------|-----------------------|------|
| Project Number   | r:102           | 2-RED-T38956             | Project Name        | e:       | Stir       | mson Atl              | as Mill               |      |
| City: C          | Coeur d'Alene   | State:                   | Idaho               | Borir    | ng Name:   | S                     | AM-Berm               | -4   |
| Coordinates (L   | JTM 11):        | Northing:                | 5282656.4417        |          | East       | ing:                  | 513492.6              | 6421 |
| Date Started:    | 6/27/2019       | Date Completed           | d: <u>6/27/2019</u> | Lo       | gged By:   | F                     | Ron Phillip           | S    |
| Drilling Compar  | ny: <u>N</u>    | lorthern Lights Drilling | Driller N           | ame:     |            | JR Car                | ıtrall                |      |
| Drilling Method: |                 | Direct Push              | Boring Diameter     | r (in.): | 2.5        | Depth D               | rilled (ft.):         | 12   |
| Shallow Sample   | e Interval:     | 0 - 3.2                  | feet                | Tin      | ne Collect | ted:                  | 12:14                 | ļ    |
| Deep Sample II   |                 | 8 - 11                   |                     | Tin      | ne Collect | ted:                  | 12:31                 |      |
| Depth (ft.       |                 |                          |                     |          |            | creening<br>ft, Resul | Results<br>ts in ppm) |      |
| surface)         |                 | Lithologic Descripti     | on                  | Depth    | Arsenic    | Lead                  | Mercury               | Zinc |
| 0                | Fill - Silty Sa | ndy Gravel, dark gree    | n                   | 1        | ND         | ND                    | ND                    | 121  |
|                  | thin green cl   | ay lense from 3 to 3.2   |                     | 3.1      | ND         | 133                   | ND                    | 140  |
| 3.2              | Clayey SAN      | D with gravel; moist to  | wet, green-         | 6        | ND         | ND                    | ND                    | 89   |
|                  | brown           |                          |                     | 7.5      | ND         | ND                    | ND                    | 137  |
|                  |                 |                          |                     | 9        | ND         | ND                    | ND                    | 359  |
|                  |                 |                          |                     | 10       | ND         | ND                    | ND                    | 371  |
|                  |                 |                          |                     | 11.5     | 21         | ND                    | ND                    | 338  |
| 12               | Bottom of Bo    | oring                    |                     |          |            |                       |                       |      |
|                  |                 |                          |                     |          |            |                       |                       |      |
|                  |                 |                          |                     |          |            |                       |                       |      |
|                  |                 |                          |                     |          |            |                       |                       |      |
|                  |                 |                          |                     |          |            |                       |                       |      |
|                  |                 |                          |                     |          |            |                       |                       |      |
|                  |                 |                          |                     |          |            |                       |                       |      |
|                  |                 |                          |                     |          |            |                       |                       |      |
|                  |                 |                          |                     |          |            |                       |                       |      |
|                  |                 |                          |                     |          |            |                       |                       |      |
|                  |                 |                          |                     |          |            |                       |                       |      |
|                  |                 |                          |                     |          |            |                       |                       |      |
|                  |                 |                          |                     |          |            |                       |                       |      |
|                  |                 |                          |                     |          |            |                       |                       |      |
|                  |                 |                          |                     |          |            |                       |                       |      |

ND = Not Detected



|  |              |                             |                 |          |                       |                       | ,                     |      |  |
|--|--------------|-----------------------------|-----------------|----------|-----------------------|-----------------------|-----------------------|------|--|
| Project Numbe  | r:1(         | 02-RED-T38956               | Project Name    | e:       | Stir                  | mson Atla             | nson Atlas Mill       |      |  |
| City: C  | Coeur d'Aler | ne State:                   | <br>Idaho       | Borir    | Boring Name: SAM-Berm |                       |                       |      |  |
| Coordinates (L   | JTM 11):     | Northing:                   | 5282686.5349    | _        | Easting:              |                       | : 513447.46           |      |  |
| Date Started:  | 6/27/20      | -<br>19 Date Complet        | ted: 6/27/2019  | <br>Lo   | Logged By:            |                       | Ron Phillips          |      |  |
| Drilling Compa   | ny:          | <br>Northern Lights Drillin | ng Driller N    | ame:     |                       | JR Can                | trall                 |      |  |
| Drilling Method  | <u></u>      | Direct Push                 | Boring Diameter | r (in.): | 2.5                   | Depth Di              | rilled (ft.):         | 12   |  |
| Shallow Sample   | e Interval:  |                             |                 |          | ne Collect            | ted:                  | 11:28                 | 3    |  |
| Deep Sample I  | nterval:     | 5 - 8                       | 3 feet          | —<br>Tir | ne Collect            | ted:                  | 11:45                 | 5    |  |
|  | 1            |                             |                 |          |                       |                       |                       |      |  |
| Depth (ft. below ground  |              |                             |                 |          |                       | creening<br>ft, Resul | Results<br>ts in ppm) |      |  |
| surface)   |              | Lithologic Descrip          | otion           | Depth    | Arsenic               | Lead                  | Mercury               | Zinc |  |
| The state of the s | · ·          |                             | •               |          |                       |                       |                       |      |  |

| Depth (ft. |  | XRF Screening Results (Depth in ft, Results in ppm) |         |      |         |      |  |
|------------|--|---|---------|------|---------|------|--|
| surface)   | Lithologic Description                         | Depth   | Arsenic | Lead | Mercury | Zinc |  |
| 0          | Fill - Silty Sand with small gravel, brown     | 1   | ND      | 30   | ND      | 99   |  |
|            |  | 3.5   | 21      | 15   | ND      | 71   |  |
| 5          | Poorly Graded SAND with gravel; some silt,     | 5.5   | ND      | ND   | ND      | 72   |  |
|            | brown  | 6.25  | 22      | ND   | ND      | 60   |  |
| 7.2        | Layer of lean clay, ~5" thick, dark green, wet | 7.25  | ND      | 1469 | ND      | 1557 |  |
| 7.8        | Back into Poorly Graded Sand, as described     | 8   | ND      | 42   | ND      | 262  |  |
|            | above  | 9   | 36      | ND   | ND      | 390  |  |
|            |  | 10.5  | ND      | ND   | ND      | 131  |  |
|            |  | 12  | ND      | ND   | ND      | 142  |  |
| 12         | Bottom of Boring                               |   |         |      |         |      |  |
|            |  |   |         |      |         |      |  |
|            |  |   |         |      |         |      |  |
|            |  |   |         |      |         |      |  |
|            |  |   |         |      |         |      |  |
|            |  |   |         |      |         |      |  |
|            |  |   |         |      |         |      |  |
|            |  |   |         |      |         |      |  |
|            |  |   |         |      |         |      |  |
|            |  |   |         |      |         |      |  |
|            |  |   |         |      |         |      |  |
|            |  |   |         |      |         |      |  |
|            |  |   |         |      |         |      |  |
|            |  |   |         |      |         |      |  |
|            |  | ND = Not Detected                                   |         |      |         |      |  |



|                  |                  |                        |                     |           |            |                       | ,                     |      |
|------------------|------------------|------------------------|---------------------|-----------|------------|-----------------------|-----------------------|------|
| Project Number   | r: 102-F         | RED-T38956             | Project Nan         | ne:       | Stir       | mson Atla             | as Mill               |      |
| City: C          | Coeur d'Alene    | State:                 | Idaho               | Bori      | ng Name:   | S                     | AM-Berm               | -6   |
| Coordinates (L   | JTM 11):         | Northing:              | 5282758.0224        |           | East       | ing:                  | 513353.0              | )491 |
| Date Started:    | 6/27/2019        | Date Completed         | d: <u>6/27/2019</u> | Lo        | gged By:   | F                     | Ron Phillip           | s    |
| Drilling Compar  | ny: Noi          | rthern Lights Drilling | Driller I           | Name:     |            | JR Car                | ntrall                |      |
| Drilling Method: | : <u>Di</u>      | rect Push              | Boring Diamete      | er (in.): | 2.5        | Depth D               | rilled (ft.):         | 12   |
| Shallow Sample   | e Interval:      | 0 - 3 f                | feet                | Tii       | me Collect | ted:                  | 10:32                 | 2    |
| Deep Sample II   | nterval:         | 8.5 - 11.              | .5 feet             | Tiı       | me Collect | ted:                  | 10:54                 | 1    |
| Depth (ft.       |                  |                        |                     |           |            | creening<br>ft, Resul | Results<br>ts in ppm) |      |
| surface)         |                  | Lithologic Descripti   | ion                 | Depth     | Arsenic    | Lead                  | Mercury               | Zinc |
| 0                | Fill - Sandy Sil | t, dry, brown          |                     | 1         | ND         | 28                    | ND                    | 60   |
| 2                | Fill - Sandy Sil | ty Gravel, dry         |                     | 3         | ND         | ND                    | ND                    | ND   |
|                  |                  |                        |                     | 4.5       | ND         | 26                    | ND                    | 32   |
| 5.5              | Poorly Graded    | SAND with Silt and     | Gravel; slightly    | 6         | ND         | ND                    | ND                    | 63   |
|                  | moist, dense     | , dark brown           |                     | 7.5       | ND         | ND                    | ND                    | 49   |
|                  | clay in matrix b | pelow 8 feet           |                     | 8.5       | 16         | ND                    | ND                    | 104  |
|                  | wet with larger  | gravel below 11.5 f    | eet                 | 12        | ND         | ND                    | ND                    | 67   |
| 12               | Bottom of bori   | ng                     |                     |           |            |                       |                       |      |
|                  |                  |                        |                     |           |            |                       |                       |      |
|                  |                  |                        |                     |           |            |                       |                       |      |
|                  |                  |                        |                     |           |            |                       |                       |      |
|                  |                  |                        |                     |           |            |                       |                       |      |
|                  |                  |                        |                     |           |            |                       |                       |      |
|                  |                  |                        |                     |           |            |                       |                       |      |
|                  |                  |                        |                     |           |            |                       |                       |      |
|                  |                  |                        |                     |           |            |                       |                       |      |
|                  |                  |                        |                     |           |            |                       |                       |      |
|                  |                  |                        |                     |           | 1          |                       |                       |      |
|                  |                  |                        |                     |           | 1          |                       |                       |      |
|                  |                  |                        |                     |           |            |                       |                       |      |
|                  |                  |                        |                     |           | 1          |                       |                       |      |
|                  |                  |                        |                     | 1         | 1          |                       |                       |      |

ND = Not Detected



| Project Numbe   | er: <u>1</u> | 02-RED-T38956            | Project Name     | : Stims        | on Atlas Mill         |
|-----------------|--------------|--------------------------|------------------|----------------|-----------------------|
| City:           | Coeur d'Aler | ne State:                | Idaho            | Boring Name:   | SAM-Berm-7            |
| Coordinates (l  | JTM 11):     | Northing:                | 5282770.3469     | Easting        | : 513188.9703         |
| Date Started:   | 6/27/20      | 19 Date Complete         | d: 6/27/2019     | Logged By:     | Ron Phillips          |
| Drilling Compa  | ny:          | Northern Lights Drilling | Driller Na       | me:JI          | R Cantrall            |
| Drilling Method | l:           | Direct Push              | Boring Diameter  | (in.): 2.5 De  | pth Drilled (ft.): 16 |
| Shallow Sampl   | e Interval:  | 0 - 3                    | feet             | Time Collected | 9:42                  |
| Deep Sample I   | nterval:     | 11 - 14 feet (inclu      | uding duplicate) | Time Collected | 10:03                 |
| Donth (ft       |              |                          |                  | XRF Scre       | ening Results         |

| 1                          |  |       |         |                       |                       |      |
|----------------------------|--|-------|---------|-----------------------|-----------------------|------|
| Depth (ft.<br>below ground |  |       |         | creening<br>ft, Resul | Results<br>ts in ppm) |      |
| surface)                   | Lithologic Description                           | Depth | Arsenic | Lead                  | Mercury               | Zinc |
| 0                          | Fill - Silty sand with small gravel              | 1.5   | ND      | ND                    | ND                    | 123  |
|                            |  | 5     | ND      | ND                    | ND                    | 78   |
| 6                          | Lean CLAY with sand at top, then with silt below | 6     | ND      | 28                    | ND                    | 134  |
|                            | that, dark brown                                 |       |         |                       |                       |      |
|                            | lighter brown below 7 feet                       | 8     | ND      | ND                    | ND                    | 77   |
|                            | little amount of sand/silt below 9.5             | 9     | ND      | ND                    | ND                    | 78   |
|                            | Sand, scattered gravel in clay below 10.5        | 10    | 24      | ND                    | ND                    | 42   |
|                            |  | 11    | ND      | ND                    | ND                    | 49   |
| 11.8                       | Clayey SAND with small gravel                    | 12.5  | ND      | 28                    | ND                    | 117  |
|                            |  | 14    | 18      | ND                    | ND                    | 55   |
|                            |  | 16    | 18      | ND                    | ND                    | 48   |
|                            |  |       |         |                       |                       |      |
|                            |  |       |         |                       |                       |      |
|                            |  |       |         |                       |                       |      |
|                            |  |       |         |                       |                       |      |
|                            |  |       |         |                       |                       |      |
|                            |  |       |         |                       |                       |      |
|                            |  |       |         |                       |                       |      |
|                            |  |       |         |                       |                       |      |
|                            |  |       |         |                       |                       |      |
|                            |  |       |         |                       |                       |      |
|                            |  |       |         |                       |                       |      |
|                            |  |       |         |                       |                       |      |
|                            |  |       | ND =    | Not Det               | ected                 |      |



|                            |                                     |                      |                 |          |            |                       | ,                     |          |
|----------------------------|-------------------------------------|----------------------|-----------------|----------|------------|-----------------------|-----------------------|----------|
| Project Number             | r: 102-RE                           | ED-T38956            | Project Name    | e:       | Stir       | mson Atla             | as Mill               |          |
| City: C                    | Coeur d'Alene                       | State:               | Idaho           | Borin    | ng Name:   | S                     | AM-Berm               | -8       |
| Coordinates (L             | JTM 11):                            | Northing:            | 5282773.6111    |          | East       | ing:                  | 513143.5              | 766      |
| Date Started:              | 6/27/2019                           | Date Complete        | d: 6/27/2019    | Lo       | gged By:   | F                     | Ron Phillip           | S        |
| Drilling Compar            | ny: North                           | nern Lights Drilling | Driller Na      | ame:     |            | JR Can                | trall                 |          |
| Drilling Method:           | Dire                                | ect Push             | Boring Diameter | · (in.): | 2.5        | Depth Di              | rilled (ft.):         | 16       |
| Shallow Sample             | e Interval:                         | 0 - 3 1              | feet            | Tin      | ne Collect | ted:                  | 9:07                  |          |
| Deep Sample Ir             | nterval:                            | 13 - 16              | 6 feet          | Tin      | ne Collect | ted:                  | 9:20                  |          |
| Depth (ft.<br>below ground |                                     |                      |                 |          |            | creening<br>ft, Resul | Results<br>ts in ppm) |          |
| surface)                   |                                     | ithologic Descript   |                 | Depth    | Arsenic    | Lead                  | Mercury               | Zinc     |
| 0                          |                                     | d with small grave   | el              | _        |            |                       |                       |          |
|                            |                                     | from 0 to 4 feet     |                 | 2        | ND         | ND                    | ND                    | 92       |
|                            | only 8" recovery                    | from 4 to 8 feet     |                 | 6        | 22         | ND                    | ND                    | 148      |
| 15                         | Doorly graded C                     | royal with good      |                 | 13<br>15 | ND         | ND                    | ND                    | 69<br>ND |
| 16                         | Poorly graded G<br>Bottom of Boring |                      |                 | 15       | ND         | ND                    | ND                    | ND       |
| 10                         | Bottom or Bonn                      | 9                    |                 |          |            |                       |                       |          |
|                            |                                     |                      |                 |          |            |                       |                       |          |
|                            |                                     |                      |                 |          |            |                       |                       |          |
|                            |                                     |                      |                 |          |            |                       |                       |          |
|                            |                                     |                      |                 |          |            |                       |                       |          |
|                            |                                     |                      |                 |          |            |                       |                       |          |
|                            |                                     |                      |                 |          |            |                       |                       |          |
|                            |                                     |                      |                 |          |            |                       |                       |          |
|                            |                                     |                      |                 |          |            |                       |                       |          |
|                            |                                     |                      |                 |          |            |                       |                       |          |
|                            |                                     |                      |                 |          |            |                       |                       |          |
|                            |                                     |                      |                 |          |            |                       |                       |          |
|                            |                                     |                      |                 |          |            |                       |                       |          |
|                            |                                     |                      |                 |          |            |                       |                       |          |
|                            |                                     |                      |                 |          |            |                       |                       |          |
|                            |                                     |                      |                 |          |            |                       |                       |          |
|                            |                                     |                      |                 |          | ND =       | Not Det               | <u>I</u><br>ected     |          |



| Project Number   | r: <u>1</u>    | 02-RED-T38956            | Project Name    | e:     | Stir       | mson Atla             | as Mill               |      |
|------------------|----------------|--------------------------|-----------------|--------|------------|-----------------------|-----------------------|------|
| City: C          | Coeur d'Ale    | ne State:                | Idaho           | Borir  | ng Name:   | S                     | AM-Berm               | -9   |
| Coordinates (L   | JTM 11):       | Northing:                | 5282772.5985    |        | East       | ing:                  | 513077.7              | 438  |
| Date Started:    | 6/27/20        | 19 Date Complete         | ed: 6/27/2019   | Lo     | gged By:   | F                     | Ron Phillip           | S    |
| Drilling Compar  | ny:            | Northern Lights Drilling | g Driller Na    | ame:   |            | JR Can                | ntrall                |      |
| Drilling Method: | :              | Direct Push              | Boring Diameter | (in.): | 2.5        | Depth D               | rilled (ft.):         | 16   |
| Shallow Sample   | e Interval:    | 0 - 3                    | feet            | Tin    | ne Collect | ted:                  | 8:28                  |      |
| Deep Sample I    | nterval:       | 12.5 - 1                 | 3 feet          | Tir    | ne Collect | ted:                  | 8:58                  |      |
| Depth (ft.       |                |                          |                 |        |            | creening<br>ft, Resul | Results<br>ts in ppm) |      |
| surface)         |                | Lithologic Descript      | tion            | Depth  | Arsenic    | Lead                  | Mercury               | Zinc |
| 0                | Fill - silty S | Sand with gravel         |                 | 3.5    | ND         | 28                    | ND                    | 93   |
|                  |                |                          |                 | 6      | ND         | 42                    | ND                    | 185  |
| 7                | Fill - sandy   | / Silt with gravel       |                 | 8.5    | ND         | 56                    | ND                    | 311  |
| 10               | Poorly Gra     | aded Sand with gravel;   | some fines      | 11     | ND         | ND                    | ND                    | 53   |
| 12.5             |                | aded Gravel with sand a  |                 | 12.5   | ND         | ND                    | ND                    | 228  |
|                  | darker b       |                          |                 |        |            |                       |                       |      |
| 13.5             | Poorly Gra     | aded Sand with silt and  | small gravel    | 15     | ND         | ND                    | ND                    | 45   |
| 16               | Bottom of      | Boring                   |                 |        |            |                       |                       |      |
|                  |                |                          |                 |        |            |                       |                       |      |
|                  |                |                          |                 |        |            |                       |                       |      |
|                  |                |                          |                 |        |            |                       |                       |      |
|                  |                |                          |                 |        |            |                       |                       |      |
|                  |                |                          |                 |        |            |                       |                       |      |
|                  |                |                          |                 |        |            |                       |                       |      |
|                  |                |                          |                 |        |            |                       |                       |      |
|                  |                |                          |                 |        |            |                       |                       |      |
|                  |                |                          |                 |        |            |                       |                       |      |
|                  |                |                          |                 |        |            |                       |                       |      |
|                  |                |                          |                 |        |            |                       |                       |      |
|                  |                |                          |                 |        |            |                       |                       |      |
|                  |                |                          |                 |        |            |                       |                       |      |
|                  |                |                          |                 |        |            |                       |                       |      |

ND = Not Detected



|                  |                |             |                 | 20                |            | -00.0 - |          |                       | J                     |      |
|------------------|----------------|-------------|-----------------|-------------------|------------|---------|----------|-----------------------|-----------------------|------|
| Project Number   | r: <u> </u>    | 02-RED-T    | 38956           | Pr                | oject Name | e:      | Stir     | mson Atla             | as Mill               |      |
| City: C          | Coeur d'Alei   | ne          | State:          | lda               | ho         | Borin   | g Name:  | S                     | AM-Berm-              | 10   |
| Coordinates (L   | JTM 11):       |             | Northing:       | 5282 <sup>-</sup> | 787.0175   |         | East     | ing:                  | 512904.5              | 5142 |
| Date Started:    | 6/26/20        | 19 Da       | ate Completed   | d: 6              | 6/26/2019  | Log     | gged By: | F                     | Ron Phillip           | s    |
| Drilling Compar  | <br>ny:        | Northern I  | _ights Drilling |                   | Driller Na | ame:    |          | JR Can                | ıtrall                |      |
| Drilling Method: |                |             |                 |                   |            |         |          |                       |                       | 12   |
| Shallow Sample   |                |             |                 |                   |            |         |          |                       | 17:18                 |      |
| Deep Sample Ir   |                |             | 9 - 12          |                   |            |         |          |                       | 17:28                 |      |
| Depth (ft.       |                |             |                 |                   |            |         |          | creening<br>ft, Resul | Results<br>ts in ppm) | ı    |
| surface)         |                | Lithol      | ogic Descripti  | ion               |            | Depth   | Arsenic  | Lead                  | Mercury               | Zinc |
| 0                | Fill - Sand    | y Gravel wi | th silt         |                   |            | 2       | ND       | 38                    | ND                    | 33   |
| 3                | Fill - Silty ( | Gravel with | sand            |                   |            |         |          |                       |                       |      |
| 4                | Fill - Silty S | Sand with g | ıravel          |                   |            | 6       | 19       | ND                    | ND                    | 92   |
| 7                | Fill - Sand    | y Silt      |                 |                   |            | 10      | 34       | 27                    | ND                    | 102  |
|                  | sand lense     | e from 11.2 | to 11.5         |                   |            |         |          |                       |                       |      |
| 11.5             | Sandy SIL      | T           |                 |                   |            |         |          |                       |                       |      |
| 12               | Bottom of      | Boring      |                 |                   |            |         |          |                       |                       |      |
|                  |                |             |                 |                   |            |         |          |                       |                       |      |
|                  |                |             |                 |                   |            |         |          |                       |                       |      |
|                  |                |             |                 |                   |            |         |          |                       |                       |      |
|                  |                |             |                 |                   |            |         |          |                       |                       |      |
|                  |                |             |                 |                   |            |         |          |                       |                       |      |
|                  |                |             |                 |                   |            |         |          |                       |                       |      |
|                  |                |             |                 |                   |            |         |          |                       |                       |      |
|                  |                |             |                 |                   |            |         |          |                       |                       |      |
|                  |                |             |                 |                   |            |         |          |                       |                       |      |
|                  |                |             |                 |                   |            |         |          |                       |                       |      |
|                  |                |             |                 |                   |            |         |          |                       |                       |      |
|                  |                |             |                 |                   |            |         |          |                       |                       |      |
|                  |                |             |                 |                   |            |         |          |                       |                       |      |
|                  |                |             |                 |                   |            |         |          |                       |                       |      |

ND = Not Detected

# APPENDIX E – LABORATORY ANALYTICAL REPORTS



www.svl.net

Work Order: **X9F0660**Reported: 17-Jul-19 09:34

Project Name: Stimson Atlas Mill 2019

Tetra Tech (WA) 1212N Washington Street Suite 208 Spokane, WA 99201

#### ANALYTICAL REPORT FOR SAMPLES

| Sample ID                     | Laboratory ID | Matrix   | Date Sampled    | Sampled By | Date Received | Notes |
|-------------------------------|---------------|----------|-----------------|------------|---------------|-------|
| SAM-SHORE-1 (0.5)             | X9F0660-01    | Sediment | 25-Jun-19 11:47 | SB         | 26-Jun-2019   | -     |
| SAM-SHORE-2 (0.5)             | X9F0660-02    | Sediment | 25-Jun-19 11:53 | SB         | 26-Jun-2019   |       |
| SAM-SHORE-3 (0.5)             | X9F0660-03    | Sediment | 24-Jun-19 16:11 | SB         | 26-Jun-2019   |       |
| SAM-SHORE-4 (0.5)             | X9F0660-04    | Sediment | 25-Jun-19 12:06 | SB         | 26-Jun-2019   |       |
| SAM-SHORE-5 (0.5)             | X9F0660-05    | Sediment | 25-Jun-19 12:15 | SB         | 26-Jun-2019   |       |
| SAM-SHORE-6 (0.5)             | X9F0660-06    | Sediment | 25-Jun-19 12:25 | SB         | 26-Jun-2019   |       |
| SAM-SHORE-7 (0.5)             | X9F0660-07    | Sediment | 25-Jun-19 12:35 | SB         | 26-Jun-2019   |       |
| SAM-SHORE-8 (0.5)             | X9F0660-08    | Sediment | 25-Jun-19 12:43 | SB         | 26-Jun-2019   |       |
| SAM-SHORE-9 (0.5)             | X9F0660-09    | Sediment | 25-Jun-19 12:50 | SB         | 26-Jun-2019   |       |
| SAM-SHORE-10 (0.5)            | X9F0660-10    | Sediment | 25-Jun-19 12:59 | SB         | 26-Jun-2019   |       |
| SAM-SHORE-SD-1                | X9F0660-11    | Sediment | 25-Jun-19 12:59 | SB         | 26-Jun-2019   |       |
| SAM-DU-EAST-1-RB              | X9F0660-12    | Rinsate  | 25-Jun-19 14:16 | SB         | 26-Jun-2019   |       |
| SAM-SHORE-10 (RB)             | X9F0660-13    | Rinsate  | 25-Jun-19 13:43 | SB         | 26-Jun-2019   |       |
| SAM-DU-SD-1                   | X9F0660-14    | Soil     | 25-Jun-19 00:00 | SB         | 26-Jun-2019   |       |
| SAM-DU-SD-1 (DUP)             | X9F0660-15    | Soil     | 25-Jun-19 00:00 | SB         | 26-Jun-2019   |       |
| SAM-DU-EAST-2                 | X9F0660-16    | Soil     | 25-Jun-19 00:00 | SB         | 26-Jun-2019   |       |
| SAM-DU-EAST-3                 | X9F0660-17    | Soil     | 25-Jun-19 00:00 | SB         | 26-Jun-2019   |       |
| SAM-DU-WEST-1                 | X9F0660-18    | Soil     | 25-Jun-19 15:52 | SB         | 26-Jun-2019   |       |
| SAM-DU-EAST-1                 | X9F0660-19    | Soil     | 24-Jun-19 17:14 | SB         | 26-Jun-2019   |       |
| SAM-DU-WEST-2                 | X9F0660-20    | Soil     | 26-Jun-19 11:42 | SB         | 26-Jun-2019   |       |
| UNPROCESSED SILICA SAND BLANK | X9F0660-21    | Solid    | _               |            | 26-Jun-2019   |       |
| PROCESSED SILICA SAND BLANK   | X9F0660-22    | Solid    | _               |            | 26-Jun-2019   |       |

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.

Sample preparation is defined by the client as per their Data Quality Objectives.

This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.

Analyses were performed in accordance with SVL standard operating procedures and calibrations were performed and met SVL internal OC criteria.

The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

#### Case Narrative: X9F0660

The state of origin only accredits for drinking water analyses.







Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0660

Reported: 17-Jul-19 09:34

Sampled: 25-Jun-19 11:47

Client Sample ID: SAM-SHORE-1 (0.5) SVL Sample ID: X9F0660-01 (Sediment)

Received: 26-Jun-19 Sample Report Page 1 of 1 Sampled By: SB

|                   |                     |        |       |      |      |          |         | Dampi   | ea Bj. BB      |       |
|-------------------|---------------------|--------|-------|------|------|----------|---------|---------|----------------|-------|
| Method            | Analyte             | Result | Units | RL   | MDL  | Dilution | Batch   | Analyst | Analyzed       | Notes |
| Metals (Total) by | y EPA 6000/7000 Met | hods   |       |      |      |          |         |         |                |       |
| EPA 6010D         | Cadmium             | 0.48   | mg/kg | 0.40 | 0.06 |          | X928079 | AS      | 07/12/19 11:03 |       |
| EPA 6010D         | Lead                | 10.6   | mg/kg | 1.5  | 0.3  |          | X928079 | AS      | 07/12/19 11:03 |       |
| EPA 6010D         | Zinc                | 146    | mg/kg | 1.0  | 0.3  |          | X928079 | AS      | 07/12/19 11:03 |       |
| Percent Solids /  | Percent Moisture    |        |       |      |      |          |         |         |                |       |
| Percent Solids    | % Solids            | 81.2   | %     | 0.1  |      |          | X928082 | NT      | 07/11/19 09:15 |       |
|                   |                     |        |       |      |      |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.







Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

X9F0660

Work Order: Reported:

17-Jul-19 09:34

Client Sample ID: SAM-SHORE-2 (0.5) SVL Sample ID: X9F0660-02 (Sediment)

Sample Report Page 1 of 1

Sampled: 25-Jun-19 11:53 Received: 26-Jun-19 Sampled By: SB

| Method             | Analyte            | Result | Units | RL   | MDL  | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|--------------------|--------|-------|------|------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | EPA 6000/7000 Metl | hods   |       |      |      |          |         |         |                |       |
| EPA 6010D          | Cadmium            | 0.46   | mg/kg | 0.40 | 0.06 |          | X928079 | AS      | 07/12/19 11:07 |       |
| EPA 6010D          | Lead               | 20.9   | mg/kg | 1.5  | 0.3  |          | X928079 | AS      | 07/12/19 11:07 |       |
| EPA 6010D          | Zinc               | 128    | mg/kg | 1.0  | 0.3  |          | X928079 | AS      | 07/12/19 11:07 |       |
| Percent Solids / P | Percent Moisture   |        |       |      |      |          |         |         |                |       |
| Percent Solids     | % Solids           | 64.6   | %     | 0.1  |      |          | X928082 | NT      | 07/11/19 09:15 | •     |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0660

Reported: 17-Jul-19 09:34

Client Sample ID: SAM-SHORE-3 (0.5) SVL Sample ID: X9F0660-03 (Sediment)

Sample Report Page 1 of 1

Sampled: 24-Jun-19 16:11 Received: 26-Jun-19 Sampled By: SB

| Method             | Analyte            | Result | Units | RL   | MDL  | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|--------------------|--------|-------|------|------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | EPA 6000/7000 Metl | ıods   |       |      |      |          |         |         |                |       |
| EPA 6010D          | Cadmium            | 0.50   | mg/kg | 0.40 | 0.06 |          | X928079 | AS      | 07/12/19 11:10 |       |
| EPA 6010D          | Lead               | 11.5   | mg/kg | 1.5  | 0.3  |          | X928079 | AS      | 07/12/19 11:10 |       |
| EPA 6010D          | Zinc               | 160    | mg/kg | 1.0  | 0.3  |          | X928079 | AS      | 07/12/19 11:10 |       |
| Percent Solids / P | Percent Moisture   |        |       |      |      |          |         |         |                |       |
| Percent Solids     | % Solids           | 80.5   | %     | 0.1  |      |          | X928082 | NT      | 07/11/19 09:15 | •     |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0660

Reported: 17-Jul-19 09:34

Client Sample ID: SAM-SHORE-4 (0.5) SVL Sample ID: X9F0660-04 (Sediment)

Sample Report Page 1 of 1

Sampled: 25-Jun-19 12:06 Received: 26-Jun-19 Sampled By: SB

| Method             | Analyte            | Result | Units | RL   | MDL  | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|--------------------|--------|-------|------|------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | EPA 6000/7000 Metl | ıods   |       |      |      |          |         |         |                |       |
| EPA 6010D          | Cadmium            | 0.93   | mg/kg | 0.40 | 0.06 |          | X928079 | AS      | 07/12/19 11:14 |       |
| EPA 6010D          | Lead               | 15.4   | mg/kg | 1.5  | 0.3  |          | X928079 | AS      | 07/12/19 11:14 |       |
| EPA 6010D          | Zinc               | 167    | mg/kg | 1.0  | 0.3  |          | X928079 | AS      | 07/12/19 11:14 |       |
| Percent Solids / I | Percent Moisture   |        |       |      |      |          |         |         |                |       |
| Percent Solids     | % Solids           | 68.9   | %     | 0.1  |      |          | X928082 | NT      | 07/11/19 09:15 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.



Kellogg, ID 83837-0929

(208) 784-1258

www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

X9F0660

Work Order: Reported:

17-Jul-19 09:34

Client Sample ID: **SAM-SHORE-5 (0.5)**SVL Sample ID: **X9F0660-05 (Sediment)** 

Sample Report Page 1 of 1

Sampled: 25-Jun-19 12:15 Received: 26-Jun-19 Sampled By: SB

| Method             | Analyte           | Result | Units | RL   | MDL  | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|-------------------|--------|-------|------|------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | EPA 6000/7000 Met | hods   |       |      |      |          |         |         |                |       |
| EPA 6010D          | Cadmium           | < 0.40 | mg/kg | 0.40 | 0.06 |          | X928079 | AS      | 07/12/19 11:17 |       |
| EPA 6010D          | Lead              | 7.7    | mg/kg | 1.5  | 0.3  |          | X928079 | AS      | 07/12/19 11:17 |       |
| EPA 6010D          | Zinc              | 84.9   | mg/kg | 1.0  | 0.3  |          | X928079 | AS      | 07/12/19 11:17 |       |
| Percent Solids / I | Percent Moisture  |        |       |      |      |          |         |         |                |       |
| Percent Solids     | % Solids          | 77.7   | %     | 0.1  |      |          | X928082 | NT      | 07/11/19 09:15 | •     |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

**Project Name: Stimson Atlas Mill 2019** 

Work Order: X9F0660

Reported: 17-Jul-19 09:34

Client Sample ID: **SAM-SHORE-6 (0.5)**SVL Sample ID: **X9F0660-06 (Sediment)** 

Sample Report Page 1 of 1

Sampled: 25-Jun-19 12:25 Received: 26-Jun-19 Sampled By: SB

| Method             | Analyte           | Result | Units | RL   | MDL  | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|-------------------|--------|-------|------|------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | EPA 6000/7000 Met | hods   |       |      |      |          |         |         |                |       |
| EPA 6010D          | Cadmium           | < 0.40 | mg/kg | 0.40 | 0.06 |          | X928079 | AS      | 07/12/19 11:27 |       |
| EPA 6010D          | Lead              | 11.9   | mg/kg | 1.5  | 0.3  |          | X928079 | AS      | 07/12/19 11:27 |       |
| EPA 6010D          | Zinc              | 102    | mg/kg | 1.0  | 0.3  |          | X928079 | AS      | 07/12/19 11:27 |       |
| Percent Solids / I | Percent Moisture  |        |       |      |      |          |         |         |                |       |
| Percent Solids     | % Solids          | 76.5   | %     | 0.1  |      |          | X928082 | NT      | 07/11/19 09:15 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order:

X9F0660

Reported: 17-Jul-19 09:34

Client Sample ID: SAM-SHORE-7 (0.5) SVL Sample ID: X9F0660-07 (Sediment)

Sample Report Page 1 of 1

Sampled: 25-Jun-19 12:35 Received: 26-Jun-19 Sampled By: SB

| Method             | Analyte           | Result | Units | RL   | MDL  | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|-------------------|--------|-------|------|------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | EPA 6000/7000 Met | hods   |       |      |      |          |         |         |                |       |
| EPA 6010D          | Cadmium           | < 0.40 | mg/kg | 0.40 | 0.06 |          | X928079 | AS      | 07/12/19 11:38 |       |
| EPA 6010D          | Lead              | 6.9    | mg/kg | 1.5  | 0.3  |          | X928079 | AS      | 07/12/19 11:38 |       |
| EPA 6010D          | Zinc              | 64.2   | mg/kg | 1.0  | 0.3  |          | X928079 | AS      | 07/12/19 11:38 |       |
| Percent Solids / I | Percent Moisture  |        |       |      |      |          |         |         |                |       |
| Percent Solids     | % Solids          | 75.7   | %     | 0.1  |      |          | X928082 | NT      | 07/11/19 09:15 | •     |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

**Project Name: Stimson Atlas Mill 2019** 

Work Order: X9F0660

Reported: 17-Jul-19 09:34

Client Sample ID: **SAM-SHORE-8 (0.5)**SVL Sample ID: **X9F0660-08 (Sediment)** 

Sample Report Page 1 of 1

Sampled: 25-Jun-19 12:43 Received: 26-Jun-19 Sampled By: SB

| Method             | Analyte            | Result | Units | RL   | MDL  | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|--------------------|--------|-------|------|------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | EPA 6000/7000 Metl | nods   |       |      |      |          |         |         |                |       |
| EPA 6010D          | Cadmium            | < 0.40 | mg/kg | 0.40 | 0.06 |          | X928079 | AS      | 07/12/19 11:42 |       |
| EPA 6010D          | Lead               | 12.0   | mg/kg | 1.5  | 0.3  |          | X928079 | AS      | 07/12/19 11:42 |       |
| EPA 6010D          | Zinc               | 72.0   | mg/kg | 1.0  | 0.3  |          | X928079 | AS      | 07/12/19 11:42 |       |
| Percent Solids / I | Percent Moisture   |        |       |      |      |          |         |         |                |       |
| Percent Solids     | % Solids           | 91.8   | %     | 0.1  |      |          | X928082 | NT      | 07/11/19 09:15 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0660

Reported: 17-Jul-19 09:34

Client Sample ID: SAM-SHORE-9 (0.5) SVL Sample ID: X9F0660-09 (Sediment)

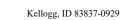
Sample Report Page 1 of 1

Sampled: 25-Jun-19 12:50 Received: 26-Jun-19 Sampled By: SB

| Method             | Analyte            | Result | Units | RL   | MDL  | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|--------------------|--------|-------|------|------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | EPA 6000/7000 Metl | ıods   |       |      |      |          |         |         |                |       |
| EPA 6010D          | Cadmium            | 1.25   | mg/kg | 0.40 | 0.06 |          | X928079 | AS      | 07/12/19 11:45 |       |
| EPA 6010D          | Lead               | 41.8   | mg/kg | 1.5  | 0.3  |          | X928079 | AS      | 07/12/19 11:45 |       |
| EPA 6010D          | Zinc               | 354    | mg/kg | 1.0  | 0.3  |          | X928079 | AS      | 07/12/19 11:45 |       |
| Percent Solids / I | Percent Moisture   |        |       |      |      |          |         |         |                |       |
| Percent Solids     | % Solids           | 83.5   | %     | 0.1  |      |          | X928082 | NT      | 07/11/19 09:15 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.







www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019 Work Order:

X9F0660 Reported: 17-Jul-19 09:34

Client Sample ID: SAM-SHORE-10 (0.5) SVL Sample ID: X9F0660-10 (Sediment)

Sample Report Page 1 of 1

Sampled: 25-Jun-19 12:59 Received: 26-Jun-19 Sampled By: SB

| Method             | Analyte            | Result | Units | RL   | MDL  | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|--------------------|--------|-------|------|------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | EPA 6000/7000 Metl | hods   |       |      |      |          |         |         |                |       |
| EPA 6010D          | Cadmium            | < 0.40 | mg/kg | 0.40 | 0.06 |          | X928079 | AS      | 07/12/19 11:49 |       |
| EPA 6010D          | Lead               | 11.5   | mg/kg | 1.5  | 0.3  |          | X928079 | AS      | 07/12/19 11:49 |       |
| EPA 6010D          | Zinc               | 146    | mg/kg | 1.0  | 0.3  |          | X928079 | AS      | 07/12/19 11:49 |       |
| Percent Solids / I | Percent Moisture   |        |       |      |      |          |         |         |                |       |
| Percent Solids     | % Solids           | 75.3   | %     | 0.1  |      | ·        | X928082 | NT      | 07/11/19 09:15 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net



Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0660

Reported: 17-Jul-19 09:34

Client Sample ID: SAM-SHORE-SD-1 SVL Sample ID: X9F0660-11 (Sediment)

Sample Report Page 1 of 1

Sampled: 25-Jun-19 12:59 Received: 26-Jun-19 Sampled By: SB

| Method             | Analyte            | Result | Units | RL   | MDL  | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|--------------------|--------|-------|------|------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | EPA 6000/7000 Metl | hods   |       |      |      |          |         |         |                |       |
| EPA 6010D          | Cadmium            | < 0.40 | mg/kg | 0.40 | 0.06 |          | X928079 | AS      | 07/12/19 11:52 |       |
| EPA 6010D          | Lead               | 7.6    | mg/kg | 1.5  | 0.3  |          | X928079 | AS      | 07/12/19 11:52 |       |
| EPA 6010D          | Zinc               | 81.5   | mg/kg | 1.0  | 0.3  |          | X928079 | AS      | 07/12/19 11:52 |       |
| Percent Solids / I | Percent Moisture   |        |       |      |      |          |         |         |                |       |
| Percent Solids     | % Solids           | 76.3   | %     | 0.1  |      |          | X928082 | NT      | 07/11/19 09:15 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.







Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0660

Reported: 17-Jul-19 09:34

Client Sample ID: SAM-DU-EAST-1-RB SVL Sample ID: X9F0660-12 (Rinsate)

Sample Report Page 1 of 1

Sampled: 25-Jun-19 14:16 Received: 26-Jun-19 Sampled By: SB

| Method           | Analyte     | Result    | Units | RL      | MDL      | Dilution | Batch   | Analyst | Analyzed       | Notes |
|------------------|-------------|-----------|-------|---------|----------|----------|---------|---------|----------------|-------|
| Metals (Total)   |             |           |       |         |          |          |         |         |                |       |
| EPA 7470A        | Mercury     | < 0.00020 | mg/L  | 0.00020 | 0.000093 |          | X927039 | MWD     | 07/03/19 11:10 |       |
| Metals (Total Re | ecoverable) |           |       |         |          |          |         |         |                |       |
| EPA 6010D        | Arsenic     | < 0.025   | mg/L  | 0.025   | 0.006    |          | X927072 | AS      | 07/12/19 11:33 |       |
| EPA 6010D        | Barium      | 0.0050    | mg/L  | 0.0040  | 0.0019   |          | X927072 | AS      | 07/12/19 11:33 |       |
| EPA 6010D        | Cadmium     | < 0.0040  | mg/L  | 0.0040  | 0.0016   |          | X927072 | AS      | 07/12/19 11:33 |       |
| EPA 6010D        | Chromium    | < 0.0060  | mg/L  | 0.0060  | 0.0020   |          | X927072 | AS      | 07/12/19 11:33 |       |
| EPA 6010D        | Lead        | 0.0204    | mg/L  | 0.0150  | 0.0049   |          | X927072 | AS      | 07/12/19 11:33 |       |
| EPA 6010D        | Selenium    | < 0.040   | mg/L  | 0.040   | 0.012    |          | X927072 | AS      | 07/12/19 11:33 |       |
| EPA 6010D        | Silver      | < 0.0100  | mg/L  | 0.0100  | 0.0019   |          | X927072 | AS      | 07/12/19 11:33 |       |
|                  |             |           |       |         |          |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Client Sample ID: SAM-SHORE-10 (RB)

SVL Sample ID: X9F0660-13 (Rinsate)

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

X9F0660

Work Order: Reported:

17-Jul-19 09:34

Sampled: 25-Jun-19 13:43 Received: 26-Jun-19

Sample Report Page 1 of 1 Sampled By: SB

| Method           | Analyte     | Result   | Units | RL     | MDL    | Dilution | Batch   | Analyst | Analyzed       | Notes |
|------------------|-------------|----------|-------|--------|--------|----------|---------|---------|----------------|-------|
| Metals (Total Re | ecoverable) |          |       |        |        |          |         |         |                |       |
| EPA 6010D        | Cadmium     | < 0.0040 | mg/L  | 0.0040 | 0.0016 |          | X927072 | AS      | 07/12/19 11:44 |       |
| EPA 6010D        | Lead        | < 0.0150 | mg/L  | 0.0150 | 0.0049 |          | X927072 | AS      | 07/12/19 11:44 |       |
| EPA 6010D        | Zinc        | < 0.010  | mg/L  | 0.010  | 0.005  |          | X927072 | AS      | 07/12/19 11:44 |       |
|                  |             |          |       |        |        |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

X9F0660

Work Order: Reported:

17-Jul-19 09:34

Client Sample ID: SAM-DU-SD-1 SVL Sample ID: X9F0660-14 (Soil)

Sample Report Page 1 of 1

Sampled: 25-Jun-19 00:00 Received: 26-Jun-19 Sampled By: SB

| Method         Analyte         Result         Units         RL         MDL         Dilution         Batch         Analyst         Analyzed           Metals (Total) by EPA 6000/7000 Methods           EPA 6010D         Arsenic         28.2         mg/kg         2.5         0.6         X928179         DJS         07/16/19 15:57           EPA 6010D         Barium         136         mg/kg         0.40         0.18         X928179         DJS         07/16/19 15:57 |       |
|--|-------|
| EPA 6010D         Arsenic         28.2         mg/kg         2.5         0.6         X928179         DJS         07/16/19 15:57           EPA 6010D         Barium         136         mg/kg         0.40         0.18         X928179         DJS         07/16/19 15:57  | Notes |
| EPA 6010D <b>Barium</b> 136 mg/kg 0.40 0.18 X928179 DJS 07/16/19 15:57   |       |
|  |       |
|  |       |
| EPA 6010D <b>Cadmium</b> 1.40 mg/kg 0.40 0.06 X928179 DJS 07/16/19 15:57   |       |
| EPA 6010D <b>Chromium</b> 22.2 mg/kg 0.60 0.20 X928179 DJS 07/16/19 15:57  |       |
| EPA 6010D <b>Lead</b> 32.4 mg/kg 1.5 0.3 X928179 DJS 07/16/19 15:57  |       |
| EPA 6010D Selenium < 4.0 mg/kg 4.0 1.1 X928179 DJS 07/16/19 15:57  |       |
| EPA 6010D Silver < 1.00 mg/kg 1.00 0.20 X928179 DJS 07/16/19 15:57   |       |
| EPA 7471B Mercury < 0.033 mg/kg 0.033 0.011 X928059 MWD 07/16/19 08:57   |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0660

Reported: 17-Jul-19 09:34

Client Sample ID: SAM-DU-SD-1 (DUP)

SVL Sample ID: X9F0660-15 (Soil)

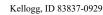
Sample Report Page 1 of 1

Sampled: 25-Jun-19 00:00 Received: 26-Jun-19 Sampled By: SB

| Method            | Analyte              | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|-------------------|----------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by | y EPA 6000/7000 Metl | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D         | Arsenic              | 26.6    | mg/kg | 2.5   | 0.6   |          | X928179 | DJS     | 07/16/19 16:00 |       |
| EPA 6010D         | Barium               | 137     | mg/kg | 0.40  | 0.18  |          | X928179 | DJS     | 07/16/19 16:00 |       |
| EPA 6010D         | Cadmium              | 0.62    | mg/kg | 0.40  | 0.06  |          | X928179 | DJS     | 07/16/19 16:00 |       |
| EPA 6010D         | Chromium             | 22.5    | mg/kg | 0.60  | 0.20  |          | X928179 | DJS     | 07/16/19 16:00 |       |
| EPA 6010D         | Lead                 | 32.6    | mg/kg | 1.5   | 0.3   |          | X928179 | DJS     | 07/16/19 16:00 |       |
| EPA 6010D         | Selenium             | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928179 | DJS     | 07/16/19 16:00 |       |
| EPA 6010D         | Silver               | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928179 | DJS     | 07/16/19 16:00 |       |
| EPA 7471B         | Mercury              | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928059 | MWD     | 07/16/19 08:59 |       |
|                   |                      |         |       |       |       |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0660

Reported: 17-Jul-19 09:34

Client Sample ID: SAM-DU-EAST-2 SVL Sample ID: X9F0660-16 (Soil)

Sample Report Page 1 of 1

Sampled: 25-Jun-19 00:00 Received: 26-Jun-19 Sampled By: SB

| Method            | Analyte              | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|-------------------|----------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by | y EPA 6000/7000 Meth | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D         | Arsenic              | 24.8    | mg/kg | 2.5   | 0.6   |          | X928179 | DJS     | 07/16/19 16:03 |       |
| EPA 6010D         | Barium               | 134     | mg/kg | 0.40  | 0.18  |          | X928179 | DJS     | 07/16/19 16:03 |       |
| EPA 6010D         | Cadmium              | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928179 | DJS     | 07/16/19 16:03 |       |
| EPA 6010D         | Chromium             | 20.7    | mg/kg | 0.60  | 0.20  |          | X928179 | DJS     | 07/16/19 16:03 |       |
| EPA 6010D         | Lead                 | 29.9    | mg/kg | 1.5   | 0.3   |          | X928179 | DJS     | 07/16/19 16:03 |       |
| EPA 6010D         | Selenium             | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928179 | DJS     | 07/16/19 16:03 |       |
| EPA 6010D         | Silver               | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928179 | DJS     | 07/16/19 16:03 |       |
| EPA 7471B         | Mercury              | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928059 | MWD     | 07/16/19 09:00 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0660

Reported: 17-Jul-19 09:34

Client Sample ID: SAM-DU-EAST-3 SVL Sample ID: X9F0660-17 (Soil)

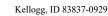
Sample Report Page 1 of 1

Sampled: 25-Jun-19 00:00 Received: 26-Jun-19 Sampled By: SB

| Method            | Analyte            | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|-------------------|--------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by | EPA 6000/7000 Meth | nods    |       |       |       |          |         |         |                |       |
| EPA 6010D         | Arsenic            | 25.9    | mg/kg | 2.5   | 0.6   |          | X928179 | DJS     | 07/16/19 16:07 |       |
| EPA 6010D         | Barium             | 140     | mg/kg | 0.40  | 0.18  |          | X928179 | DJS     | 07/16/19 16:07 |       |
| EPA 6010D         | Cadmium            | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928179 | DJS     | 07/16/19 16:07 |       |
| EPA 6010D         | Chromium           | 22.1    | mg/kg | 0.60  | 0.20  |          | X928179 | DJS     | 07/16/19 16:07 |       |
| EPA 6010D         | Lead               | 34.4    | mg/kg | 1.5   | 0.3   |          | X928179 | DJS     | 07/16/19 16:07 |       |
| EPA 6010D         | Selenium           | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928179 | DJS     | 07/16/19 16:07 |       |
| EPA 6010D         | Silver             | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928179 | DJS     | 07/16/19 16:07 |       |
| EPA 7471B         | Mercury            | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928059 | MWD     | 07/16/19 09:02 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0660

Reported:

17-Jul-19 09:34

Client Sample ID: SAM-DU-WEST-1 SVL Sample ID: X9F0660-18 (Soil)

Sample Report Page 1 of 1

Sampled: 25-Jun-19 15:52 Received: 26-Jun-19 Sampled By: SB

| Method            | Analyte              | Result | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|-------------------|----------------------|--------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by | y EPA 6000/7000 Meth | nods   |       |       |       |          |         |         |                |       |
| EPA 6010D         | Arsenic              | 18.0   | mg/kg | 2.5   | 0.6   |          | X928179 | DJS     | 07/16/19 16:18 |       |
| EPA 6010D         | Barium               | 176    | mg/kg | 0.40  | 0.18  |          | X928179 | DJS     | 07/16/19 16:18 |       |
| EPA 6010D         | Cadmium              | < 0.40 | mg/kg | 0.40  | 0.06  |          | X928179 | DJS     | 07/16/19 16:18 |       |
| EPA 6010D         | Chromium             | 24.7   | mg/kg | 0.60  | 0.20  |          | X928179 | DJS     | 07/16/19 16:18 |       |
| EPA 6010D         | Lead                 | 45.6   | mg/kg | 1.5   | 0.3   |          | X928179 | DJS     | 07/16/19 16:18 |       |
| EPA 6010D         | Selenium             | < 4.0  | mg/kg | 4.0   | 1.1   |          | X928179 | DJS     | 07/16/19 16:18 |       |
| EPA 6010D         | Silver               | < 1.00 | mg/kg | 1.00  | 0.20  |          | X928179 | DJS     | 07/16/19 16:18 |       |
| EPA 7471B         | Mercury              | 0.045  | mg/kg | 0.033 | 0.011 |          | X928059 | MWD     | 07/16/19 09:08 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0660

Reported: 17-Jul-19 09:34

Client Sample ID: SAM-DU-EAST-1 SVL Sample ID: X9F0660-19 (Soil)

Sample Report Page 1 of 1

Sampled: 24-Jun-19 17:14 Received: 26-Jun-19 Sampled By: SB

| Method            | Analyte              | Result | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|-------------------|----------------------|--------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by | y EPA 6000/7000 Metl | hods   |       |       |       |          |         |         |                |       |
| EPA 6010D         | Arsenic              | 24.1   | mg/kg | 2.5   | 0.6   |          | X928179 | DJS     | 07/16/19 16:21 |       |
| EPA 6010D         | Barium               | 152    | mg/kg | 0.40  | 0.18  |          | X928179 | DJS     | 07/16/19 16:21 |       |
| EPA 6010D         | Cadmium              | < 0.40 | mg/kg | 0.40  | 0.06  |          | X928179 | DJS     | 07/16/19 16:21 |       |
| EPA 6010D         | Chromium             | 21.5   | mg/kg | 0.60  | 0.20  |          | X928179 | DJS     | 07/16/19 16:21 |       |
| EPA 6010D         | Lead                 | 33.3   | mg/kg | 1.5   | 0.3   |          | X928179 | DJS     | 07/16/19 16:21 |       |
| EPA 6010D         | Selenium             | < 4.0  | mg/kg | 4.0   | 1.1   |          | X928179 | DJS     | 07/16/19 16:21 |       |
| EPA 6010D         | Silver               | < 1.00 | mg/kg | 1.00  | 0.20  |          | X928179 | DJS     | 07/16/19 16:21 |       |
| EPA 7471B         | Mercury              | 0.035  | mg/kg | 0.033 | 0.011 |          | X928059 | MWD     | 07/16/19 09:10 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

X9F0660

Work Order: Reported:

17-Jul-19 09:34

Client Sample ID: SAM-DU-WEST-2 SVL Sample ID: X9F0660-20 (Soil)

Sample Report Page 1 of 1

Sampled: 26-Jun-19 11:42 Received: 26-Jun-19 Sampled By: SB

| Method            | Analyte              | Result | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|-------------------|----------------------|--------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by | y EPA 6000/7000 Meth | nods   |       |       |       |          |         |         |                |       |
| EPA 6010D         | Arsenic              | 18.2   | mg/kg | 2.5   | 0.6   |          | X928179 | DJS     | 07/16/19 16:35 |       |
| EPA 6010D         | Barium               | 199    | mg/kg | 0.40  | 0.18  |          | X928179 | DJS     | 07/16/19 16:35 |       |
| EPA 6010D         | Cadmium              | < 0.40 | mg/kg | 0.40  | 0.06  |          | X928179 | DJS     | 07/16/19 16:35 |       |
| EPA 6010D         | Chromium             | 23.4   | mg/kg | 0.60  | 0.20  |          | X928179 | DJS     | 07/16/19 16:35 |       |
| EPA 6010D         | Lead                 | 47.3   | mg/kg | 1.5   | 0.3   |          | X928179 | DJS     | 07/16/19 16:35 |       |
| EPA 6010D         | Selenium             | < 4.0  | mg/kg | 4.0   | 1.1   |          | X928179 | DJS     | 07/16/19 16:35 |       |
| EPA 6010D         | Silver               | < 1.00 | mg/kg | 1.00  | 0.20  |          | X928179 | DJS     | 07/16/19 16:35 |       |
| EPA 7471B         | Mercury              | 0.232  | mg/kg | 0.033 | 0.011 |          | X928059 | MWD     | 07/16/19 09:15 |       |
|                   |                      |        |       |       |       |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

X9F0660

Work Order: Reported:

17-Jul-19 09:34

Client Sample ID: UNPROCESSED SILICA SAND BLANK

SVL Sample ID: X9F0660-21 (Solid)

Sample Report Page 1 of 1

Sampled: — Received: 26-Jun-19 Sampled By:

|                  |                     |         |       |       |       |          |         | 1       | ,              |       |
|------------------|---------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Method           | Analyte             | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
| Metals (Total) b | y EPA 6000/7000 Met | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D        | Arsenic             | < 2.5   | mg/kg | 2.5   | 0.6   |          | X928179 | DJS     | 07/16/19 16:38 |       |
| EPA 6010D        | Barium              | < 0.40  | mg/kg | 0.40  | 0.18  |          | X928179 | DJS     | 07/16/19 16:38 |       |
| EPA 6010D        | Cadmium             | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928179 | DJS     | 07/16/19 16:38 |       |
| EPA 6010D        | Chromium            | < 0.60  | mg/kg | 0.60  | 0.20  |          | X928179 | DJS     | 07/16/19 16:38 |       |
| EPA 6010D        | Lead                | < 1.5   | mg/kg | 1.5   | 0.3   |          | X928179 | DJS     | 07/16/19 16:38 |       |
| EPA 6010D        | Selenium            | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928179 | DJS     | 07/16/19 16:38 |       |
| EPA 6010D        | Silver              | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928179 | DJS     | 07/16/19 16:38 |       |
| EPA 7471B        | Mercury             | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928059 | MWD     | 07/16/19 09:17 |       |
|                  |                     |         |       |       |       |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net



Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0660

Reported: 17-Jul-19 09:34

### Client Sample ID: PROCESSED SILICA SAND BLANK

SVL Sample ID: X9F0660-22 (Solid)

Sample Report Page 1 of 1

Sampled: — Received: 26-Jun-19

| Sampled | Pxv. |
|---------|------|
| Sampicu | Dy.  |

| Method            | Analyte             | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|-------------------|---------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by | y EPA 6000/7000 Met | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D         | Arsenic             | < 2.5   | mg/kg | 2.5   | 0.6   |          | X928179 | DJS     | 07/16/19 16:42 |       |
| EPA 6010D         | Barium              | < 0.40  | mg/kg | 0.40  | 0.18  |          | X928179 | DJS     | 07/16/19 16:42 |       |
| EPA 6010D         | Cadmium             | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928179 | DJS     | 07/16/19 16:42 |       |
| EPA 6010D         | Chromium            | < 0.60  | mg/kg | 0.60  | 0.20  |          | X928179 | DJS     | 07/16/19 16:42 |       |
| EPA 6010D         | Lead                | < 1.5   | mg/kg | 1.5   | 0.3   |          | X928179 | DJS     | 07/16/19 16:42 |       |
| EPA 6010D         | Selenium            | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928179 | DJS     | 07/16/19 16:42 |       |
| EPA 6010D         | Silver              | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928179 | DJS     | 07/16/19 16:42 |       |
| EPA 7471B         | Mercury             | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928059 | MWD     | 07/16/19 09:18 |       |
|                   |                     |         |       |       |       |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.



Tetra Tech (WA)

Project Name: Stimson Atlas Mill 2019

1212N Washington Street Suite 208

Work Order: X9F0660

1212N Washington Street Suite 208 Work Order: X9F0660 Spokane, WA 99201 Reported: 17-Jul-19 09:34

| Method        | Analyte              | Units  | Result    | MDL      | MRL     | Batch ID | Analyzed  | Notes |
|---------------|----------------------|--------|-----------|----------|---------|----------|-----------|-------|
|               | ,                    |        |           |          |         |          |           |       |
| Metals (Total | )                    |        |           |          |         |          |           |       |
| EPA 7470A     | Mercury              | mg/L   | < 0.00020 | 0.000093 | 0.00020 | X927039  | 03-Jul-19 |       |
| Metals (Total | ) by EPA 6000/7000 M | ethods |           |          |         |          |           |       |
| EPA 6010D     | Arsenic              | mg/kg  | <2.5      | 0.6      | 2.5     | X928179  | 16-Jul-19 |       |
| EPA 6010D     | Barium               | mg/kg  | < 0.40    | 0.18     | 0.40    | X928179  | 16-Jul-19 |       |
| EPA 6010D     | Cadmium              | mg/kg  | < 0.40    | 0.06     | 0.40    | X928079  | 12-Jul-19 |       |
| EPA 6010D     | Cadmium              | mg/kg  | < 0.40    | 0.06     | 0.40    | X928179  | 16-Jul-19 |       |
| EPA 6010D     | Chromium             | mg/kg  | < 0.60    | 0.20     | 0.60    | X928179  | 16-Jul-19 |       |
| EPA 6010D     | Lead                 | mg/kg  | <1.5      | 0.3      | 1.5     | X928079  | 12-Jul-19 |       |
| EPA 6010D     | Lead                 | mg/kg  | <1.5      | 0.3      | 1.5     | X928179  | 16-Jul-19 |       |
| EPA 6010D     | Selenium             | mg/kg  | <4.0      | 1.1      | 4.0     | X928179  | 16-Jul-19 |       |
| EPA 6010D     | Silver               | mg/kg  | <1.00     | 0.20     | 1.00    | X928179  | 16-Jul-19 |       |
| EPA 6010D     | Zinc                 | mg/kg  | <1.0      | 0.3      | 1.0     | X928079  | 12-Jul-19 |       |
| EPA 7471B     | Mercury              | mg/kg  | < 0.033   | 0.011    | 0.033   | X928059  | 16-Jul-19 |       |
| Metals (Total | Recoverable)         |        |           |          |         |          |           |       |
| EPA 6010D     | Arsenic              | mg/L   | < 0.025   | 0.006    | 0.025   | X927072  | 12-Jul-19 |       |
| EPA 6010D     | Barium               | mg/L   | < 0.0040  | 0.0019   | 0.0040  | X927072  | 12-Jul-19 |       |
| EPA 6010D     | Cadmium              | mg/L   | < 0.0040  | 0.0016   | 0.0040  | X927072  | 12-Jul-19 |       |
| EPA 6010D     | Chromium             | mg/L   | < 0.0060  | 0.0020   | 0.0060  | X927072  | 12-Jul-19 |       |
| EPA 6010D     | Lead                 | mg/L   | < 0.0150  | 0.0049   | 0.0150  | X927072  | 12-Jul-19 |       |
| EPA 6010D     | Selenium             | mg/L   | < 0.040   | 0.012    | 0.040   | X927072  | 12-Jul-19 |       |
| EPA 6010D     | Silver               | mg/L   | < 0.0100  | 0.0019   | 0.0100  | X927072  | 12-Jul-19 |       |
| EPA 6010D     | Zinc                 | mg/L   | < 0.010   | 0.005    | 0.010   | X927072  | 12-Jul-19 |       |

| Quality Control - LABORATORY CONTROL SAMPLE Data |                      |                |               |             |           |                      |          |           |       |  |  |  |
|--|----------------------|----------------|---------------|-------------|-----------|----------------------|----------|-----------|-------|--|--|--|
| Method   | Analyte              | Units          | LCS<br>Result | LCS<br>True | %<br>Rec. | Acceptance<br>Limits | Batch ID | Analyzed  | Notes |  |  |  |
| Metals (Total                                    | )                    |                |               |             |           |                      |          |           |       |  |  |  |
| EPA 7470A  | Mercury              | mg/L           | 0.00534       | 0.00500     | 107       | 80 - 120             | X927039  | 03-Jul-19 |       |  |  |  |
| Metals (Total)                                   | ) by EPA 6000/7000 M | <b>Lethods</b> |               |             |           |                      |          |           |       |  |  |  |
| EPA 6010D  | Arsenic              | mg/kg          | 99.6          | 100         | 99.6      | 80 - 120             | X928179  | 16-Jul-19 |       |  |  |  |
| EPA 6010D  | Barium               | mg/kg          | 103           | 100         | 103       | 80 - 120             | X928179  | 16-Jul-19 |       |  |  |  |
| EPA 6010D  | Cadmium              | mg/kg          | 95.8          | 100         | 95.8      | 80 - 120             | X928079  | 12-Jul-19 |       |  |  |  |
| EPA 6010D  | Cadmium              | mg/kg          | 100           | 100         | 100       | 80 - 120             | X928179  | 16-Jul-19 |       |  |  |  |
| EPA 6010D  | Chromium             | mg/kg          | 102           | 100         | 102       | 80 - 120             | X928179  | 16-Jul-19 |       |  |  |  |
| EPA 6010D  | Lead                 | mg/kg          | 99.3          | 100         | 99.3      | 80 - 120             | X928079  | 12-Jul-19 |       |  |  |  |
| EPA 6010D  | Lead                 | mg/kg          | 100           | 100         | 100       | 80 - 120             | X928179  | 16-Jul-19 |       |  |  |  |
| EPA 6010D  | Selenium             | mg/kg          | 100           | 100         | 100       | 80 - 120             | X928179  | 16-Jul-19 |       |  |  |  |
| EPA 6010D  | Silver               | mg/kg          | 5.17          | 5.00        | 103       | 80 - 120             | X928179  | 16-Jul-19 |       |  |  |  |
| EPA 6010D  | Zinc                 | mg/kg          | 96.6          | 100         | 96.6      | 80 - 120             | X928079  | 12-Jul-19 |       |  |  |  |
| EPA 7471B  | Mercury              | mg/kg          | 0.845         | 0.833       | 101       | 80 - 120             | X928059  | 16-Jul-19 |       |  |  |  |
| Metals (Total                                    | Recoverable)         |                |               |             |           |                      |          |           |       |  |  |  |
| EPA 6010D  | Arsenic              | mg/L           | 0.989         | 1.00        | 98.9      | 80 - 120             | X927072  | 12-Jul-19 |       |  |  |  |
| EPA 6010D  | Barium               | mg/L           | 1.04          | 1.00        | 104       | 80 - 120             | X927072  | 12-Jul-19 |       |  |  |  |
| EPA 6010D  | Cadmium              | mg/L           | 0.994         | 1.00        | 99.4      | 80 - 120             | X927072  | 12-Jul-19 |       |  |  |  |
| EPA 6010D  | Chromium             | mg/L           | 1.00          | 1.00        | 100       | 80 - 120             | X927072  | 12-Jul-19 |       |  |  |  |
| EPA 6010D  | Lead                 | mg/L           | 1.00          | 1.00        | 100       | 80 - 120             | X927072  | 12-Jul-19 |       |  |  |  |
| EPA 6010D  | Selenium             | mg/L           | 1.02          | 1.00        | 102       | 80 - 120             | X927072  | 12-Jul-19 |       |  |  |  |
| EPA 6010D  | Silver               | mg/L           | 0.0527        | 0.0500      | 105       | 80 - 120             | X927072  | 12-Jul-19 |       |  |  |  |
| EPA 6010D  | Zinc                 | mg/L           | 0.978         | 1.00        | 97.8      | 80 - 120             | X927072  | 12-Jul-19 |       |  |  |  |



www.svl.net



Tetra Tech (WA) **Project Name: Stimson Atlas Mill 2019** 

X9F0660 1212N Washington Street Suite 208 Work Order: 17-Jul-19 09:34 Spokane, WA 99201 Reported:

| Quality Contro                | ol - DUPLICATE Data            |       |                     |                  |     |              |          |           |       |
|-------------------------------|--------------------------------|-------|---------------------|------------------|-----|--------------|----------|-----------|-------|
| Method                        | Analyte                        | Units | Duplicate<br>Result | Sample<br>Result | RPD | RPD<br>Limit | Batch ID | Analyzed  | Notes |
| Percent Solids Percent Solids | / Percent Moisture<br>% Solids | %     | 79.0                | 77.7             | 1.6 | 20           | X928082  | 11-Jul-19 |       |

| Quality Control - MATRIX SPIKE Data |                    |         |                 |                      |                    |               |                      |          |           |       |  |  |
|-------------------------------------|--------------------|---------|-----------------|----------------------|--------------------|---------------|----------------------|----------|-----------|-------|--|--|
| Method                              | Analyte            | Units   | Spike<br>Result | Sample<br>Result (R) | Spike<br>Level (S) | %<br>Recovery | Acceptance<br>Limits | Batch ID | Analyzed  | Notes |  |  |
| N 1 (T 1)                           |                    |         |                 |                      |                    |               |                      |          |           |       |  |  |
| Metals (Total)                      |                    | -       | 0.004.00        |                      | 0.004.00           | 400           |                      | ******** |           |       |  |  |
| EPA 7470A                           | Mercury            | mg/L    | 0.00100         | <0.00020             | 0.00100            | 100           | 75 - 125             | X927039  | 03-Jul-19 |       |  |  |
| EPA 7470A                           | Mercury            | mg/L    | 0.00105         | < 0.00020            | 0.00100            | 105           | 75 - 125             | X927039  | 03-Jul-19 |       |  |  |
| Metals (Total) l                    | by EPA 6000/7000 M | lethods |                 |                      |                    |               |                      |          |           |       |  |  |
| EPA 6010D                           | Arsenic            | mg/kg   | 124             | 25.9                 | 100                | 97.9          | 75 - 125             | X928179  | 16-Jul-19 |       |  |  |
| EPA 6010D                           | Barium             | mg/kg   | 255             | 140                  | 100                | 115           | 75 - 125             | X928179  | 16-Jul-19 |       |  |  |
| EPA 6010D                           | Cadmium            | mg/kg   | 96.2            | < 0.40               | 100                | 95.9          | 75 - 125             | X928079  | 12-Jul-19 |       |  |  |
| EPA 6010D                           | Cadmium            | mg/kg   | 99.2            | < 0.40               | 100                | 98.9          | 75 - 125             | X928179  | 16-Jul-19 |       |  |  |
| EPA 6010D                           | Chromium           | mg/kg   | 122             | 22.1                 | 100                | 99.9          | 75 - 125             | X928179  | 16-Jul-19 |       |  |  |
| EPA 6010D                           | Lead               | mg/kg   | 104             | 7.7                  | 100                | 96.3          | 75 - 125             | X928079  | 12-Jul-19 |       |  |  |
| EPA 6010D                           | Lead               | mg/kg   | 126             | 34.4                 | 100                | 91.1          | 75 - 125             | X928179  | 16-Jul-19 |       |  |  |
| EPA 6010D                           | Selenium           | mg/kg   | 96.8            | <4.0                 | 100                | 96.8          | 75 - 125             | X928179  | 16-Jul-19 |       |  |  |
| EPA 6010D                           | Silver             | mg/kg   | 5.54            | <1.00                | 5.00               | 106           | 75 - 125             | X928179  | 16-Jul-19 |       |  |  |
| EPA 6010D                           | Zinc               | mg/kg   | 172             | 84.9                 | 100                | 87.0          | 75 - 125             | X928079  | 12-Jul-19 |       |  |  |
| EPA 7471B                           | Mercury            | mg/kg   | 0.337           | < 0.033              | 0.333              | 95.7          | 75 - 125             | X928059  | 16-Jul-19 |       |  |  |
| Metals (Total R                     | (ecoverable)       |         |                 |                      |                    |               |                      |          |           |       |  |  |
| EPA 6010D                           | Arsenic            | mg/L    | 1.00            | < 0.025              | 1.00               | 100           | 75 - 125             | X927072  | 12-Jul-19 |       |  |  |
| EPA 6010D                           | Barium             | mg/L    | 1.04            | 0.0050               | 1.00               | 103           | 75 - 125             | X927072  | 12-Jul-19 |       |  |  |
| EPA 6010D                           | Cadmium            | mg/L    | 1.01            | < 0.0040             | 1.00               | 101           | 75 - 125             | X927072  | 12-Jul-19 |       |  |  |
| EPA 6010D                           | Chromium           | mg/L    | 1.02            | < 0.0060             | 1.00               | 102           | 75 - 125             | X927072  | 12-Jul-19 |       |  |  |
| EPA 6010D                           | Lead               | mg/L    | 1.04            | 0.0204               | 1.00               | 102           | 75 - 125             | X927072  | 12-Jul-19 |       |  |  |
| EPA 6010D                           | Selenium           | mg/L    | 1.02            | < 0.040              | 1.00               | 102           | 75 - 125             | X927072  | 12-Jul-19 |       |  |  |
| EPA 6010D                           | Silver             | mg/L    | 0.0521          | < 0.0100             | 0.0500             | 104           | 75 - 125             | X927072  | 12-Jul-19 |       |  |  |
| EPA 6010D                           | Zinc               | mg/L    | 1.11            | 0.126                | 1.00               | 98.7          | 75 - 125             | X927072  | 12-Jul-19 |       |  |  |

| Method                           | Analyte              | Units   | MSD<br>Result | Spike<br>Result | Spike<br>Level | %<br>Rec. | RPD | RPD<br>Limit | Batch ID | Analyzed  | Notes |
|----------------------------------|----------------------|---------|---------------|-----------------|----------------|-----------|-----|--------------|----------|-----------|-------|
|                                  |                      |         |               |                 |                |           |     |              |          |           |       |
| <b>Metals (Total</b><br>PA 7470A | )<br>Mercury         | mg/L    | 0.00100       | 0.00100         | 0.00100        | 100       | 0.1 | 20           | X927039  | 03-Jul-19 |       |
| Aetals (Total                    | ) by EPA 6000/7000 N | Methods |               |                 |                |           |     |              |          |           |       |
| PA 6010D                         | Arsenic              | mg/kg   | 125           | 124             | 100            | 98.8      | 0.7 | 20           | X928179  | 16-Jul-19 |       |
| PA 6010D                         | Barium               | mg/kg   | 253           | 255             | 100            | 113       | 0.8 | 20           | X928179  | 16-Jul-19 |       |
| PA 6010D                         | Cadmium              | mg/kg   | 95.5          | 96.2            | 100            | 95.2      | 0.8 | 20           | X928079  | 12-Jul-19 |       |
| PA 6010D                         | Cadmium              | mg/kg   | 100           | 99.2            | 100            | 99.9      | 1.0 | 20           | X928179  | 16-Jul-19 |       |
| PA 6010D                         | Chromium             | mg/kg   | 122           | 122             | 100            | 100       | 0.3 | 20           | X928179  | 16-Jul-19 |       |
| PA 6010D                         | Lead                 | mg/kg   | 105           | 104             | 100            | 97.6      | 1.2 | 20           | X928079  | 12-Jul-19 |       |
| PA 6010D                         | Lead                 | mg/kg   | 127           | 126             | 100            | 93.0      | 1.5 | 20           | X928179  | 16-Jul-19 |       |
| PA 6010D                         | Selenium             | mg/kg   | 98.4          | 96.8            | 100            | 98.4      | 1.7 | 20           | X928179  | 16-Jul-19 |       |
| PA 6010D                         | Silver               | mg/kg   | 5.74          | 5.54            | 5.00           | 110       | 3.6 | 20           | X928179  | 16-Jul-19 |       |
| PA 6010D                         | Zinc                 | mg/kg   | 173           | 172             | 100            | 88.5      | 0.9 | 20           | X928079  | 12-Jul-19 |       |



Kellogg, ID 83837-0929

(208) 784-1258

www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019
Work Order: X9F0660
Reported: 17-Jul-19 09:34

| Quality Control - MATRIX SPIKE DUPLICATE Data (Continued) |                    |              |               |                 |                |           |     |              |          |           |       |
|---|--------------------|--------------|---------------|-----------------|----------------|-----------|-----|--------------|----------|-----------|-------|
| Method  | Analyte            | Units        | MSD<br>Result | Spike<br>Result | Spike<br>Level | %<br>Rec. | RPD | RPD<br>Limit | Batch ID | Analyzed  | Notes |
| Metals (Total) b  | oy EPA 6000/7000 M | lethods (Con | tinued)       |                 |                |           |     |              |          |           |       |
| EPA 7471B   | Mercury            | mg/kg        | 0.352         | 0.337           | 0.333          | 100       | 4.4 | 20           | X928059  | 16-Jul-19 |       |
| Metals (Total R   | ecoverable)        |              |               |                 |                |           |     |              |          |           |       |
| EPA 6010D   | Arsenic            | mg/L         | 1.02          | 1.00            | 1.00           | 102       | 1.5 | 20           | X927072  | 12-Jul-19 |       |
| EPA 6010D   | Barium             | mg/L         | 1.06          | 1.04            | 1.00           | 105       | 1.8 | 20           | X927072  | 12-Jul-19 |       |
| EPA 6010D   | Cadmium            | mg/L         | 1.02          | 1.01            | 1.00           | 102       | 1.4 | 20           | X927072  | 12-Jul-19 |       |
| EPA 6010D   | Chromium           | mg/L         | 1.03          | 1.02            | 1.00           | 103       | 1.9 | 20           | X927072  | 12-Jul-19 |       |
| EPA 6010D   | Lead               | mg/L         | 1.05          | 1.04            | 1.00           | 103       | 1.5 | 20           | X927072  | 12-Jul-19 |       |
| EPA 6010D   | Selenium           | mg/L         | 1.04          | 1.02            | 1.00           | 104       | 1.7 | 20           | X927072  | 12-Jul-19 |       |
| EPA 6010D   | Silver             | mg/L         | 0.0528        | 0.0521          | 0.0500         | 106       | 1.4 | 20           | X927072  | 12-Jul-19 |       |
| EPA 6010D   | Zinc               | mg/L         | 1.13          | 1.11            | 1.00           | 100       | 1.3 | 20           | X927072  | 12-Jul-19 |       |

#### **Notes and Definitions**

LCS Laboratory Control Sample (Blank Spike)

RPD Relative Percent Difference

UDL A result is less than the detection limit

0.30R>S % recovery not applicable; spike level is less than 30% of the sample concentration

< RL A result is less than the reporting limit

MRL Method Reporting Limit
MDL Method Detection Limit

N/A Not Applicable



(208) 784-1258 www.svl.net

Tetra Tech (WA) Project Name: Stimson Atlas Mill 2019 1212N Washington Street Suite 208 Work Order: X9F0708 Spokane, WA 99201 Reported: 17-Jul-19 17:12

#### ANALYTICAL REPORT FOR SAMPLES

| Sample ID             | Laboratory ID | Matrix  | Date Sampled    | Sampled By | Date Received | Notes |
|-----------------------|---------------|---------|-----------------|------------|---------------|-------|
| SAM-BERM-1 (0-3)      | X9F0708-01    | Soil    | 27-Jun-19 14:09 | RP         | 28-Jun-2019   |       |
| SAM-BERM-1 (9-12)     | X9F0708-02    | Soil    | 27-Jun-19 14:20 | RP         | 28-Jun-2019   |       |
| SAM-BERM-2 (0-3)      | X9F0708-03    | Soil    | 27-Jun-19 13:38 | RP         | 28-Jun-2019   |       |
| SAM-BERM-2 (7.5-10.5) | X9F0708-04    | Soil    | 27-Jun-19 13:50 | RP         | 28-Jun-2019   |       |
| SAM-BERM-3 (0-3)      | X9F0708-05    | Soil    | 27-Jun-19 12:50 | RP         | 28-Jun-2019   |       |
| SAM-BERM-3 (5.5-8)    | X9F0708-06    | Soil    | 27-Jun-19 13:02 | RP         | 28-Jun-2019   |       |
| SAM-BERM-4 (0-3.2)    | X9F0708-07    | Soil    | 27-Jun-19 12:14 | RP         | 28-Jun-2019   |       |
| SAM-BERM-4 (8-11)     | X9F0708-08    | Soil    | 27-Jun-19 12:31 | RP         | 28-Jun-2019   |       |
| SAM-BERM-5 (0-3)      | X9F0708-09    | Soil    | 27-Jun-19 11:28 | RP         | 28-Jun-2019   |       |
| SAM-BERM-5 (5-8)      | X9F0708-10    | Soil    | 27-Jun-19 11:45 | RP         | 28-Jun-2019   |       |
| SAM-BERM-6 (0-3)      | X9F0708-11    | Soil    | 27-Jun-19 10:32 | RP         | 28-Jun-2019   |       |
| SAM-BERM-6 (8.5-11.5) | X9F0708-12    | Soil    | 27-Jun-19 10:34 | RP         | 28-Jun-2019   |       |
| SAM-BERM-7 (0-3)      | X9F0708-13    | Soil    | 27-Jun-19 09:42 | RP         | 28-Jun-2019   |       |
| SAM-BERM-7 (11-14)    | X9F0708-14    | Soil    | 27-Jun-19 10:03 | RP         | 28-Jun-2019   |       |
| SAM-BERM-8 (0-3)      | X9F0708-15    | Soil    | 27-Jun-19 09:07 | RP         | 28-Jun-2019   |       |
| SAM-BERM-8 (13-16)    | X9F0708-16    | Soil    | 27-Jun-19 09:20 | RP         | 28-Jun-2019   |       |
| SAM-BERM-9 (0-3)      | X9F0708-17    | Soil    | 27-Jun-19 08:28 | RP         | 28-Jun-2019   |       |
| SAM-BERM-9 (12.5-13)  | X9F0708-18    | Soil    | 27-Jun-19 08:50 | RP         | 28-Jun-2019   |       |
| SAM-BERM-10 (0-3)     | X9F0708-19    | Soil    | 26-Jun-19 17:18 | RP         | 28-Jun-2019   |       |
| SAM-BERM-10 (9-12)    | X9F0708-20    | Soil    | 26-Jun-19 17:28 | RP         | 28-Jun-2019   |       |
| SAM-BERM-SD-1         | X9F0708-21    | Soil    | 27-Jun-19 00:00 | RP         | 28-Jun-2019   |       |
| SAM-DU-WEST-3         | X9F0708-22    | Soil    | 26-Jun-19 16:00 | RP         | 28-Jun-2019   |       |
| SAM-DU-NORTH-1        | X9F0708-23    | Soil    | 27-Jun-19 17:02 | RP         | 28-Jun-2019   |       |
| SAM-DU-WEST-3-RB      | X9F0708-24    | Rinsate | 26-Jun-19 16:11 | RP         | 28-Jun-2019   |       |
| SAM-DU-NORTH-1-RB     | X9F0708-25    | Rinsate | 27-Jun-19 16:35 | RP         | 28-Jun-2019   |       |
| SAM-BERM-1 (9-12) RB  | X9F0708-26    | Rinsate | 27-Jun-19 15:08 | RP         | 28-Jun-2019   |       |

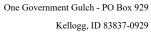
Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.

Sample preparation is defined by the client as per their Data Quality Objectives.

This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.

Analyses were performed in accordance with SVL standard operating procedures and calibrations were performed and met SVL internal QC criteria.

The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.





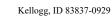
SVL

Tetra Tech (WA)Project Name: Stimson Atlas Mill 20191212N Washington Street Suite 208Work Order: X9F0708Spokane, WA 99201Reported: 17-Jul-19 17:12

Case Narrative: X9F0708

The state of origin only accredits for drinking water analyses.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0708

Reported: 17-Jul-19 17:12

Client Sample ID: SAM-BERM-1 (0-3) SVL Sample ID: X9F0708-01 (Soil)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 14:09 Received: 28-Jun-19 Sampled By: RP

| Method            | Analyte              | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|-------------------|----------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by | y EPA 6000/7000 Metl | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D         | Arsenic              | 7.3     | mg/kg | 2.5   | 0.6   |          | X928221 | DJS     | 07/17/19 10:13 |       |
| EPA 6010D         | Barium               | 93.8    | mg/kg | 0.40  | 0.18  |          | X928221 | DJS     | 07/17/19 10:13 |       |
| EPA 6010D         | Cadmium              | 0.57    | mg/kg | 0.40  | 0.06  |          | X928221 | DJS     | 07/17/19 10:13 |       |
| EPA 6010D         | Chromium             | 11.3    | mg/kg | 0.60  | 0.20  |          | X928221 | DJS     | 07/17/19 10:13 |       |
| EPA 6010D         | Lead                 | 15.1    | mg/kg | 1.5   | 0.3   |          | X928221 | DJS     | 07/17/19 10:13 |       |
| EPA 6010D         | Selenium             | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928221 | DJS     | 07/17/19 10:13 |       |
| EPA 6010D         | Silver               | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928221 | DJS     | 07/17/19 10:13 |       |
| EPA 7471B         | Mercury              | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 09:51 |       |
| Percent Solids /  | Percent Moisture     |         |       |       |       |          |         |         |                |       |
| Percent Solids    | % Solids             | 93.1    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019 Work Order: X9F0708

> Reported: 17-Jul-19 17:12

Client Sample ID: SAM-BERM-1 (9-12) SVL Sample ID: X9F0708-02 (Soil)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 14:20 Received: 28-Jun-19 Sampled By: RP

| Analyte            | Result  | Units                 | RL  | MDL  | Dilution  | Batch  | Analyst  | Analyzed   | Notes  |
|--------------------|---|-----------------------|---|--|---|--|--|--|--|
| EPA 6000/7000 Meth | nods  |                       |   |  |   |  |  |  |  |
| Arsenic            | 19.7  | mg/kg                 | 2.5   | 0.6  |   | X928221  | DJS  | 07/17/19 10:17   |  |
| Barium             | 79.0  | mg/kg                 | 0.40  | 0.18   |   | X928221  | DJS  | 07/17/19 10:17   |  |
| Cadmium            | < 0.40  | mg/kg                 | 0.40  | 0.06   |   | X928221  | DJS  | 07/17/19 10:17   |  |
| Chromium           | 13.3  | mg/kg                 | 0.60  | 0.20   |   | X928221  | DJS  | 07/17/19 10:17   |  |
| Lead               | 16.4  | mg/kg                 | 1.5   | 0.3  |   | X928221  | DJS  | 07/17/19 10:17   |  |
| Selenium           | < 4.0   | mg/kg                 | 4.0   | 1.1  |   | X928221  | DJS  | 07/17/19 10:17   |  |
| Silver             | < 1.00  | mg/kg                 | 1.00  | 0.20   |   | X928221  | DJS  | 07/17/19 10:17   |  |
| Mercury            | < 0.033   | mg/kg                 | 0.033   | 0.011  |   | X928060  | MWD  | 07/16/19 09:52   |  |
| Percent Moisture   |   |                       |   |  |   |  |  |  |  |
| % Solids           | 90.8  | %                     | 0.1   |  |   | X928207  | NT/JA  | 07/16/19 10:15   |  |
|                    | EPA 6000/7000 Meth<br>Arsenic<br>Barium<br>Cadmium<br>Chromium<br>Lead<br>Selenium<br>Silver<br>Mercury | EPA 6000/7000 Methods | EPA 6000/7000 Methods           Arsenic         19.7         mg/kg           Barium         79.0         mg/kg           Cadmium         < 0.40 | EPA 6000/7000 Methods           Arsenic         19.7         mg/kg         2.5           Barium         79.0         mg/kg         0.40           Cadmium         < 0.40 | EPA 6000/7000 Methods           Arsenic         19.7         mg/kg         2.5         0.6           Barium         79.0         mg/kg         0.40         0.18           Cadmium         < 0.40 | EPA 6000/7000 Methods           Arsenic         19.7         mg/kg         2.5         0.6           Barium         79.0         mg/kg         0.40         0.18           Cadmium         < 0.40         mg/kg         0.40         0.06           Chromium         13.3         mg/kg         0.60         0.20           Lead         16.4         mg/kg         1.5         0.3           Selenium         < 4.0         mg/kg         4.0         1.1           Silver         < 1.00         mg/kg         1.00         0.20           Mercury         < 0.033         mg/kg         0.033         0.011 | EPA 6000/7000 Methods           Arsenic         19.7         mg/kg         2.5         0.6         X928221           Barium         79.0         mg/kg         0.40         0.18         X928221           Cadmium         < 0.40         mg/kg         0.40         0.06         X928221           Chromium         13.3         mg/kg         0.60         0.20         X928221           Lead         16.4         mg/kg         1.5         0.3         X928221           Selenium         < 4.0         mg/kg         4.0         1.1         X928221           Silver         < 1.00         mg/kg         1.00         0.20         X928221           Mercury         < 0.033         mg/kg         0.033         0.011         X928060 | EPA 6000/7000 Methods           Arsenic         19.7         mg/kg         2.5         0.6         X928221         DJS           Barium         79.0         mg/kg         0.40         0.18         X928221         DJS           Cadmium         < 0.40         mg/kg         0.40         0.06         X928221         DJS           Chromium         13.3         mg/kg         0.60         0.20         X928221         DJS           Lead         16.4         mg/kg         1.5         0.3         X928221         DJS           Selenium         < 4.0         mg/kg         4.0         1.1         X928221         DJS           Silver         < 1.00         mg/kg         1.00         0.20         X928221         DJS           Mercury         < 0.033         mg/kg         0.033         0.011         X928060         MWD | EPA 6000/7000 Methods           Arsenic         19.7         mg/kg         2.5         0.6         X928221         DJS         07/17/19 10:17           Barium         79.0         mg/kg         0.40         0.18         X928221         DJS         07/17/19 10:17           Cadmium         < 0.40         mg/kg         0.40         0.06         X928221         DJS         07/17/19 10:17           Chromium         13.3         mg/kg         0.60         0.20         X928221         DJS         07/17/19 10:17           Lead         16.4         mg/kg         1.5         0.3         X928221         DJS         07/17/19 10:17           Selenium         < 4.0         mg/kg         4.0         1.1         X928221         DJS         07/17/19 10:17           Silver         < 1.00         mg/kg         1.00         0.20         X928221         DJS         07/17/19 10:17           Mercury         < 0.033         mg/kg         0.033         0.011         X928060         MWD         07/16/19 09:52 |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0708

Reported: 17-Jul-19 17:12

Client Sample ID: SAM-BERM-2 (0-3) SVL Sample ID: X9F0708-03 (Soil)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 13:38 Received: 28-Jun-19 Sampled By: RP

| Method              | Analyte            | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|---------------------|--------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by I | EPA 6000/7000 Meth | ıods    |       |       |       |          |         |         |                |       |
| EPA 6010D           | Arsenic            | 18.7    | mg/kg | 2.5   | 0.6   |          | X928221 | DJS     | 07/17/19 10:21 |       |
| EPA 6010D           | Barium             | 300     | mg/kg | 0.40  | 0.18  |          | X928221 | DJS     | 07/17/19 10:21 |       |
| EPA 6010D           | Cadmium            | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928221 | DJS     | 07/17/19 10:21 |       |
| EPA 6010D           | Chromium           | 27.1    | mg/kg | 0.60  | 0.20  |          | X928221 | DJS     | 07/17/19 10:21 |       |
| EPA 6010D           | Lead               | 21.5    | mg/kg | 1.5   | 0.3   |          | X928221 | DJS     | 07/17/19 10:21 |       |
| EPA 6010D           | Selenium           | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928221 | DJS     | 07/17/19 10:21 |       |
| EPA 6010D           | Silver             | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928221 | DJS     | 07/17/19 10:21 |       |
| EPA 7471B           | Mercury            | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 09:54 |       |
| Percent Solids / Pe | rcent Moisture     |         |       |       |       |          |         |         |                |       |
| Percent Solids      | % Solids           | 87.9    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

X9F0708

Work Order: Reported:

17-Jul-19 17:12

Client Sample ID: SAM-BERM-2 (7.5-10.5)

SVL Sample ID: X9F0708-04 (Soil)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 13:50 Received: 28-Jun-19 Sampled By: RP

| Method             | Analyte            | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|--------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | EPA 6000/7000 Metl | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D          | Arsenic            | 22.0    | mg/kg | 2.5   | 0.6   |          | X928221 | DJS     | 07/17/19 10:25 |       |
| EPA 6010D          | Barium             | 154     | mg/kg | 0.40  | 0.18  |          | X928221 | DJS     | 07/17/19 10:25 |       |
| EPA 6010D          | Cadmium            | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928221 | DJS     | 07/17/19 10:25 |       |
| EPA 6010D          | Chromium           | 21.8    | mg/kg | 0.60  | 0.20  |          | X928221 | DJS     | 07/17/19 10:25 |       |
| EPA 6010D          | Lead               | 10.3    | mg/kg | 1.5   | 0.3   |          | X928221 | DJS     | 07/17/19 10:25 |       |
| EPA 6010D          | Selenium           | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928221 | DJS     | 07/17/19 10:25 |       |
| EPA 6010D          | Silver             | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928221 | DJS     | 07/17/19 10:25 |       |
| EPA 7471B          | Mercury            | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 09:56 |       |
| Percent Solids / P | Percent Moisture   |         |       |       |       |          |         |         |                |       |
| Percent Solids     | % Solids           | 88.1    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA) 1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0708

Reported: 17-Jul-19 17:12

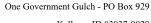
Client Sample ID: SAM-BERM-3 (0-3) SVL Sample ID: X9F0708-05 (Soil)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 12:50 Received: 28-Jun-19 Sampled By: RP

| Method              | Analyte            | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|---------------------|--------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by I | EPA 6000/7000 Meth | ıods    |       |       |       |          |         |         |                |       |
| EPA 6010D           | Arsenic            | 11.8    | mg/kg | 2.5   | 0.6   |          | X928221 | DJS     | 07/17/19 10:29 |       |
| EPA 6010D           | Barium             | 101     | mg/kg | 0.40  | 0.18  |          | X928221 | DJS     | 07/17/19 10:29 |       |
| EPA 6010D           | Cadmium            | 0.54    | mg/kg | 0.40  | 0.06  |          | X928221 | DJS     | 07/17/19 10:29 |       |
| EPA 6010D           | Chromium           | 10.2    | mg/kg | 0.60  | 0.20  |          | X928221 | DJS     | 07/17/19 10:29 |       |
| EPA 6010D           | Lead               | 15.4    | mg/kg | 1.5   | 0.3   |          | X928221 | DJS     | 07/17/19 10:29 |       |
| EPA 6010D           | Selenium           | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928221 | DJS     | 07/17/19 10:29 |       |
| EPA 6010D           | Silver             | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928221 | DJS     | 07/17/19 10:29 |       |
| EPA 7471B           | Mercury            | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 10:11 |       |
| Percent Solids / Pe | rcent Moisture     |         |       |       |       |          |         |         |                |       |
| Percent Solids      | % Solids           | 86.4    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.



(208) 784-1258 www.svl.net



Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019 Work Order: X9F0708

> Reported: 17-Jul-19 17:12

Client Sample ID: SAM-BERM-3 (5.5-8) SVL Sample ID: X9F0708-06 (Soil)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 13:02 Received: 28-Jun-19 Sampled By: RP

| Method             | Analyte              | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|----------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | y EPA 6000/7000 Metl | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D          | Arsenic              | 6.5     | mg/kg | 2.5   | 0.6   |          | X928221 | DJS     | 07/17/19 10:33 |       |
| EPA 6010D          | Barium               | 72.9    | mg/kg | 0.40  | 0.18  |          | X928221 | DJS     | 07/17/19 10:33 |       |
| EPA 6010D          | Cadmium              | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928221 | DJS     | 07/17/19 10:33 |       |
| EPA 6010D          | Chromium             | 16.0    | mg/kg | 0.60  | 0.20  |          | X928221 | DJS     | 07/17/19 10:33 |       |
| EPA 6010D          | Lead                 | 13.2    | mg/kg | 1.5   | 0.3   |          | X928221 | DJS     | 07/17/19 10:33 |       |
| EPA 6010D          | Selenium             | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928221 | DJS     | 07/17/19 10:33 |       |
| EPA 6010D          | Silver               | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928221 | DJS     | 07/17/19 10:33 |       |
| EPA 7471B          | Mercury              | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 10:13 |       |
| Percent Solids / 1 | Percent Moisture     |         |       |       |       |          |         |         |                |       |
| Percent Solids     | % Solids             | 86.7    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |
|                    |                      |         |       |       |       |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0708

Reported: 17-Jul-19 17:12

Client Sample ID: SAM-BERM-4 (0-3.2)

SVL Sample ID: X9F0708-07 (Soil)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 12:14 Received: 28-Jun-19 Sampled By: RP

| Method             | Analyte              | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|----------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | y EPA 6000/7000 Meth | nods    |       |       |       |          |         |         |                |       |
| EPA 6010D          | Arsenic              | 12.1    | mg/kg | 2.5   | 0.6   |          | X928221 | DJS     | 07/17/19 10:37 |       |
| EPA 6010D          | Barium               | 101     | mg/kg | 0.40  | 0.18  |          | X928221 | DJS     | 07/17/19 10:37 |       |
| EPA 6010D          | Cadmium              | 0.44    | mg/kg | 0.40  | 0.06  |          | X928221 | DJS     | 07/17/19 10:37 |       |
| EPA 6010D          | Chromium             | 14.9    | mg/kg | 0.60  | 0.20  |          | X928221 | DJS     | 07/17/19 10:37 |       |
| EPA 6010D          | Lead                 | 30.2    | mg/kg | 1.5   | 0.3   |          | X928221 | DJS     | 07/17/19 10:37 |       |
| EPA 6010D          | Selenium             | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928221 | DJS     | 07/17/19 10:37 |       |
| EPA 6010D          | Silver               | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928221 | DJS     | 07/17/19 10:37 |       |
| EPA 7471B          | Mercury              | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 10:15 |       |
| Percent Solids / 1 | Percent Moisture     |         |       |       |       |          |         |         |                |       |
| Percent Solids     | % Solids             | 83.3    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |
|                    |                      |         |       |       |       |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0708

Reported: 17-Jul-19 17:12

Client Sample ID: SAM-BERM-4 (8-11) SVL Sample ID: X9F0708-08 (Soil)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 12:31 Received: 28-Jun-19 Sampled By: RP

| Method            | Analyte              | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|-------------------|----------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by | y EPA 6000/7000 Metl | nods    |       |       |       |          |         |         |                |       |
| EPA 6010D         | Arsenic              | 7.3     | mg/kg | 2.5   | 0.6   |          | X928221 | DJS     | 07/17/19 10:41 |       |
| EPA 6010D         | Barium               | 85.1    | mg/kg | 0.40  | 0.18  |          | X928221 | DJS     | 07/17/19 10:41 |       |
| EPA 6010D         | Cadmium              | 1.28    | mg/kg | 0.40  | 0.06  |          | X928221 | DJS     | 07/17/19 10:41 |       |
| EPA 6010D         | Chromium             | 7.46    | mg/kg | 0.60  | 0.20  |          | X928221 | DJS     | 07/17/19 10:41 |       |
| EPA 6010D         | Lead                 | 13.8    | mg/kg | 1.5   | 0.3   |          | X928221 | DJS     | 07/17/19 10:41 |       |
| EPA 6010D         | Selenium             | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928221 | DJS     | 07/17/19 10:41 |       |
| EPA 6010D         | Silver               | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928221 | DJS     | 07/17/19 10:41 |       |
| EPA 7471B         | Mercury              | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 10:16 |       |
| Percent Solids /  | Percent Moisture     |         |       |       |       |          |         |         |                |       |
| Percent Solids    | % Solids             | 92.3    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0708 Reported: 17-Jul-19 17:12

Client Sample ID: SAM-BERM-5 (0-3) SVL Sample ID: X9F0708-09 (Soil)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 11:28 Received: 28-Jun-19 Sampled By: RP

| Method             | Analyte              | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|----------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | y EPA 6000/7000 Metl | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D          | Arsenic              | 11.2    | mg/kg | 2.5   | 0.6   |          | X928221 | DJS     | 07/17/19 11:12 |       |
| EPA 6010D          | Barium               | 92.1    | mg/kg | 0.40  | 0.18  |          | X928221 | DJS     | 07/17/19 11:12 |       |
| EPA 6010D          | Cadmium              | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928221 | DJS     | 07/17/19 11:12 |       |
| EPA 6010D          | Chromium             | 15.3    | mg/kg | 0.60  | 0.20  |          | X928221 | DJS     | 07/17/19 11:12 |       |
| EPA 6010D          | Lead                 | 13.8    | mg/kg | 1.5   | 0.3   |          | X928221 | DJS     | 07/17/19 11:12 |       |
| EPA 6010D          | Selenium             | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928221 | DJS     | 07/17/19 11:12 |       |
| EPA 6010D          | Silver               | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928221 | DJS     | 07/17/19 11:12 |       |
| EPA 7471B          | Mercury              | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 10:18 |       |
| Percent Solids / 1 | Percent Moisture     |         |       |       |       |          |         |         |                |       |
| Percent Solids     | % Solids             | 95.5    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |
|                    |                      |         |       |       |       |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0708

Reported:

17-Jul-19 17:12

Client Sample ID: SAM-BERM-5 (5-8) SVL Sample ID: X9F0708-10 (Soil)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 11:45 Received: 28-Jun-19 Sampled By: RP

| Method             | Analyte              | Result | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|----------------------|--------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | y EPA 6000/7000 Meth | nods   |       |       |       |          |         |         |                |       |
| EPA 6010D          | Arsenic              | 21.1   | mg/kg | 2.5   | 0.6   |          | X928221 | DJS     | 07/17/19 11:28 |       |
| EPA 6010D          | Barium               | 87.0   | mg/kg | 0.40  | 0.18  |          | X928221 | DJS     | 07/17/19 11:28 |       |
| EPA 6010D          | Cadmium              | 3.46   | mg/kg | 0.40  | 0.06  |          | X928221 | DJS     | 07/17/19 11:28 |       |
| EPA 6010D          | Chromium             | 13.8   | mg/kg | 0.60  | 0.20  |          | X928221 | DJS     | 07/17/19 11:28 |       |
| EPA 6010D          | Lead                 | 249    | mg/kg | 1.5   | 0.3   |          | X928221 | DJS     | 07/17/19 11:28 |       |
| EPA 6010D          | Selenium             | < 4.0  | mg/kg | 4.0   | 1.1   |          | X928221 | DJS     | 07/17/19 11:28 |       |
| EPA 6010D          | Silver               | < 1.00 | mg/kg | 1.00  | 0.20  |          | X928221 | DJS     | 07/17/19 11:28 |       |
| EPA 7471B          | Mercury              | 0.080  | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 10:27 |       |
| Percent Solids / 1 | Percent Moisture     |        |       |       |       |          |         |         |                |       |
| Percent Solids     | % Solids             | 84.0   | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 | •     |
|                    |                      |        |       |       |       |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

X9F0708

Work Order: Reported:

17-Jul-19 17:12

Client Sample ID: SAM-BERM-6 (0-3) SVL Sample ID: X9F0708-11 (Soil)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 10:32 Received: 28-Jun-19 Sampled By: RP

|                   |                      |         |       |       |       |          |         |         | ,              |       |
|-------------------|----------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Method            | Analyte              | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
| Metals (Total) by | y EPA 6000/7000 Metl | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D         | Arsenic              | 7.8     | mg/kg | 2.5   | 0.6   |          | X928221 | DJS     | 07/17/19 11:32 |       |
| EPA 6010D         | Barium               | 56.5    | mg/kg | 0.40  | 0.18  |          | X928221 | DJS     | 07/17/19 11:32 |       |
| EPA 6010D         | Cadmium              | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928221 | DJS     | 07/17/19 11:32 |       |
| EPA 6010D         | Chromium             | 9.49    | mg/kg | 0.60  | 0.20  |          | X928221 | DJS     | 07/17/19 11:32 |       |
| EPA 6010D         | Lead                 | 10.5    | mg/kg | 1.5   | 0.3   |          | X928221 | DJS     | 07/17/19 11:32 |       |
| EPA 6010D         | Selenium             | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928221 | DJS     | 07/17/19 11:32 |       |
| EPA 6010D         | Silver               | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928221 | DJS     | 07/17/19 11:32 |       |
| EPA 7471B         | Mercury              | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 10:29 |       |
| Percent Solids /  | Percent Moisture     |         |       |       |       |          |         |         |                |       |
| Percent Solids    | % Solids             | 95.9    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |
|                   |                      |         |       |       |       |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0708

Reported: 17-Jul-19 17:12

Client Sample ID: SAM-BERM-6 (8.5-11.5)

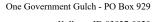
SVL Sample ID: X9F0708-12 (Soil)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 10:34 Received: 28-Jun-19 Sampled By: RP

| Method            | Analyte              | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|-------------------|----------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by | y EPA 6000/7000 Metl | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D         | Arsenic              | 9.3     | mg/kg | 2.5   | 0.6   |          | X928221 | DJS     | 07/17/19 11:36 |       |
| EPA 6010D         | Barium               | 130     | mg/kg | 0.40  | 0.18  |          | X928221 | DJS     | 07/17/19 11:36 |       |
| EPA 6010D         | Cadmium              | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928221 | DJS     | 07/17/19 11:36 |       |
| EPA 6010D         | Chromium             | 10.5    | mg/kg | 0.60  | 0.20  |          | X928221 | DJS     | 07/17/19 11:36 |       |
| EPA 6010D         | Lead                 | 9.3     | mg/kg | 1.5   | 0.3   |          | X928221 | DJS     | 07/17/19 11:36 |       |
| EPA 6010D         | Selenium             | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928221 | DJS     | 07/17/19 11:36 |       |
| EPA 6010D         | Silver               | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928221 | DJS     | 07/17/19 11:36 |       |
| EPA 7471B         | Mercury              | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 10:31 |       |
| Percent Solids /  | Percent Moisture     |         |       |       |       |          |         |         |                |       |
| Percent Solids    | % Solids             | 84.8    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |
|                   |                      |         |       |       |       |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.



(208) 784-1258 www.svl.net



Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

X9F0708

Work Order:

Reported:

17-Jul-19 17:12

Client Sample ID: SAM-BERM-7 (0-3) SVL Sample ID: X9F0708-13 (Soil)

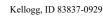
Sample Report Page 1 of 1

Sampled: 27-Jun-19 09:42 Received: 28-Jun-19 Sampled By: RP

| Method             | Analyte              | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|----------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | y EPA 6000/7000 Meth | nods    |       |       |       |          |         |         |                |       |
| EPA 6010D          | Arsenic              | 14.2    | mg/kg | 2.5   | 0.6   |          | X928221 | DJS     | 07/17/19 11:40 |       |
| EPA 6010D          | Barium               | 156     | mg/kg | 0.40  | 0.18  |          | X928221 | DJS     | 07/17/19 11:40 |       |
| EPA 6010D          | Cadmium              | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928221 | DJS     | 07/17/19 11:40 |       |
| EPA 6010D          | Chromium             | 16.3    | mg/kg | 0.60  | 0.20  |          | X928221 | DJS     | 07/17/19 11:40 |       |
| EPA 6010D          | Lead                 | 23.7    | mg/kg | 1.5   | 0.3   |          | X928221 | DJS     | 07/17/19 11:40 |       |
| EPA 6010D          | Selenium             | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928221 | DJS     | 07/17/19 11:40 |       |
| EPA 6010D          | Silver               | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928221 | DJS     | 07/17/19 11:40 |       |
| EPA 7471B          | Mercury              | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 10:33 |       |
| Percent Solids / 1 | Percent Moisture     |         |       |       |       |          |         |         |                |       |
| Percent Solids     | % Solids             | 86.6    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |
|                    |                      |         |       |       |       |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0708

Reported: 17-Jul-19 17:12

Client Sample ID: SAM-BERM-7 (11-14) SVL Sample ID: X9F0708-14 (Soil)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 10:03 Received: 28-Jun-19 Sampled By: RP

| Method              | Analyte            | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|---------------------|--------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by I | EPA 6000/7000 Meth | ıods    |       |       |       |          |         |         |                |       |
| EPA 6010D           | Arsenic            | 14.8    | mg/kg | 2.5   | 0.6   |          | X928222 | DJS     | 07/17/19 12:17 |       |
| EPA 6010D           | Barium             | 163     | mg/kg | 0.40  | 0.18  |          | X928222 | DJS     | 07/17/19 12:17 |       |
| EPA 6010D           | Cadmium            | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928222 | DJS     | 07/17/19 12:17 |       |
| EPA 6010D           | Chromium           | 20.7    | mg/kg | 0.60  | 0.20  |          | X928222 | DJS     | 07/17/19 12:17 |       |
| EPA 6010D           | Lead               | 17.5    | mg/kg | 1.5   | 0.3   |          | X928222 | DJS     | 07/17/19 12:17 |       |
| EPA 6010D           | Selenium           | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928222 | DJS     | 07/17/19 12:17 |       |
| EPA 6010D           | Silver             | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928222 | DJS     | 07/17/19 12:17 |       |
| EPA 7471B           | Mercury            | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 10:34 |       |
| Percent Solids / Pe | rcent Moisture     |         |       |       |       |          |         |         |                |       |
| Percent Solids      | % Solids           | 91.5    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0708

Reported: 17-Jul-19 17:12

Client Sample ID: SAM-BERM-8 (0-3) SVL Sample ID: X9F0708-15 (Soil)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 09:07 Received: 28-Jun-19 Sampled By: RP

| Method              | Analyte            | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|---------------------|--------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by I | EPA 6000/7000 Metl | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D           | Arsenic            | 7.0     | mg/kg | 2.5   | 0.6   |          | X928222 | DJS     | 07/17/19 12:29 |       |
| EPA 6010D           | Barium             | 70.2    | mg/kg | 0.40  | 0.18  |          | X928222 | DJS     | 07/17/19 12:29 |       |
| EPA 6010D           | Cadmium            | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928222 | DJS     | 07/17/19 12:29 |       |
| EPA 6010D           | Chromium           | 11.2    | mg/kg | 0.60  | 0.20  |          | X928222 | DJS     | 07/17/19 12:29 |       |
| EPA 6010D           | Lead               | 8.1     | mg/kg | 1.5   | 0.3   |          | X928222 | DJS     | 07/17/19 12:29 |       |
| EPA 6010D           | Selenium           | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928222 | DJS     | 07/17/19 12:29 |       |
| EPA 6010D           | Silver             | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928222 | DJS     | 07/17/19 12:29 |       |
| EPA 7471B           | Mercury            | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 10:36 |       |
| Percent Solids / Pe | rcent Moisture     |         |       |       |       |          |         |         |                |       |
| Percent Solids      | % Solids           | 93.9    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0708

Reported: 17-Jul-19 17:12

Client Sample ID: SAM-BERM-8 (13-16) SVL Sample ID: X9F0708-16 (Soil)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 09:20 Received: 28-Jun-19 Sampled By: RP

| Method             | Analyte              | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|----------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | y EPA 6000/7000 Metl | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D          | Arsenic              | 5.9     | mg/kg | 2.5   | 0.6   |          | X928222 | DJS     | 07/17/19 12:33 |       |
| EPA 6010D          | Barium               | 48.4    | mg/kg | 0.40  | 0.18  |          | X928222 | DJS     | 07/17/19 12:33 |       |
| EPA 6010D          | Cadmium              | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928222 | DJS     | 07/17/19 12:33 |       |
| EPA 6010D          | Chromium             | 9.10    | mg/kg | 0.60  | 0.20  |          | X928222 | DJS     | 07/17/19 12:33 |       |
| EPA 6010D          | Lead                 | 5.4     | mg/kg | 1.5   | 0.3   |          | X928222 | DJS     | 07/17/19 12:33 |       |
| EPA 6010D          | Selenium             | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928222 | DJS     | 07/17/19 12:33 |       |
| EPA 6010D          | Silver               | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928222 | DJS     | 07/17/19 12:33 |       |
| EPA 7471B          | Mercury              | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 10:38 |       |
| Percent Solids / 1 | Percent Moisture     |         |       |       |       |          |         |         |                |       |
| Percent Solids     | % Solids             | 91.9    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |
|                    |                      |         |       |       |       |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0708

Reported: 17-Jul-19 17:12

Client Sample ID: SAM-BERM-9 (0-3) SVL Sample ID: X9F0708-17 (Soil)

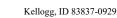
Sample Report Page 1 of 1

Sampled: 27-Jun-19 08:28 Received: 28-Jun-19 Sampled By: RP

| Method               | Analyte          | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|----------------------|------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by E  | PA 6000/7000 Met | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D            | Arsenic          | 7.9     | mg/kg | 2.5   | 0.6   |          | X928222 | DJS     | 07/17/19 12:37 |       |
| EPA 6010D            | Barium           | 92.9    | mg/kg | 0.40  | 0.18  |          | X928222 | DJS     | 07/17/19 12:37 |       |
| EPA 6010D            | Cadmium          | 0.52    | mg/kg | 0.40  | 0.06  |          | X928222 | DJS     | 07/17/19 12:37 |       |
| EPA 6010D            | Chromium         | 11.1    | mg/kg | 0.60  | 0.20  |          | X928222 | DJS     | 07/17/19 12:37 |       |
| EPA 6010D            | Lead             | 27.4    | mg/kg | 1.5   | 0.3   |          | X928222 | DJS     | 07/17/19 12:37 |       |
| EPA 6010D            | Selenium         | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928222 | DJS     | 07/17/19 12:37 |       |
| EPA 6010D            | Silver           | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928222 | DJS     | 07/17/19 12:37 |       |
| EPA 7471B            | Mercury          | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 10:40 |       |
| Percent Solids / Per | rcent Moisture   |         |       |       |       |          |         |         |                |       |
| Percent Solids       | % Solids         | 94.4    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

X9F0708

Work Order: Reported: 17-Jul-19 17:12

Client Sample ID: SAM-BERM-9 (12.5-13) SVL Sample ID: X9F0708-18 (Soil)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 08:50 Received: 28-Jun-19 Sampled By: RP

| Method            | Analyte              | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|-------------------|----------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by | y EPA 6000/7000 Metl | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D         | Arsenic              | 7.8     | mg/kg | 2.5   | 0.6   |          | X928222 | DJS     | 07/17/19 12:41 |       |
| EPA 6010D         | Barium               | 63.6    | mg/kg | 0.40  | 0.18  |          | X928222 | DJS     | 07/17/19 12:41 |       |
| EPA 6010D         | Cadmium              | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928222 | DJS     | 07/17/19 12:41 |       |
| EPA 6010D         | Chromium             | 11.1    | mg/kg | 0.60  | 0.20  |          | X928222 | DJS     | 07/17/19 12:41 |       |
| EPA 6010D         | Lead                 | 20.2    | mg/kg | 1.5   | 0.3   |          | X928222 | DJS     | 07/17/19 12:41 |       |
| EPA 6010D         | Selenium             | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928222 | DJS     | 07/17/19 12:41 |       |
| EPA 6010D         | Silver               | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928222 | DJS     | 07/17/19 12:41 |       |
| EPA 7471B         | Mercury              | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 10:42 |       |
| Percent Solids /  | Percent Moisture     |         |       |       |       |          |         |         |                |       |
| Percent Solids    | % Solids             | 95.2    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |
|                   |                      |         |       |       |       |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019 Work Order: X9F0708

> Reported: 17-Jul-19 17:12

Client Sample ID: SAM-BERM-10 (0-3) SVL Sample ID: X9F0708-19 (Soil)

Sample Report Page 1 of 1

Sampled: 26-Jun-19 17:18 Received: 28-Jun-19 Sampled By: RP

| Method             | Analyte              | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|----------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | y EPA 6000/7000 Metl | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D          | Arsenic              | 12.5    | mg/kg | 2.5   | 0.6   |          | X928222 | DJS     | 07/17/19 12:45 |       |
| EPA 6010D          | Barium               | 497     | mg/kg | 0.40  | 0.18  |          | X928222 | DJS     | 07/17/19 12:45 |       |
| EPA 6010D          | Cadmium              | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928222 | DJS     | 07/17/19 12:45 |       |
| EPA 6010D          | Chromium             | 16.9    | mg/kg | 0.60  | 0.20  |          | X928222 | DJS     | 07/17/19 12:45 |       |
| EPA 6010D          | Lead                 | 12.9    | mg/kg | 1.5   | 0.3   |          | X928222 | DJS     | 07/17/19 12:45 |       |
| EPA 6010D          | Selenium             | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928222 | DJS     | 07/17/19 12:45 |       |
| EPA 6010D          | Silver               | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928222 | DJS     | 07/17/19 12:45 |       |
| EPA 7471B          | Mercury              | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 10:47 |       |
| Percent Solids / 1 | Percent Moisture     |         |       |       |       |          |         |         |                |       |
| Percent Solids     | % Solids             | 96.1    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |
|                    |                      |         |       |       |       |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.



(208) 784-1258

www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0708

Reported: 17-Jul-19 17:12

Client Sample ID: SAM-BERM-10 (9-12) SVL Sample ID: X9F0708-20 (Soil)

Sample Report Page 1 of 1

Sampled: 26-Jun-19 17:28 Received: 28-Jun-19 Sampled By: RP

| Method             | Analyte              | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|----------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | y EPA 6000/7000 Metl | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D          | Arsenic              | 10.6    | mg/kg | 2.5   | 0.6   |          | X928222 | DJS     | 07/17/19 13:08 |       |
| EPA 6010D          | Barium               | 124     | mg/kg | 0.40  | 0.18  |          | X928222 | DJS     | 07/17/19 13:08 |       |
| EPA 6010D          | Cadmium              | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928222 | DJS     | 07/17/19 13:08 |       |
| EPA 6010D          | Chromium             | 15.6    | mg/kg | 0.60  | 0.20  |          | X928222 | DJS     | 07/17/19 13:08 |       |
| EPA 6010D          | Lead                 | 10.8    | mg/kg | 1.5   | 0.3   |          | X928222 | DJS     | 07/17/19 13:08 |       |
| EPA 6010D          | Selenium             | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928222 | DJS     | 07/17/19 13:08 |       |
| EPA 6010D          | Silver               | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928222 | DJS     | 07/17/19 13:08 |       |
| EPA 7471B          | Mercury              | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928060 | MWD     | 07/16/19 10:49 |       |
| Percent Solids / 1 | Percent Moisture     |         |       |       |       |          |         |         |                |       |
| Percent Solids     | % Solids             | 93.9    | %     | 0.1   |       |          | X928207 | NT/JA   | 07/16/19 10:15 |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0708

Reported: 17-Jul-19 17:12

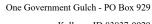
Client Sample ID: SAM-BERM-SD-1 SVL Sample ID: X9F0708-21 (Soil)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 00:00 Received: 28-Jun-19 Sampled By: RP

| Method             | Analyte              | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|--------------------|----------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by  | y EPA 6000/7000 Metl | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D          | Arsenic              | 11.2    | mg/kg | 2.5   | 0.6   |          | X928222 | DJS     | 07/17/19 13:12 |       |
| EPA 6010D          | Barium               | 131     | mg/kg | 0.40  | 0.18  |          | X928222 | DJS     | 07/17/19 13:12 |       |
| EPA 6010D          | Cadmium              | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928222 | DJS     | 07/17/19 13:12 |       |
| EPA 6010D          | Chromium             | 20.7    | mg/kg | 0.60  | 0.20  |          | X928222 | DJS     | 07/17/19 13:12 |       |
| EPA 6010D          | Lead                 | 19.6    | mg/kg | 1.5   | 0.3   |          | X928222 | DJS     | 07/17/19 13:12 |       |
| EPA 6010D          | Selenium             | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928222 | DJS     | 07/17/19 13:12 |       |
| EPA 6010D          | Silver               | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928222 | DJS     | 07/17/19 13:12 |       |
| EPA 7471B          | Mercury              | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928059 | MWD     | 07/16/19 09:20 |       |
| Percent Solids / 1 | Percent Moisture     |         |       |       |       |          |         |         |                |       |
| Percent Solids     | % Solids             | 90.5    | %     | 0.1   |       |          | X928208 | NT/JA   | 07/16/19 11:35 |       |
|                    |                      |         |       |       |       |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019 Work Order: X9F0708

Reported: 17-Jul-19 17:12

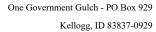
Client Sample ID: SAM-DU-WEST-3 SVL Sample ID: X9F0708-22 (Soil)

Sample Report Page 1 of 1

Sampled: 26-Jun-19 16:00 Received: 28-Jun-19 Sampled By: RP

| Method           | Analyte              | Result | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|------------------|----------------------|--------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) b | y EPA 6000/7000 Metl | ıods   |       |       |       |          |         |         |                |       |
| EPA 6010D        | Arsenic              | 20.8   | mg/kg | 2.5   | 0.6   |          | X928222 | DJS     | 07/17/19 13:16 |       |
| EPA 6010D        | Barium               | 170    | mg/kg | 0.40  | 0.18  |          | X928222 | DJS     | 07/17/19 13:16 |       |
| EPA 6010D        | Cadmium              | < 0.40 | mg/kg | 0.40  | 0.06  |          | X928222 | DJS     | 07/17/19 13:16 |       |
| EPA 6010D        | Chromium             | 22.9   | mg/kg | 0.60  | 0.20  |          | X928222 | DJS     | 07/17/19 13:16 |       |
| EPA 6010D        | Lead                 | 40.4   | mg/kg | 1.5   | 0.3   |          | X928222 | DJS     | 07/17/19 13:16 |       |
| EPA 6010D        | Selenium             | < 4.0  | mg/kg | 4.0   | 1.1   |          | X928222 | DJS     | 07/17/19 13:16 |       |
| EPA 6010D        | Silver               | < 1.00 | mg/kg | 1.00  | 0.20  |          | X928222 | DJS     | 07/17/19 13:16 |       |
| EPA 7471B        | Mercury              | 0.035  | mg/kg | 0.033 | 0.011 |          | X928059 | MWD     | 07/16/19 09:22 |       |
|                  |                      |        |       |       |       |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.







Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019
Work Order: X9F0708

Reported: 17-Jul-19 17:12

Client Sample ID: **SAM-DU-NORTH-1** SVL Sample ID: **X9F0708-23 (Soil)** 

Sample Report Page 1 of 1

Sampled: 27-Jun-19 17:02 Received: 28-Jun-19 Sampled By: RP

| Method            | Analyte              | Result  | Units | RL    | MDL   | Dilution | Batch   | Analyst | Analyzed       | Notes |
|-------------------|----------------------|---------|-------|-------|-------|----------|---------|---------|----------------|-------|
| Metals (Total) by | y EPA 6000/7000 Metl | hods    |       |       |       |          |         |         |                |       |
| EPA 6010D         | Arsenic              | 15.3    | mg/kg | 2.5   | 0.6   |          | X928222 | DJS     | 07/17/19 13:20 |       |
| EPA 6010D         | Barium               | 153     | mg/kg | 0.40  | 0.18  |          | X928222 | DJS     | 07/17/19 13:20 |       |
| EPA 6010D         | Cadmium              | < 0.40  | mg/kg | 0.40  | 0.06  |          | X928222 | DJS     | 07/17/19 13:20 |       |
| EPA 6010D         | Chromium             | 28.3    | mg/kg | 0.60  | 0.20  |          | X928222 | DJS     | 07/17/19 13:20 |       |
| EPA 6010D         | Lead                 | 21.3    | mg/kg | 1.5   | 0.3   |          | X928222 | DJS     | 07/17/19 13:20 |       |
| EPA 6010D         | Selenium             | < 4.0   | mg/kg | 4.0   | 1.1   |          | X928222 | DJS     | 07/17/19 13:20 |       |
| EPA 6010D         | Silver               | < 1.00  | mg/kg | 1.00  | 0.20  |          | X928222 | DJS     | 07/17/19 13:20 |       |
| EPA 7471B         | Mercury              | < 0.033 | mg/kg | 0.033 | 0.011 |          | X928059 | MWD     | 07/16/19 09:24 |       |
|                   |                      |         |       |       |       |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0708

Reported: 17-Jul-19 17:12

Client Sample ID: SAM-DU-WEST-3-RB SVL Sample ID: X9F0708-24 (Rinsate)

Sample Report Page 1 of 1

Sampled: 26-Jun-19 16:11 Received: 28-Jun-19 Sampled By: RP

|                  |             |           |       |         |          |          |         | F-      | ea Bj. Ta      |       |
|------------------|-------------|-----------|-------|---------|----------|----------|---------|---------|----------------|-------|
| Method           | Analyte     | Result    | Units | RL      | MDL      | Dilution | Batch   | Analyst | Analyzed       | Notes |
| Metals (Total)   |             |           |       |         |          |          |         |         |                |       |
| EPA 7470A        | Mercury     | < 0.00020 | mg/L  | 0.00020 | 0.000093 |          | X929046 | MWD     | 07/16/19 12:55 |       |
| Metals (Total Re | ecoverable) |           |       |         |          |          |         |         |                |       |
| EPA 6010D        | Arsenic     | < 0.025   | mg/L  | 0.025   | 0.006    |          | X927072 | AS      | 07/12/19 11:49 |       |
| EPA 6010D        | Barium      | 0.0049    | mg/L  | 0.0040  | 0.0019   |          | X927072 | AS      | 07/12/19 11:49 |       |
| EPA 6010D        | Cadmium     | < 0.0040  | mg/L  | 0.0040  | 0.0016   |          | X927072 | AS      | 07/12/19 11:49 |       |
| EPA 6010D        | Chromium    | < 0.0060  | mg/L  | 0.0060  | 0.0020   |          | X927072 | AS      | 07/12/19 11:49 |       |
| EPA 6010D        | Lead        | 0.0527    | mg/L  | 0.0150  | 0.0049   |          | X927072 | AS      | 07/12/19 11:49 |       |
| EPA 6010D        | Selenium    | < 0.040   | mg/L  | 0.040   | 0.012    |          | X927072 | AS      | 07/12/19 11:49 |       |
| EPA 6010D        | Silver      | < 0.0100  | mg/L  | 0.0100  | 0.0019   |          | X927072 | AS      | 07/12/19 11:49 |       |
|                  |             |           |       |         |          |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Tetra Tech (WA)

1212N Washington Street Suite 208

Spokane, WA 99201

Project Name: Stimson Atlas Mill 2019

Work Order: X9F0708

Reported: 17-Jul-19 17:12

Client Sample ID: SAM-DU-NORTH-1-RB SVL Sample ID: X9F0708-25 (Rinsate)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 16:35 Received: 28-Jun-19 Sampled By: RP

|                  | •           | •         |       |         | II .     |          |         | Sampi   | cu by. Ki      |       |
|------------------|-------------|-----------|-------|---------|----------|----------|---------|---------|----------------|-------|
| Method           | Analyte     | Result    | Units | RL      | MDL      | Dilution | Batch   | Analyst | Analyzed       | Notes |
| Metals (Total)   |             |           |       |         |          |          |         |         |                |       |
| EPA 7470A        | Mercury     | < 0.00020 | mg/L  | 0.00020 | 0.000093 |          | X929046 | MWD     | 07/16/19 12:57 |       |
| Metals (Total Re | ecoverable) |           |       |         |          |          |         |         |                |       |
| EPA 6010D        | Arsenic     | < 0.025   | mg/L  | 0.025   | 0.006    |          | X927072 | AS      | 07/12/19 11:53 |       |
| EPA 6010D        | Barium      | < 0.0040  | mg/L  | 0.0040  | 0.0019   |          | X927072 | AS      | 07/12/19 11:53 |       |
| EPA 6010D        | Cadmium     | < 0.0040  | mg/L  | 0.0040  | 0.0016   |          | X927072 | AS      | 07/12/19 11:53 |       |
| EPA 6010D        | Chromium    | < 0.0060  | mg/L  | 0.0060  | 0.0020   |          | X927072 | AS      | 07/12/19 11:53 |       |
| EPA 6010D        | Lead        | < 0.0150  | mg/L  | 0.0150  | 0.0049   |          | X927072 | AS      | 07/12/19 11:53 |       |
| EPA 6010D        | Selenium    | < 0.040   | mg/L  | 0.040   | 0.012    |          | X927072 | AS      | 07/12/19 11:53 |       |
| EPA 6010D        | Silver      | < 0.0100  | mg/L  | 0.0100  | 0.0019   |          | X927072 | AS      | 07/12/19 11:53 |       |
|                  |             |           |       |         |          |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.





www.svl.net

Spokane, WA 99201

Tetra Tech (WA) 1212N Washington Street Suite 208 Project Name: Stimson Atlas Mill 2019

Work Order: X9F0708

Reported: 17-Jul-19 17:12

Client Sample ID: SAM-BERM-1 (9-12) RB SVL Sample ID: X9F0708-26 (Rinsate)

Sample Report Page 1 of 1

Sampled: 27-Jun-19 15:08 Received: 28-Jun-19 Sampled By: RP

|                  |             |           |       |         |          |          |         | F-      | ea Bj. Ta      |       |
|------------------|-------------|-----------|-------|---------|----------|----------|---------|---------|----------------|-------|
| Method           | Analyte     | Result    | Units | RL      | MDL      | Dilution | Batch   | Analyst | Analyzed       | Notes |
| Metals (Total)   |             |           |       |         |          |          |         |         |                |       |
| EPA 7470A        | Mercury     | < 0.00020 | mg/L  | 0.00020 | 0.000093 |          | X929046 | MWD     | 07/16/19 13:03 |       |
| Metals (Total Re | ecoverable) |           |       |         |          |          |         |         |                |       |
| EPA 6010D        | Arsenic     | < 0.025   | mg/L  | 0.025   | 0.006    |          | X927072 | AS      | 07/12/19 11:57 |       |
| EPA 6010D        | Barium      | < 0.0040  | mg/L  | 0.0040  | 0.0019   |          | X927072 | AS      | 07/12/19 11:57 |       |
| EPA 6010D        | Cadmium     | < 0.0040  | mg/L  | 0.0040  | 0.0016   |          | X927072 | AS      | 07/12/19 11:57 |       |
| EPA 6010D        | Chromium    | < 0.0060  | mg/L  | 0.0060  | 0.0020   |          | X927072 | AS      | 07/12/19 11:57 |       |
| EPA 6010D        | Lead        | < 0.0150  | mg/L  | 0.0150  | 0.0049   |          | X927072 | AS      | 07/12/19 11:57 |       |
| EPA 6010D        | Selenium    | < 0.040   | mg/L  | 0.040   | 0.012    |          | X927072 | AS      | 07/12/19 11:57 |       |
| EPA 6010D        | Silver      | < 0.0100  | mg/L  | 0.0100  | 0.0019   |          | X927072 | AS      | 07/12/19 11:57 |       |
|                  |             |           |       |         |          |          |         |         |                |       |

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.



www.svl.net



Tetra Tech (WA) **Project Name: Stimson Atlas Mill 2019** 1212N Washington Street Suite 208 Work Order: X9F0708 Spokane, WA 99201 Reported: 17-Jul-19 17:12

| Method        | Analyte              | Units   | Result    | MDL      | MRL     | Batch ID | Analyzed  | Notes |
|---------------|----------------------|---------|-----------|----------|---------|----------|-----------|-------|
|               | <u> </u>             |         |           |          |         |          |           |       |
| Metals (Total | ,                    |         |           |          |         |          |           |       |
| EPA 7470A     | Mercury              | mg/L    | < 0.00020 | 0.000093 | 0.00020 | X929046  | 16-Jul-19 |       |
| Metals (Total | ) by EPA 6000/7000 M | lethods |           |          |         |          |           |       |
| EPA 6010D     | Arsenic              | mg/kg   | <2.5      | 0.6      | 2.5     | X928221  | 17-Jul-19 |       |
| EPA 6010D     | Arsenic              | mg/kg   | <2.5      | 0.6      | 2.5     | X928222  | 17-Jul-19 |       |
| EPA 6010D     | Barium               | mg/kg   | < 0.40    | 0.18     | 0.40    | X928221  | 17-Jul-19 |       |
| EPA 6010D     | Barium               | mg/kg   | < 0.40    | 0.18     | 0.40    | X928222  | 17-Jul-19 |       |
| EPA 6010D     | Cadmium              | mg/kg   | < 0.40    | 0.06     | 0.40    | X928221  | 17-Jul-19 |       |
| PA 6010D      | Cadmium              | mg/kg   | < 0.40    | 0.06     | 0.40    | X928222  | 17-Jul-19 |       |
| PA 6010D      | Chromium             | mg/kg   | < 0.60    | 0.20     | 0.60    | X928221  | 17-Jul-19 |       |
| PA 6010D      | Chromium             | mg/kg   | < 0.60    | 0.20     | 0.60    | X928222  | 17-Jul-19 |       |
| PA 6010D      | Lead                 | mg/kg   | <1.5      | 0.3      | 1.5     | X928221  | 17-Jul-19 |       |
| PA 6010D      | Lead                 | mg/kg   | <1.5      | 0.3      | 1.5     | X928222  | 17-Jul-19 |       |
| PA 6010D      | Selenium             | mg/kg   | <4.0      | 1.1      | 4.0     | X928221  | 17-Jul-19 |       |
| PA 6010D      | Selenium             | mg/kg   | <4.0      | 1.1      | 4.0     | X928222  | 17-Jul-19 |       |
| PA 6010D      | Silver               | mg/kg   | <1.00     | 0.20     | 1.00    | X928221  | 17-Jul-19 |       |
| PA 6010D      | Silver               | mg/kg   | <1.00     | 0.20     | 1.00    | X928222  | 17-Jul-19 |       |
| PA 7471B      | Mercury              | mg/kg   | < 0.033   | 0.011    | 0.033   | X928059  | 16-Jul-19 |       |
| EPA 7471B     | Mercury              | mg/kg   | < 0.033   | 0.011    | 0.033   | X928060  | 16-Jul-19 |       |
| Metals (Total | Recoverable)         |         |           |          |         |          |           |       |
| EPA 6010D     | Arsenic              | mg/L    | < 0.025   | 0.006    | 0.025   | X927072  | 12-Jul-19 |       |
| PA 6010D      | Barium               | mg/L    | < 0.0040  | 0.0019   | 0.0040  | X927072  | 12-Jul-19 |       |
| PA 6010D      | Cadmium              | mg/L    | < 0.0040  | 0.0016   | 0.0040  | X927072  | 12-Jul-19 |       |
| PA 6010D      | Chromium             | mg/L    | < 0.0060  | 0.0020   | 0.0060  | X927072  | 12-Jul-19 |       |
| PA 6010D      | Lead                 | mg/L    | < 0.0150  | 0.0049   | 0.0150  | X927072  | 12-Jul-19 |       |
| PA 6010D      | Selenium             | mg/L    | < 0.040   | 0.012    | 0.040   | X927072  | 12-Jul-19 |       |
| PA 6010D      | Silver               | mg/L    | < 0.0100  | 0.0019   | 0.0100  | X927072  | 12-Jul-19 |       |

| Quality Conti | rol - LABORATORY     | CONTROL SAM    | IPLE Data     |             |           |                      |          |           |       |
|---------------|----------------------|----------------|---------------|-------------|-----------|----------------------|----------|-----------|-------|
| Method        | Analyte              | Units          | LCS<br>Result | LCS<br>True | %<br>Rec. | Acceptance<br>Limits | Batch ID | Analyzed  | Notes |
| Metals (Total | )                    |                |               |             |           |                      |          |           |       |
| EPA 7470A     | Mercury              | mg/L           | 0.00500       | 0.00500     | 100       | 80 - 120             | X929046  | 16-Jul-19 |       |
| Metals (Total | ) by EPA 6000/7000 M | <b>Iethods</b> |               |             |           |                      |          |           |       |
| EPA 6010D     | Arsenic              | mg/kg          | 97.6          | 100         | 97.6      | 80 - 120             | X928221  | 17-Jul-19 |       |
| EPA 6010D     | Arsenic              | mg/kg          | 98.4          | 100         | 98.4      | 80 - 120             | X928222  | 17-Jul-19 |       |
| EPA 6010D     | Barium               | mg/kg          | 103           | 100         | 103       | 80 - 120             | X928221  | 17-Jul-19 |       |
| EPA 6010D     | Barium               | mg/kg          | 102           | 100         | 102       | 80 - 120             | X928222  | 17-Jul-19 |       |
| EPA 6010D     | Cadmium              | mg/kg          | 97.9          | 100         | 97.9      | 80 - 120             | X928221  | 17-Jul-19 |       |
| EPA 6010D     | Cadmium              | mg/kg          | 98.3          | 100         | 98.3      | 80 - 120             | X928222  | 17-Jul-19 |       |
| EPA 6010D     | Chromium             | mg/kg          | 101           | 100         | 101       | 80 - 120             | X928221  | 17-Jul-19 |       |
| EPA 6010D     | Chromium             | mg/kg          | 100           | 100         | 100       | 80 - 120             | X928222  | 17-Jul-19 |       |
| EPA 6010D     | Lead                 | mg/kg          | 98.1          | 100         | 98.1      | 80 - 120             | X928221  | 17-Jul-19 |       |
| EPA 6010D     | Lead                 | mg/kg          | 98.5          | 100         | 98.5      | 80 - 120             | X928222  | 17-Jul-19 |       |
| EPA 6010D     | Selenium             | mg/kg          | 95.0          | 100         | 95.0      | 80 - 120             | X928221  | 17-Jul-19 |       |
| EPA 6010D     | Selenium             | mg/kg          | 95.1          | 100         | 95.1      | 80 - 120             | X928222  | 17-Jul-19 |       |
| EPA 6010D     | Silver               | mg/kg          | 4.99          | 5.00        | 99.8      | 80 - 120             | X928221  | 17-Jul-19 |       |
| EPA 6010D     | Silver               | mg/kg          | 4.96          | 5.00        | 99.1      | 80 - 120             | X928222  | 17-Jul-19 |       |
| EPA 7471B     | Mercury              | mg/kg          | 0.845         | 0.833       | 101       | 80 - 120             | X928059  | 16-Jul-19 |       |
| EPA 7471B     | Mercury              | mg/kg          | 0.888         | 0.833       | 107       | 80 - 120             | X928060  | 16-Jul-19 |       |

www.svl.net



Tetra Tech (WA) **Project Name: Stimson Atlas Mill 2019** 

1212N Washington Street Suite 208 Work Order: X9F0708

Spokane, WA 99201 Reported: 17-Jul-19 17:12

| <b>Quality Cont</b> | rol - LABORATORY | CONTROL SAM | IPLE Data     | (Continued) |           |                      |          |           |       |
|---------------------|------------------|-------------|---------------|-------------|-----------|----------------------|----------|-----------|-------|
| Method              | Analyte          | Units       | LCS<br>Result | LCS<br>True | %<br>Rec. | Acceptance<br>Limits | Batch ID | Analyzed  | Notes |
| Metals (Total       | Recoverable)     |             |               |             |           |                      |          |           |       |
| EPA 6010D           | Arsenic          | mg/L        | 0.989         | 1.00        | 98.9      | 80 - 120             | X927072  | 12-Jul-19 |       |
| EPA 6010D           | Barium           | mg/L        | 1.04          | 1.00        | 104       | 80 - 120             | X927072  | 12-Jul-19 |       |
| EPA 6010D           | Cadmium          | mg/L        | 0.994         | 1.00        | 99.4      | 80 - 120             | X927072  | 12-Jul-19 |       |
| EPA 6010D           | Chromium         | mg/L        | 1.00          | 1.00        | 100       | 80 - 120             | X927072  | 12-Jul-19 |       |
| EPA 6010D           | Lead             | mg/L        | 1.00          | 1.00        | 100       | 80 - 120             | X927072  | 12-Jul-19 |       |
| EPA 6010D           | Selenium         | mg/L        | 1.02          | 1.00        | 102       | 80 - 120             | X927072  | 12-Jul-19 |       |
| EPA 6010D           | Silver           | mg/L        | 0.0527        | 0.0500      | 105       | 80 - 120             | X927072  | 12-Jul-19 |       |

| <b>Quality Contr</b> | ol - DUPLICATE Da  | ta    |                     |                  |     |              |          |           |       |
|----------------------|--------------------|-------|---------------------|------------------|-----|--------------|----------|-----------|-------|
| Method               | Analyte            | Units | Duplicate<br>Result | Sample<br>Result | RPD | RPD<br>Limit | Batch ID | Analyzed  | Notes |
| Percent Solids       | / Percent Moisture |       |                     |                  |     |              |          |           |       |
| Percent Solids       | % Solids           | %     | 90.1                | 90.5             | 0.4 | 20           | X928208  | 16-Jul-19 |       |
| Percent Solids       | % Solids           | %     | 96.3                | 95.5             | 0.9 | 20           | X928207  | 16-Jul-19 |       |

| <b>Quality Cont</b> | rol - MATRIX SPIKE   | Data    |                 |                      |                    |               |                      |          |           |       |
|---------------------|----------------------|---------|-----------------|----------------------|--------------------|---------------|----------------------|----------|-----------|-------|
| Method              | Analyte              | Units   | Spike<br>Result | Sample<br>Result (R) | Spike<br>Level (S) | %<br>Recovery | Acceptance<br>Limits | Batch ID | Analyzed  | Notes |
| Metals (Total)      | <br>)                |         |                 |                      |                    |               |                      |          |           |       |
| EPA 7470A           | Mercury              | mg/L    | 0.00101         | < 0.00020            | 0.00100            | 101           | 75 - 125             | X929046  | 16-Jul-19 |       |
| Metals (Total)      | ) by EPA 6000/7000 M | lethods |                 |                      |                    |               |                      |          |           |       |
| EPA 6010D           | Arsenic              | mg/kg   | 115             | 11.2                 | 100                | 103           | 75 - 125             | X928221  | 17-Jul-19 |       |
| EPA 6010D           | Arsenic              | mg/kg   | 107             | 14.8                 | 100                | 92.7          | 75 - 125             | X928222  | 17-Jul-19 |       |
| EPA 6010D           | Barium               | mg/kg   | 210             | 92.1                 | 100                | 118           | 75 - 125             | X928221  | 17-Jul-19 |       |
| EPA 6010D           | Barium               | mg/kg   | 243             | 163                  | 100                | 80.3          | 75 - 125             | X928222  | 17-Jul-19 |       |
| EPA 6010D           | Cadmium              | mg/kg   | 101             | < 0.40               | 100                | 101           | 75 - 125             | X928221  | 17-Jul-19 |       |
| EPA 6010D           | Cadmium              | mg/kg   | 96.7            | < 0.40               | 100                | 96.5          | 75 - 125             | X928222  | 17-Jul-19 |       |
| EPA 6010D           | Chromium             | mg/kg   | 118             | 15.3                 | 100                | 103           | 75 - 125             | X928221  | 17-Jul-19 |       |
| EPA 6010D           | Chromium             | mg/kg   | 119             | 20.7                 | 100                | 97.9          | 75 - 125             | X928222  | 17-Jul-19 |       |
| EPA 6010D           | Lead                 | mg/kg   | 111             | 13.8                 | 100                | 97.1          | 75 - 125             | X928221  | 17-Jul-19 |       |
| EPA 6010D           | Lead                 | mg/kg   | 114             | 17.5                 | 100                | 96.6          | 75 - 125             | X928222  | 17-Jul-19 |       |
| EPA 6010D           | Selenium             | mg/kg   | 97.9            | <4.0                 | 100                | 97.9          | 75 - 125             | X928221  | 17-Jul-19 |       |
| EPA 6010D           | Selenium             | mg/kg   | 93.0            | <4.0                 | 100                | 93.0          | 75 - 125             | X928222  | 17-Jul-19 |       |
| EPA 6010D           | Silver               | mg/kg   | 5.22            | <1.00                | 5.00               | 104           | 75 - 125             | X928221  | 17-Jul-19 |       |
| EPA 6010D           | Silver               | mg/kg   | 4.90            | <1.00                | 5.00               | 98.0          | 75 - 125             | X928222  | 17-Jul-19 |       |
| EPA 7471B           | Mercury              | mg/kg   | 0.337           | < 0.033              | 0.333              | 95.7          | 75 - 125             | X928059  | 16-Jul-19 |       |
| EPA 7471B           | Mercury              | mg/kg   | 0.352           | < 0.033              | 0.333              | 100           | 75 - 125             | X928060  | 16-Jul-19 |       |
| Metals (Total       | Recoverable)         |         |                 |                      |                    |               |                      |          |           |       |
| EPA 6010D           | Arsenic              | mg/L    | 1.00            | < 0.025              | 1.00               | 100           | 75 - 125             | X927072  | 12-Jul-19 |       |
| EPA 6010D           | Barium               | mg/L    | 1.04            | 0.0050               | 1.00               | 103           | 75 - 125             | X927072  | 12-Jul-19 |       |
| EPA 6010D           | Cadmium              | mg/L    | 1.01            | < 0.0040             | 1.00               | 101           | 75 - 125             | X927072  | 12-Jul-19 |       |
| EPA 6010D           | Chromium             | mg/L    | 1.02            | < 0.0060             | 1.00               | 102           | 75 - 125             | X927072  | 12-Jul-19 |       |
| EPA 6010D           | Lead                 | mg/L    | 1.04            | 0.0204               | 1.00               | 102           | 75 - 125             | X927072  | 12-Jul-19 |       |
| EPA 6010D           | Selenium             | mg/L    | 1.02            | < 0.040              | 1.00               | 102           | 75 - 125             | X927072  | 12-Jul-19 |       |
| EPA 6010D           | Silver               | mg/L    | 0.0521          | < 0.0100             | 0.0500             | 104           | 75 - 125             | X927072  | 12-Jul-19 |       |



www.svl.net

Tetra Tech (WA)
Project Name: Stimson Atlas Mill 2019
1212N Washington Street Suite 208
Work Order: X9F0708

Spokane, WA 99201 Reported: 17-Jul-19 17:12

| Method        | Analyte              | Units   | MSD<br>Result | Spike<br>Result | Spike<br>Level | %<br>Rec. | RPD | RPD<br>Limit | Batch ID | Analyzed  | Notes |
|---------------|----------------------|---------|---------------|-----------------|----------------|-----------|-----|--------------|----------|-----------|-------|
|               |                      |         |               |                 |                |           |     |              |          |           |       |
| Metals (Total | ,                    |         |               |                 |                |           |     |              |          |           |       |
| EPA 7470A     | Mercury              | mg/L    | 0.00101       | 0.00101         | 0.00100        | 101       | 0.0 | 20           | X929046  | 16-Jul-19 |       |
| Metals (Total | ) by EPA 6000/7000 I | Methods |               |                 |                |           |     |              |          |           |       |
| EPA 6010D     | Arsenic              | mg/kg   | 108           | 115             | 100            | 96.8      | 6.0 | 20           | X928221  | 17-Jul-19 |       |
| EPA 6010D     | Arsenic              | mg/kg   | 111           | 107             | 100            | 96.3      | 3.2 | 20           | X928222  | 17-Jul-19 |       |
| EPA 6010D     | Barium               | mg/kg   | 193           | 210             | 100            | 101       | 8.4 | 20           | X928221  | 17-Jul-19 |       |
| EPA 6010D     | Barium               | mg/kg   | 257           | 243             | 100            | 94.2      | 5.6 | 20           | X928222  | 17-Jul-19 |       |
| PA 6010D      | Cadmium              | mg/kg   | 99.4          | 101             | 100            | 99.3      | 1.2 | 20           | X928221  | 17-Jul-19 |       |
| PA 6010D      | Cadmium              | mg/kg   | 97.9          | 96.7            | 100            | 97.7      | 1.2 | 20           | X928222  | 17-Jul-19 |       |
| PA 6010D      | Chromium             | mg/kg   | 115           | 118             | 100            | 100       | 2.4 | 20           | X928221  | 17-Jul-19 |       |
| PA 6010D      | Chromium             | mg/kg   | 118           | 119             | 100            | 97.2      | 0.6 | 20           | X928222  | 17-Jul-19 |       |
| PA 6010D      | Lead                 | mg/kg   | 111           | 111             | 100            | 97.0      | 0.1 | 20           | X928221  | 17-Jul-19 |       |
| PA 6010D      | Lead                 | mg/kg   | 109           | 114             | 100            | 91.7      | 4.4 | 20           | X928222  | 17-Jul-19 |       |
| PA 6010D      | Selenium             | mg/kg   | 97.2          | 97.9            | 100            | 97.2      | 0.7 | 20           | X928221  | 17-Jul-19 |       |
| PA 6010D      | Selenium             | mg/kg   | 94.5          | 93.0            | 100            | 94.5      | 1.6 | 20           | X928222  | 17-Jul-19 |       |
| PA 6010D      | Silver               | mg/kg   | 4.99          | 5.22            | 5.00           | 99.7      | 4.5 | 20           | X928221  | 17-Jul-19 |       |
| PA 6010D      | Silver               | mg/kg   | 4.94          | 4.90            | 5.00           | 98.8      | 0.8 | 20           | X928222  | 17-Jul-19 |       |
| PA 7471B      | Mercury              | mg/kg   | 0.352         | 0.337           | 0.333          | 100       | 4.4 | 20           | X928059  | 16-Jul-19 |       |
| EPA 7471B     | Mercury              | mg/kg   | 0.357         | 0.352           | 0.333          | 102       | 1.4 | 20           | X928060  | 16-Jul-19 |       |
| Metals (Total | Recoverable)         |         |               |                 |                |           |     |              |          |           |       |
| EPA 6010D     | Arsenic              | mg/L    | 1.02          | 1.00            | 1.00           | 102       | 1.5 | 20           | X927072  | 12-Jul-19 |       |
| EPA 6010D     | Barium               | mg/L    | 1.06          | 1.04            | 1.00           | 105       | 1.8 | 20           | X927072  | 12-Jul-19 |       |
| EPA 6010D     | Cadmium              | mg/L    | 1.02          | 1.01            | 1.00           | 102       | 1.4 | 20           | X927072  | 12-Jul-19 |       |
| PA 6010D      | Chromium             | mg/L    | 1.03          | 1.02            | 1.00           | 103       | 1.9 | 20           | X927072  | 12-Jul-19 |       |
| PA 6010D      | Lead                 | mg/L    | 1.05          | 1.04            | 1.00           | 103       | 1.5 | 20           | X927072  | 12-Jul-19 |       |
| PA 6010D      | Selenium             | mg/L    | 1.04          | 1.02            | 1.00           | 104       | 1.7 | 20           | X927072  | 12-Jul-19 |       |
| PA 6010D      | Silver               | mg/L    | 0.0528        | 0.0521          | 0.0500         | 106       | 1.4 | 20           | X927072  | 12-Jul-19 |       |

#### **Notes and Definitions**

| LCS | Laboratory | Control Sam | ple ( | Blank S | pike) |  |
|-----|------------|-------------|-------|---------|-------|--|
|     |            |             |       |         |       |  |

RPD Relative Percent Difference

UDL A result is less than the detection limit

0.30R>S % recovery not applicable; spike level is less than 30% of the sample concentration

< RL A result is less than the reporting limit

MRL Method Reporting Limit
MDL Method Detection Limit

N/A Not Applicable



# ANALYTICAL REPORT

July 11, 2019

# Tetra Tech EMI - Spokane, WA

Sample Delivery Group: L1114273

Samples Received: 06/29/2019

Project Number:

Description: STIMSON ATLAS MILL

Report To: Jon Welge

1212 N. Washington Street

Suite 208

Spokane, WA 99201

Entire Report Reviewed By:

Buar Ford

Brian Ford Project Manage

Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the biboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures 660302, 060903, and 060304.

September of the provided in laboratory standard operating procedures 660302, 060903, and 060304.



















| Cp: Cover Page  | 1  |
|---|----|
| Tc: Table of Contents                                       | 2  |
| Ss: Sample Summary  | 3  |
| Cn: Case Narrative  | 4  |
| Sr: Sample Results  | 5  |
| SAM-DU-WEST-1 L1114273-01                                   | 5  |
| SAM-DU-SD-1 L1114273-02                                     | 6  |
| SAM-DU-WEST-2 L1114273-03                                   | 7  |
| SAM-DU-WEST-3 L1114273-04                                   | 8  |
| SAM-DU-NORTH-1 L1114273-05                                  | 9  |
| SAM-DU-WEST-1-RB L1114273-06                                | 10 |
| SAM-DU-WEST-3-RB L1114273-07                                | 11 |
| Qc: Quality Control Summary                                 | 12 |
| Total Solids by Method 2540 G-2011                          | 12 |
| Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM | 13 |
| GI: Glossary of Terms                                       | 19 |
| Al: Accreditations & Locations                              | 20 |
| Sc: Sample Chain of Custody                                 | 21 |















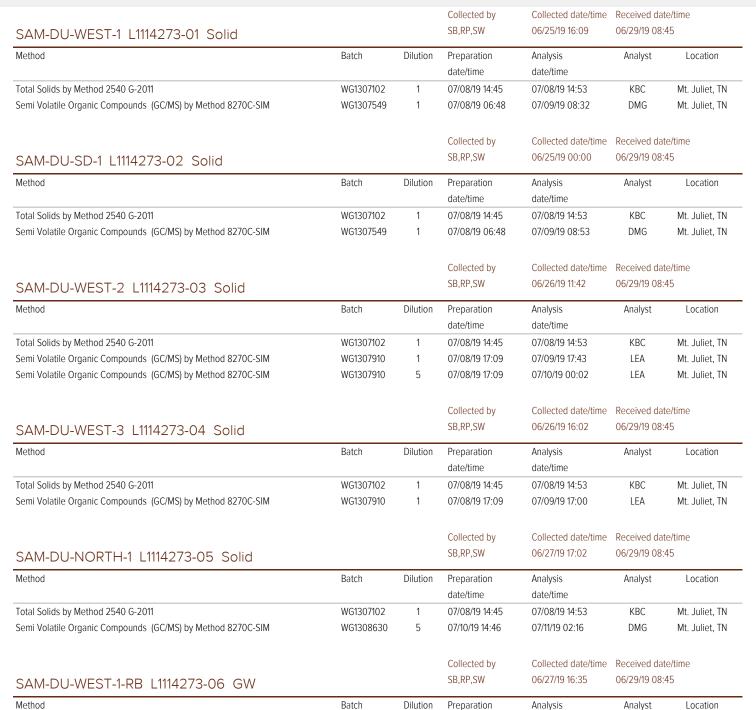




# SAMPLE SUMMARY

| ONE | AR N | ATION | MIDE |
|-----|------|-------|------|
|     |      |       |      |

| ONE  | ΙΛR  | NATIONWIDE.  |  |
|------|------|--------------|--|
| OINL | LAD. | INATIONWIDE. |  |





















Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

SAM-DU-WEST-3-RB L1114273-07 GW

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Method

WG1304606

Batch

WG1304606

date/time

1

Dilution

07/02/19 15:40

Collected by

SB,RP,SW

Preparation

07/02/19 15:40

date/time

date/time

07/03/19 04:57

06/26/19 16:18

07/03/19 05:18

Analysis

date/time

Collected date/time

AAT

Received date/time

06/29/19 08:45

Analyst

AAT

Mt. Juliet, TN

Location

Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Ss













Brian Ford Project Manager

Buar Ford

# SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

Collected date/time: 06/25/19 16:09

## Total Solids by Method 2540 G-2011

|              | Result | Qualifier | Dilution | Analysis         | Batch     |
|--------------|--------|-----------|----------|------------------|-----------|
| Analyte      | %      |           |          | date / time      |           |
| Total Solids | 96.9   |           | 1        | 07/08/2019 14:53 | WG1307102 |



# Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

|                      | Result (dry) | Qualifier   | MDL (dry) | RDL (dry) | Dilution | Analysis         | Batch     |
|----------------------|--------------|-------------|-----------|-----------|----------|------------------|-----------|
| Analyte              | mg/kg        |             | mg/kg     | mg/kg     |          | date / time      |           |
| Anthracene           | 0.00111      | J           | 0.000619  | 0.00619   | 1        | 07/09/2019 08:32 | WG1307549 |
| Acenaphthene         | U            |             | 0.000619  | 0.00619   | 1        | 07/09/2019 08:32 | WG1307549 |
| Benzo(a)anthracene   | 0.00216      | <u>J</u>    | 0.000619  | 0.00619   | 1        | 07/09/2019 08:32 | WG1307549 |
| Benzo(a)pyrene       | 0.00432      | <u>J</u>    | 0.000619  | 0.00619   | 1        | 07/09/2019 08:32 | WG1307549 |
| Benzo(b)fluoranthene | 0.00575      | <u>J</u>    | 0.000619  | 0.00619   | 1        | 07/09/2019 08:32 | WG1307549 |
| Benzo(k)fluoranthene | 0.00158      | <u>J</u>    | 0.000619  | 0.00619   | 1        | 07/09/2019 08:32 | WG1307549 |
| Chrysene             | 0.00246      | <u>J</u>    | 0.000619  | 0.00619   | 1        | 07/09/2019 08:32 | WG1307549 |
| Fluoranthene         | 0.00641      |             | 0.000619  | 0.00619   | 1        | 07/09/2019 08:32 | WG1307549 |
| Fluorene             | U            |             | 0.000619  | 0.00619   | 1        | 07/09/2019 08:32 | WG1307549 |
| Naphthalene          | 0.00331      | <u>J J4</u> | 0.00206   | 0.0206    | 1        | 07/09/2019 08:32 | WG1307549 |
| Pyrene               | 0.00496      | <u>J</u>    | 0.000619  | 0.00619   | 1        | 07/09/2019 08:32 | WG1307549 |
| (S) Nitrobenzene-d5  | 82.8         |             |           | 14.0-149  |          | 07/09/2019 08:32 | WG1307549 |
| (S) 2-Fluorobiphenyl | 90.5         |             |           | 34.0-125  |          | 07/09/2019 08:32 | WG1307549 |
| (S) p-Terphenyl-d14  | 96.7         |             |           | 23.0-120  |          | 07/09/2019 08:32 | WG1307549 |

















# SAMPLE RESULTS - 02

ONE LAB. NATIONWIDE.

Collected date/time: 06/25/19 00:00

#### Total Solids by Method 2540 G-2011

|              | Result | Qualifier | Dilution | Analysis         | Batch     |
|--------------|--------|-----------|----------|------------------|-----------|
| Analyte      | %      |           |          | date / time      |           |
| Total Solids | 96.5   |           | 1        | 07/08/2019 14:53 | WG1307102 |





| n .     |   |          | RDL (dry)   | Dilution  | Analysis   | Batch  |
|---------|---|----------|---|---|--|--|
| mg/kg   |   | mg/kg    | mg/kg   |   | date / time  |  |
| 0.00124 | <u>J</u>  | 0.000622 | 0.00622   | 1   | 07/09/2019 08:53   | WG1307549  |
| U       |   | 0.000622 | 0.00622   | 1   | 07/09/2019 08:53   | WG1307549  |
| 0.00245 | <u>J</u>  | 0.000622 | 0.00622   | 1   | 07/09/2019 08:53   | WG1307549  |
| 0.00422 | <u>J</u>  | 0.000622 | 0.00622   | 1   | 07/09/2019 08:53   | WG1307549  |
| 0.00535 | <u>J</u>  | 0.000622 | 0.00622   | 1   | 07/09/2019 08:53   | WG1307549  |
| 0.00140 | <u>J</u>  | 0.000622 | 0.00622   | 1   | 07/09/2019 08:53   | WG1307549  |
| 0.00215 | <u>J</u>  | 0.000622 | 0.00622   | 1   | 07/09/2019 08:53   | WG1307549  |
| 0.00627 |   | 0.000622 | 0.00622   | 1   | 07/09/2019 08:53   | WG1307549  |
| U       |   | 0.000622 | 0.00622   | 1   | 07/09/2019 08:53   | WG1307549  |
| 0.00311 | <u>J J4</u>   | 0.00207  | 0.0207  | 1   | 07/09/2019 08:53   | WG1307549  |
| 0.00538 | <u>J</u>  | 0.000622 | 0.00622   | 1   | 07/09/2019 08:53   | WG1307549  |
| 78.6    |   |          | 14.0-149  |   | 07/09/2019 08:53   | WG1307549  |
| 83.5    |   |          | 34.0-125  |   | 07/09/2019 08:53   | WG1307549  |
| 91.6    |   |          | 23.0-120  |   | 07/09/2019 08:53   | WG1307549  |
|         | 0.00124<br>U<br>0.00245<br>0.00422<br>0.00535<br>0.00140<br>0.00215<br>0.00627<br>U<br>0.00311<br>0.00538<br>78.6<br>83.5 | 0.00124  | 0.00124       J       0.000622         U       0.000622         0.00245       J       0.000622         0.00422       J       0.000622         0.00535       J       0.000622         0.00140       J       0.000622         0.00215       J       0.000622         0.00627       0.000622         U       0.000622         0.00311       J       J       0.00207         0.00538       J       0.000622         78.6       83.5 | 0.00124         J         0.000622         0.00622           U         0.000622         0.00622           0.00245         J         0.000622         0.00622           0.00422         J         0.000622         0.00622           0.00535         J         0.000622         0.00622           0.00140         J         0.000622         0.00622           0.00215         J         0.000622         0.00622           0.00627         0.000622         0.00622         0.00622           0.00311         J         J         0.00207         0.0207           0.00538         J         0.000622         0.00622         0.00622           78.6         14.0-149         83.5         34.0-125 | 0.00124         J         0.000622         0.00622         1           0.00124         J         0.000622         0.00622         1           0.00245         J         0.000622         0.00622         1           0.00422         J         0.000622         0.00622         1           0.00535         J         0.000622         0.00622         1           0.00140         J         0.000622         0.00622         1           0.00215         J         0.000622         0.00622         1           0.00627         0.000622         0.00622         1           0.00311         J         J         0.00207         0.0207         1           0.00538         J         0.000622         0.00622         1           78.6         14.0-149         34.0-125 | 0.00124         J         0.000622         0.00622         1         07/09/2019 08:53           U         0.000622         0.00622         1         07/09/2019 08:53           0.00245         J         0.000622         0.00622         1         07/09/2019 08:53           0.00422         J         0.000622         0.00622         1         07/09/2019 08:53           0.00535         J         0.000622         0.00622         1         07/09/2019 08:53           0.00140         J         0.000622         0.00622         1         07/09/2019 08:53           0.00215         J         0.000622         0.00622         1         07/09/2019 08:53           0.00627         0.000622         0.00622         1         07/09/2019 08:53           0.00311         J J4         0.00207         0.0207         1         07/09/2019 08:53           0.00538         J         0.000622         0.00622         1         07/09/2019 08:53           0.866         14.0-149         07/09/2019 08:53           0.853         34.0-125         07/09/2019 08:53 |















Collected date/time: 06/26/19 11:42

# SAMPLE RESULTS - 03

ONE LAB. NATIONWIDE.

L1114273

## Total Solids by Method 2540 G-2011

|              | Result | Qualifier | Dilution | Analysis         | Batch     |
|--------------|--------|-----------|----------|------------------|-----------|
| Analyte      | %      |           |          | date / time      |           |
| Total Solids | 92.6   |           | 1        | 07/08/2019 14:53 | WG1307102 |

# <sup>2</sup>Tc

Ss

Cn

СQс

Gl

# Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

|                      | Result (dry) | Qualifier | MDL (dry) | RDL (dry) | Dilution | Analysis         | <u>Batch</u> |
|----------------------|--------------|-----------|-----------|-----------|----------|------------------|--------------|
| Analyte              | mg/kg        |           | mg/kg     | mg/kg     |          | date / time      |              |
| Anthracene           | 0.00582      | J         | 0.00324   | 0.0324    | 5        | 07/10/2019 00:02 | WG1307910    |
| Acenaphthene         | U            |           | 0.000648  | 0.00648   | 1        | 07/09/2019 17:43 | WG1307910    |
| Benzo(a)anthracene   | 0.00961      |           | 0.000648  | 0.00648   | 1        | 07/09/2019 17:43 | WG1307910    |
| Benzo(a)pyrene       | 0.0111       |           | 0.000648  | 0.00648   | 1        | 07/09/2019 17:43 | WG1307910    |
| Benzo(b)fluoranthene | 0.0233       |           | 0.000648  | 0.00648   | 1        | 07/09/2019 17:43 | WG1307910    |
| Benzo(k)fluoranthene | U            |           | 0.000648  | 0.00648   | 1        | 07/09/2019 17:43 | WG1307910    |
| Chrysene             | 0.00857      |           | 0.000648  | 0.00648   | 1        | 07/09/2019 17:43 | WG1307910    |
| Fluoranthene         | 0.0193       | <u>J</u>  | 0.00324   | 0.0324    | 5        | 07/10/2019 00:02 | WG1307910    |
| Fluorene             | 0.00106      | <u>J</u>  | 0.000648  | 0.00648   | 1        | 07/09/2019 17:43 | WG1307910    |
| Naphthalene          | U            |           | 0.00216   | 0.0216    | 1        | 07/09/2019 17:43 | WG1307910    |
| Pyrene               | 0.0153       |           | 0.000648  | 0.00648   | 1        | 07/09/2019 17:43 | WG1307910    |
| (S) Nitrobenzene-d5  | 128          |           |           | 14.0-149  |          | 07/09/2019 17:43 | WG1307910    |
| (S) Nitrobenzene-d5  | 83.1         |           |           | 14.0-149  |          | 07/10/2019 00:02 | WG1307910    |
| (S) 2-Fluorobiphenyl | 90.2         |           |           | 34.0-125  |          | 07/09/2019 17:43 | WG1307910    |
| (S) 2-Fluorobiphenyl | 81.7         |           |           | 34.0-125  |          | 07/10/2019 00:02 | WG1307910    |
| (S) p-Terphenyl-d14  | 85.0         |           |           | 23.0-120  |          | 07/09/2019 17:43 | WG1307910    |
| (S) p-Terphenyl-d14  | 81.0         |           |           | 23.0-120  |          | 07/10/2019 00:02 | WG1307910    |



#### Sample Narrative:

L1114273-03 WG1307910: IS/SURR failed on lower dilution.

Collected date/time: 06/26/19 16:02

# SAMPLE RESULTS - 04

ONE LAB. NATIONWIDE.

## Total Solids by Method 2540 G-2011

|              | Result | Qualifier | Dilution | Analysis         | Batch     |
|--------------|--------|-----------|----------|------------------|-----------|
| Analyte      | %      |           |          | date / time      |           |
| Total Solids | 88.3   |           | 1        | 07/08/2019 14:53 | WG1307102 |



# Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

|                      | Result (dry) | Qualifier | MDL (dry) | RDL (dry) | Dilution | Analysis         | <u>Batch</u> |
|----------------------|--------------|-----------|-----------|-----------|----------|------------------|--------------|
| Analyte              | mg/kg        |           | mg/kg     | mg/kg     |          | date / time      |              |
| Anthracene           | 0.00115      | <u>J</u>  | 0.000679  | 0.00679   | 1        | 07/09/2019 17:00 | WG1307910    |
| Acenaphthene         | U            |           | 0.000679  | 0.00679   | 1        | 07/09/2019 17:00 | WG1307910    |
| Benzo(a)anthracene   | 0.00263      | <u>J</u>  | 0.000679  | 0.00679   | 1        | 07/09/2019 17:00 | WG1307910    |
| Benzo(a)pyrene       | U            |           | 0.000679  | 0.00679   | 1        | 07/09/2019 17:00 | WG1307910    |
| Benzo(b)fluoranthene | 0.00546      | <u>J</u>  | 0.000679  | 0.00679   | 1        | 07/09/2019 17:00 | WG1307910    |
| Benzo(k)fluoranthene | U            |           | 0.000679  | 0.00679   | 1        | 07/09/2019 17:00 | WG1307910    |
| Chrysene             | 0.00258      | <u>J</u>  | 0.000679  | 0.00679   | 1        | 07/09/2019 17:00 | WG1307910    |
| Fluoranthene         | 0.00576      | J         | 0.000679  | 0.00679   | 1        | 07/09/2019 17:00 | WG1307910    |
| Fluorene             | U            |           | 0.000679  | 0.00679   | 1        | 07/09/2019 17:00 | WG1307910    |
| Naphthalene          | U            |           | 0.00226   | 0.0226    | 1        | 07/09/2019 17:00 | WG1307910    |
| Pyrene               | 0.00453      | <u>J</u>  | 0.000679  | 0.00679   | 1        | 07/09/2019 17:00 | WG1307910    |
| (S) Nitrobenzene-d5  | 115          |           |           | 14.0-149  |          | 07/09/2019 17:00 | WG1307910    |
| (S) 2-Fluorobiphenyl | 86.2         |           |           | 34.0-125  |          | 07/09/2019 17:00 | WG1307910    |
| (S) p-Terphenyl-d14  | 77.5         |           |           | 23.0-120  |          | 07/09/2019 17:00 | WG1307910    |
|                      |              |           |           |           |          |                  |              |





Ss













PAGE:

8 of 21

Collected date/time: 06/27/19 17:02

# SAMPLE RESULTS - 05

ONE LAB. NATIONWIDE.

### Total Solids by Method 2540 G-2011

|              | Result | Qualifier | Dilution | Analysis         | Batch     |
|--------------|--------|-----------|----------|------------------|-----------|
| Analyte      | %      |           |          | date / time      |           |
| Total Solids | 92.8   |           | 1        | 07/08/2019 14:53 | WG1307102 |





# Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

| ·                    | Result (dry) | Qualifier | MDL (dry) | RDL (dry) | Dilution | Analysis         | Batch     |
|----------------------|--------------|-----------|-----------|-----------|----------|------------------|-----------|
| Analyte              | mg/kg        |           | mg/kg     | mg/kg     |          | date / time      |           |
| Anthracene           | 0.0142       | <u>J</u>  | 0.00323   | 0.0323    | 5        | 07/11/2019 02:16 | WG1308630 |
| Acenaphthene         | U            |           | 0.00323   | 0.0323    | 5        | 07/11/2019 02:16 | WG1308630 |
| Benzo(a)anthracene   | 0.177        |           | 0.00323   | 0.0323    | 5        | 07/11/2019 02:16 | WG1308630 |
| Benzo(a)pyrene       | 0.111        |           | 0.00323   | 0.0323    | 5        | 07/11/2019 02:16 | WG1308630 |
| Benzo(b)fluoranthene | 0.0690       |           | 0.00323   | 0.0323    | 5        | 07/11/2019 02:16 | WG1308630 |
| Benzo(k)fluoranthene | U            |           | 0.00323   | 0.0323    | 5        | 07/11/2019 02:16 | WG1308630 |
| Chrysene             | 0.189        |           | 0.00323   | 0.0323    | 5        | 07/11/2019 02:16 | WG1308630 |
| Fluoranthene         | 0.0506       |           | 0.00323   | 0.0323    | 5        | 07/11/2019 02:16 | WG1308630 |
| Fluorene             | 0.00549      | <u>J</u>  | 0.00323   | 0.0323    | 5        | 07/11/2019 02:16 | WG1308630 |
| Naphthalene          | U            |           | 0.0108    | 0.108     | 5        | 07/11/2019 02:16 | WG1308630 |
| Pyrene               | 0.289        |           | 0.00323   | 0.0323    | 5        | 07/11/2019 02:16 | WG1308630 |
| (S) Nitrobenzene-d5  | 76.9         |           |           | 14.0-149  |          | 07/11/2019 02:16 | WG1308630 |
| (S) 2-Fluorobiphenyl | 83.5         |           |           | 34.0-125  |          | 07/11/2019 02:16 | WG1308630 |
| (S) p-Terphenyl-d14  | 95.3         |           |           | 23.0-120  |          | 07/11/2019 02:16 | WG1308630 |
|                      |              |           |           |           |          |                  |           |















PAGE:

9 of 21

(S) p-Terphenyl-d14

105

## SAMPLE RESULTS - 06

ONE LAB. NATIONWIDE.

L1114273

## Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

|                      | Result    | Qualifier | MDL        | RDL       | Dilution | Analysis         | Batch     |
|----------------------|-----------|-----------|------------|-----------|----------|------------------|-----------|
| Analyte              | mg/l      |           | mg/l       | mg/l      |          | date / time      |           |
| Anthracene           | U         |           | 0.0000140  | 0.0000500 | 1        | 07/03/2019 04:57 | WG1304606 |
| Acenaphthene         | U         |           | 0.0000100  | 0.0000500 | 1        | 07/03/2019 04:57 | WG1304606 |
| Benzo(a)anthracene   | U         |           | 0.00000410 | 0.0000500 | 1        | 07/03/2019 04:57 | WG1304606 |
| Benzo(a)pyrene       | U         |           | 0.0000116  | 0.0000500 | 1        | 07/03/2019 04:57 | WG1304606 |
| Benzo(b)fluoranthene | U         |           | 0.00000212 | 0.0000500 | 1        | 07/03/2019 04:57 | WG1304606 |
| Benzo(k)fluoranthene | U         |           | 0.0000136  | 0.0000500 | 1        | 07/03/2019 04:57 | WG1304606 |
| Chrysene             | U         |           | 0.0000108  | 0.0000500 | 1        | 07/03/2019 04:57 | WG1304606 |
| Fluoranthene         | U         |           | 0.0000157  | 0.0000500 | 1        | 07/03/2019 04:57 | WG1304606 |
| Fluorene             | U         |           | 0.00000850 | 0.0000500 | 1        | 07/03/2019 04:57 | WG1304606 |
| Naphthalene          | 0.0000300 | B J J3 J4 | 0.0000198  | 0.000250  | 1        | 07/03/2019 04:57 | WG1304606 |
| Pyrene               | U         |           | 0.0000117  | 0.0000500 | 1        | 07/03/2019 04:57 | WG1304606 |
| (S) Nitrobenzene-d5  | 132       |           |            | 31.0-160  |          | 07/03/2019 04:57 | WG1304606 |
| (S) 2-Fluorobiphenyl | 93.7      |           |            | 48.0-148  |          | 07/03/2019 04:57 | WG1304606 |

07/03/2019 04:57

WG1304606

37.0-146



















## SAMPLE RESULTS - 07

ONE LAB. NATIONWIDE.

.1114273

## Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

|                      | Result    | Qualifier | MDL        | RDL       | Dilution | Analysis         | <u>Batch</u> |
|----------------------|-----------|-----------|------------|-----------|----------|------------------|--------------|
| Analyte              | mg/l      |           | mg/l       | mg/l      |          | date / time      |              |
| Anthracene           | U         |           | 0.0000140  | 0.0000500 | 1        | 07/03/2019 05:18 | WG1304606    |
| Acenaphthene         | U         |           | 0.0000100  | 0.0000500 | 1        | 07/03/2019 05:18 | WG1304606    |
| Benzo(a)anthracene   | U         |           | 0.00000410 | 0.0000500 | 1        | 07/03/2019 05:18 | WG1304606    |
| Benzo(a)pyrene       | U         |           | 0.0000116  | 0.0000500 | 1        | 07/03/2019 05:18 | WG1304606    |
| Benzo(b)fluoranthene | U         |           | 0.00000212 | 0.0000500 | 1        | 07/03/2019 05:18 | WG1304606    |
| Benzo(k)fluoranthene | U         |           | 0.0000136  | 0.0000500 | 1        | 07/03/2019 05:18 | WG1304606    |
| Chrysene             | U         |           | 0.0000108  | 0.0000500 | 1        | 07/03/2019 05:18 | WG1304606    |
| Fluoranthene         | U         |           | 0.0000157  | 0.0000500 | 1        | 07/03/2019 05:18 | WG1304606    |
| Fluorene             | U         |           | 0.00000850 | 0.0000500 | 1        | 07/03/2019 05:18 | WG1304606    |
| Naphthalene          | 0.0000316 | B J J3 J4 | 0.0000198  | 0.000250  | 1        | 07/03/2019 05:18 | WG1304606    |
| Pyrene               | U         |           | 0.0000117  | 0.0000500 | 1        | 07/03/2019 05:18 | WG1304606    |
| (S) Nitrobenzene-d5  | 134       |           |            | 31.0-160  |          | 07/03/2019 05:18 | WG1304606    |
| (S) 2-Fluorobiphenyl | 94.7      |           |            | 48.0-148  |          | 07/03/2019 05:18 | WG1304606    |
| (S) p-Terphenyl-d14  | 107       |           |            | 37.0-146  |          | 07/03/2019 05:18 | WG1304606    |



















ONE LAB. NATIONWIDE.

Total Solids by Method 2540 G-2011

L1114273-01,02,03,04,05

## Method Blank (MB)

| (MB) R3428800-1 07 | 7/08/19 14:53 |              |        |        |
|--------------------|---------------|--------------|--------|--------|
|                    | MB Result     | MB Qualifier | MB MDL | MB RDL |
| Analyte            | %             |              | %      | %      |
| Total Solids       | 0.000         |              |        |        |



<sup>3</sup>Ss

## L1114273-01 Original Sample (OS) • Duplicate (DUP)

| (OS) I 111/17 | 272 01 07/08  | /10 11·53 - /DI IE | ) D3/13/8/8/UU 3 | 07/08/19 14:53 |
|---------------|---------------|--------------------|------------------|----------------|
| (U3) LIII42   | 2/3-01 0//00/ | 13 14.33 • (DUF    | ) N3420000-3     | 07/00/13 14.33 |

|              | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD<br>Limits |
|--------------|-----------------|------------|----------|---------|---------------|-------------------|
| Analyte      | %               | %          |          | %       |               | %                 |
| Total Solids | 96.9            | 96.6       | 1        | 0.359   |               | 10                |





## Laboratory Control Sample (LCS)

## (LCS) R3428800-2 07/08/19 14:53

| (LCS) R3428800-2 07/0 | 8/19 14:53   |            |          |             |
|-----------------------|--------------|------------|----------|-------------|
|                       | Spike Amount | LCS Result | LCS Rec. | Rec. Limits |
| Analyte               | %            | %          | %        | %           |
| Total Solids          | 50.0         | 50.0       | 100      | 85.0-115    |





ONE LAB. NATIONWIDE.

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

L1114273-06,07

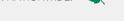
## Method Blank (MB)

| (MB) R3427086-2 07/02 | 2/19 23:07 |              |            |           |
|-----------------------|------------|--------------|------------|-----------|
|                       | MB Result  | MB Qualifier | MB MDL     | MB RDL    |
| Analyte               | mg/l       |              | mg/l       | mg/l      |
| Anthracene            | U          |              | 0.0000140  | 0.0000500 |
| Acenaphthene          | U          |              | 0.0000100  | 0.0000500 |
| Benzo(a)anthracene    | U          |              | 0.00000410 | 0.0000500 |
| Benzo(a)pyrene        | U          |              | 0.0000116  | 0.0000500 |
| Benzo(b)fluoranthene  | U          |              | 0.00000212 | 0.0000500 |
| Benzo(k)fluoranthene  | U          |              | 0.0000136  | 0.0000500 |
| Chrysene              | U          |              | 0.0000108  | 0.0000500 |
| Fluoranthene          | U          |              | 0.0000157  | 0.0000500 |
| Fluorene              | U          |              | 0.00000850 | 0.0000500 |
| Naphthalene           | 0.0000214  | <u>J</u>     | 0.0000198  | 0.000250  |
| Pyrene                | U          |              | 0.0000117  | 0.0000500 |
| (S) Nitrobenzene-d5   | 139        |              |            | 31.0-160  |
| (S) 2-Fluorobiphenyl  | 96.0       |              |            | 48.0-148  |
| (S) p-Terphenyl-d14   | 103        |              |            | 37.0-146  |



(LCS) R3427086-1 07/02/19 22:23 • (LCSD) R3427086-3 07/02/19 23:29

| Analyte         mg/l         mg/l         mg/l         % | esult LCSD Result LCS Rec. LCSD Rec. Rec. Limits LCS Qualifier LCSD Qualifier RPD RPD Limits |
|--|--|
| Anthracene         0.00200         0.00192         0.00187         96.0         93.5         67.0-150         2.64         20           Acenaphthene         0.00200         0.00163         0.00148         81.5         74.0         65.0-138         9.65         20           Benzo(a)anthracene         0.00200         0.00179         0.00178         89.5         89.0         61.0-140         0.560         20   |  |
| Acenaphthene         0.00200         0.00163         0.00148         81.5         74.0         65.0-138         9.65         20           Benzo(a)anthracene         0.00200         0.00179         0.00178         89.5         89.0         61.0-140         0.560         20   | mg/l % % %   |
| Benzo(a)anthracene 0.00200 0.00179 0.00178 89.5 89.0 61.0-140 0.560 20   | 92 0.00187 96.0 93.5 67.0-150 2.64 20  |
|  | 53 0.00148 81.5 74.0 65.0-138 9.65 20  |
| Pogge/alpyropo 0.00200 0.00191 0.00194 00.5 02.0 60.0.1/3 1.64 20  | 79 0.00178 89.5 89.0 61.0-140 0.560 20   |
| Defizo(a)pyrefie 0.00200 0.00161 0.00164 30.5 32.0 00.0-145 1.04 20  | 81 0.00184 90.5 92.0 60.0-143 1.64 20  |
| Benzo(b)fluoranthene 0.00200 0.00175 0.00180 87.5 90.0 58.0-141 2.82 20  | 75 0.00180 87.5 90.0 58.0-141 2.82 20  |
| Benzo(k)fluoranthene 0.00200 0.00179 0.00175 89.5 87.5 58.0-148 2.26 20  | 79 0.00175 89.5 87.5 58.0-148 2.26 20  |
| Chrysene 0.00200 0.00187 0.00190 93.5 95.0 64.0-144 1.59 20  | 37 0.00190 93.5 95.0 64.0-144 1.59 20  |
| Fluoranthene 0.00200 0.00195 0.00190 97.5 95.0 69.0-153 2.60 20  | <b>95</b> 0.00190 97.5 95.0 69.0-153 2.60 20   |
| Fluorene 0.00200 0.00161 0.00154 80.5 77.0 64.0-136 4.44 20  | 51 0.00154 80.5 77.0 64.0-136 4.44 20  |
| Naphthalene 0.00200 0.00148 0.00119 74.0 59.5 61.0-137 <u>J3 J4</u> 21.7 20  | 48 0.00119 74.0 59.5 61.0-137 <u>J3 J4</u> 21.7 20   |
| Pyrene 0.00200 0.00187 0.00189 93.5 94.5 60.0-142 1.06 20  |  |
| (S) Nitrobenzene-d5 145 135 31.0-160   | 145 135 31.0-160   |
| (S) 2-Fluorobiphenyl 96.0 96.0 48.0-148  | 96.0 96.0 48.0-148   |
| (S) p-Terphenyl-d14 100 102 37.0-146   | 100 102 37.0-146   |



Sc

DATE/TIME:

07/11/19 22:51

ONE LAB. NATIONWIDE.

Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

L1114273-01,02

## Method Blank (MB)

| (MB) R3428722-2 07/0 | 9/19 01:37 |              |          |          |
|----------------------|------------|--------------|----------|----------|
|                      | MB Result  | MB Qualifier | MB MDL   | MB RDL   |
| Analyte              | mg/kg      |              | mg/kg    | mg/kg    |
| Anthracene           | U          |              | 0.000600 | 0.00600  |
| Acenaphthene         | U          |              | 0.000600 | 0.00600  |
| Benzo(a)anthracene   | U          |              | 0.000600 | 0.00600  |
| Benzo(a)pyrene       | U          |              | 0.000600 | 0.00600  |
| Benzo(b)fluoranthene | U          |              | 0.000600 | 0.00600  |
| Benzo(k)fluoranthene | U          |              | 0.000600 | 0.00600  |
| Chrysene             | U          |              | 0.000600 | 0.00600  |
| Fluoranthene         | U          |              | 0.000600 | 0.00600  |
| Fluorene             | U          |              | 0.000600 | 0.00600  |
| Naphthalene          | U          |              | 0.00200  | 0.0200   |
| Pyrene               | U          |              | 0.000600 | 0.00600  |
| (S) Nitrobenzene-d5  | 57.4       |              |          | 14.0-149 |
| (S) 2-Fluorobiphenyl | 72.7       |              |          | 34.0-125 |
| (S) p-Terphenyl-d14  | 93.5       |              |          | 23.0-120 |

## Laboratory Control Sample (LCS)

| (LCS) R3428722-1 | 07/09/19 01:16 |
|------------------|----------------|
|------------------|----------------|

| (LC3) N3420722-1 0770 |              |            |          |             |               |
|-----------------------|--------------|------------|----------|-------------|---------------|
|                       | Spike Amount | LCS Result | LCS Rec. | Rec. Limits | LCS Qualifier |
| Analyte               | mg/kg        | mg/kg      | %        | %           |               |
| Anthracene            | 0.0800       | 0.0646     | 80.7     | 50.0-126    |               |
| Acenaphthene          | 0.0800       | 0.0476     | 59.5     | 50.0-120    |               |
| Benzo(a)anthracene    | 0.0800       | 0.0706     | 88.3     | 45.0-120    |               |
| Benzo(a)pyrene        | 0.0800       | 0.0632     | 79.0     | 42.0-120    |               |
| Benzo(b)fluoranthene  | 0.0800       | 0.0659     | 82.4     | 42.0-121    |               |
| Benzo(k)fluoranthene  | 0.0800       | 0.0689     | 86.1     | 49.0-125    |               |
| Chrysene              | 0.0800       | 0.0666     | 83.3     | 49.0-122    |               |
| Fluoranthene          | 0.0800       | 0.0737     | 92.1     | 49.0-129    |               |
| Fluorene              | 0.0800       | 0.0542     | 67.8     | 49.0-120    |               |
| Naphthalene           | 0.0800       | 0.0397     | 49.6     | 50.0-120    | <u>J4</u>     |
| Pyrene                | 0.0800       | 0.0540     | 67.5     | 43.0-123    |               |
| (S) Nitrobenzene-d5   |              |            | 88.0     | 14.0-149    |               |
| (S) 2-Fluorobiphenyl  |              |            | 90.6     | 34.0-125    |               |
| (S) p-Terphenyl-d14   |              |            | 93.2     | 23.0-120    |               |
|                       |              |            |          |             |               |

ONE LAB. NATIONWIDE.

Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

L1114273-03,04

## Method Blank (MB)

| (MB) R3428825-2 07/09 | )/19 09:37 |              |          |          |
|-----------------------|------------|--------------|----------|----------|
|                       | MB Result  | MB Qualifier | MB MDL   | MB RDL   |
| Analyte               | mg/kg      |              | mg/kg    | mg/kg    |
| Anthracene            | U          |              | 0.000600 | 0.00600  |
| Acenaphthene          | U          |              | 0.000600 | 0.00600  |
| Benzo(a)anthracene    | U          |              | 0.000600 | 0.00600  |
| Benzo(a)pyrene        | U          |              | 0.000600 | 0.00600  |
| Benzo(b)fluoranthene  | U          |              | 0.000600 | 0.00600  |
| Benzo(k)fluoranthene  | U          |              | 0.000600 | 0.00600  |
| Chrysene              | U          |              | 0.000600 | 0.00600  |
| Fluoranthene          | U          |              | 0.000600 | 0.00600  |
| Fluorene              | U          |              | 0.000600 | 0.00600  |
| Naphthalene           | U          |              | 0.00200  | 0.0200   |
| Pyrene                | U          |              | 0.000600 | 0.00600  |
| (S) Nitrobenzene-d5   | 102        |              |          | 14.0-149 |
| (S) 2-Fluorobiphenyl  | 86.2       |              |          | 34.0-125 |
| (S) p-Terphenyl-d14   | 98.7       |              |          | 23.0-120 |

## Laboratory Control Sample (LCS)

| (LCS) R3428825-1 0 | )//09/19 09:16 |
|--------------------|----------------|
|--------------------|----------------|

|                      | Spike Amount | LCS Result | LCS Rec. | Rec. Limits | LCS Qualifier |
|----------------------|--------------|------------|----------|-------------|---------------|
| Analyte              | mg/kg        | mg/kg      | %        | %           |               |
| Anthracene           | 0.080.0      | 0.0624     | 78.0     | 50.0-126    |               |
| Acenaphthene         | 0.0800       | 0.0608     | 76.0     | 50.0-120    |               |
| Benzo(a)anthracene   | 0.080.0      | 0.0635     | 79.4     | 45.0-120    |               |
| Benzo(a)pyrene       | 0.080.0      | 0.0555     | 69.4     | 42.0-120    |               |
| Benzo(b)fluoranthene | 0.0800       | 0.0857     | 107      | 42.0-121    |               |
| Benzo(k)fluoranthene | 0.0800       | 0.0788     | 98.5     | 49.0-125    |               |
| Chrysene             | 0.0800       | 0.0618     | 77.3     | 49.0-122    |               |
| Fluoranthene         | 0.0800       | 0.0702     | 87.8     | 49.0-129    |               |
| Fluorene             | 0.0800       | 0.0610     | 76.3     | 49.0-120    |               |
| Naphthalene          | 0.0800       | 0.0550     | 68.8     | 50.0-120    |               |
| Pyrene               | 0.0800       | 0.0549     | 68.6     | 43.0-123    |               |
| (S) Nitrobenzene-d5  |              |            | 120      | 14.0-149    |               |
| (S) 2-Fluorobiphenyl |              |            | 95.7     | 34.0-125    |               |
| (S) p-Terphenyl-d14  |              |            | 96.2     | 23.0-120    |               |



Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

L1114273-03,04

## L1113997-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1113997-03 07/09/19 15:57 • (MS) R3428825-3 07/09/19 16:18 • (MSD) R3428825-4 07/09/19 16:39

| ` '                  | , ,          |                 |           | '          |         |          |          |             |              |               |       |            |
|----------------------|--------------|-----------------|-----------|------------|---------|----------|----------|-------------|--------------|---------------|-------|------------|
|                      | Spike Amount | Original Result | MS Result | MSD Result | MS Rec. | MSD Rec. | Dilution | Rec. Limits | MS Qualifier | MSD Qualifier | RPD   | RPD Limits |
| Analyte              | mg/kg        | mg/kg           | mg/kg     | mg/kg      | %       | %        |          | %           |              |               | %     | %          |
| Anthracene           | 0.0800       | ND              | 0.0516    | 0.0640     | 64.5    | 80.0     | 1        | 10.0-145    |              |               | 21.5  | 30         |
| Acenaphthene         | 0.0800       | ND              | 0.0584    | 0.0621     | 73.0    | 77.6     | 1        | 14.0-127    |              |               | 6.14  | 27         |
| Benzo(a)anthracene   | 0.0800       | ND              | 0.0563    | 0.0725     | 70.4    | 90.6     | 1        | 10.0-139    |              |               | 25.2  | 30         |
| Benzo(a)pyrene       | 0.0800       | 0.0722          | 0.0617    | 0.0638     | 0.000   | 0.000    | 1        | 10.0-141    | <u>J6</u>    | <u>J6</u>     | 3.35  | 31         |
| Benzo(b)fluoranthene | 0.0800       | ND              | 0.0709    | 0.0714     | 88.6    | 89.3     | 1        | 10.0-140    |              |               | 0.703 | 36         |
| Benzo(k)fluoranthene | 0.0800       | ND              | 0.0542    | 0.0595     | 67.8    | 74.4     | 1        | 10.0-137    |              |               | 9.32  | 31         |
| Chrysene             | 0.0800       | 0.118           | 0.189     | 0.205      | 88.7    | 109      | 1        | 10.0-145    |              |               | 8.12  | 30         |
| Fluoranthene         | 0.0800       | ND              | 0.0744    | 0.0850     | 93.0    | 106      | 1        | 10.0-153    |              |               | 13.3  | 33         |
| Fluorene             | 0.0800       | ND              | 0.0556    | 0.0713     | 69.5    | 89.1     | 1        | 11.0-130    |              |               | 24.7  | 29         |
| Naphthalene          | 0.0800       | ND              | 0.0492    | 0.0517     | 61.5    | 64.6     | 1        | 10.0-135    |              |               | 4.96  | 27         |
| Pyrene               | 0.0800       | 0.0235          | 0.0700    | 0.0833     | 58.1    | 74.8     | 1        | 10.0-148    |              |               | 17.4  | 35         |
| (S) Nitrobenzene-d5  |              |                 |           |            | 93.8    | 93.0     |          | 14.0-149    |              |               |       |            |
| (S) 2-Fluorobiphenyl |              |                 |           |            | 77.9    | 63.1     |          | 34.0-125    |              |               |       |            |
| (S) p-Terphenyl-d14  |              |                 |           |            | 66.4    | 85.6     |          | 23.0-120    |              |               |       |            |
|                      |              |                 |           |            |         |          |          |             |              |               |       |            |



















ONE LAB. NATIONWIDE.

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

L1114273-05

## Method Blank (MB)

| (MB) R3429535-2 07/10 | 0/19 18:52 |              |          |          |
|-----------------------|------------|--------------|----------|----------|
|                       | MB Result  | MB Qualifier | MB MDL   | MB RDL   |
| Analyte               | mg/kg      |              | mg/kg    | mg/kg    |
| Anthracene            | U          |              | 0.000600 | 0.00600  |
| Acenaphthene          | U          |              | 0.000600 | 0.00600  |
| Benzo(a)anthracene    | U          |              | 0.000600 | 0.00600  |
| Benzo(a)pyrene        | U          |              | 0.000600 | 0.00600  |
| Benzo(b)fluoranthene  | U          |              | 0.000600 | 0.00600  |
| Benzo(k)fluoranthene  | U          |              | 0.000600 | 0.00600  |
| Chrysene              | U          |              | 0.000600 | 0.00600  |
| Fluoranthene          | U          |              | 0.000600 | 0.00600  |
| Fluorene              | U          |              | 0.000600 | 0.00600  |
| Naphthalene           | U          |              | 0.00200  | 0.0200   |
| Pyrene                | U          |              | 0.000600 | 0.00600  |
| (S) Nitrobenzene-d5   | 91.8       |              |          | 14.0-149 |
| (S) 2-Fluorobiphenyl  | 94.4       |              |          | 34.0-125 |
| (S) p-Terphenyl-d14   | 108        |              |          | 23.0-120 |

## Laboratory Control Sample (LCS)

| (LCS) R3429535-1 07/1 | 0/19 18:31   |            |          |             |               |
|-----------------------|--------------|------------|----------|-------------|---------------|
|                       | Spike Amount | LCS Result | LCS Rec. | Rec. Limits | LCS Qualifier |
| Analyte               | mg/kg        | mg/kg      | %        | %           |               |
| Anthracene            | 0.0800       | 0.0703     | 87.9     | 50.0-126    |               |
| Acenaphthene          | 0.0800       | 0.0618     | 77.3     | 50.0-120    |               |
| Benzo(a)anthracene    | 0.0800       | 0.0760     | 95.0     | 45.0-120    |               |
| Benzo(a)pyrene        | 0.0800       | 0.0648     | 81.0     | 42.0-120    |               |
| Benzo(b)fluoranthene  | 0.0800       | 0.0725     | 90.6     | 42.0-121    |               |
| Benzo(k)fluoranthene  | 0.0800       | 0.0699     | 87.4     | 49.0-125    |               |
| Chrysene              | 0.0800       | 0.0729     | 91.1     | 49.0-122    |               |
| Fluoranthene          | 0.0800       | 0.0771     | 96.4     | 49.0-129    |               |
| Fluorene              | 0.0800       | 0.0678     | 84.8     | 49.0-120    |               |
| Naphthalene           | 0.0800       | 0.0553     | 69.1     | 50.0-120    |               |
| Pyrene                | 0.0800       | 0.0774     | 96.8     | 43.0-123    |               |
| (S) Nitrobenzene-d5   |              |            | 113      | 14.0-149    |               |
| (S) 2-Fluorobiphenyl  |              |            | 107      | 34.0-125    |               |
| (S) p-Terphenyl-d14   |              |            | 110      | 23.0-120    |               |

 ACCOUNT:
 PROJECT:
 SDG:
 DATE/TIME:
 PAGE:

 Tetra Tech EMI - Spokane, WA
 L1114273
 07/11/19 22:51
 17 of 21





















(S) p-Terphenyl-d14

## QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

11114273-05

## L1114322-30 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1114322-30 07/10/19 23:27 • (MS) R3429535-3 07/10/19 23:48 • (MSD) R3429535-4 07/11/19 00:09

|                      | Spike Amount (dry) | Original Result<br>(dry) | MS Result (dry) | MSD Result<br>(dry) | MS Rec. | MSD Rec. | Dilution | Rec. Limits | MS Qualifier | MSD Qualifier | RPD   | RPD Limits |
|----------------------|--------------------|--------------------------|-----------------|---------------------|---------|----------|----------|-------------|--------------|---------------|-------|------------|
| Analyte              | mg/kg              | mg/kg                    | mg/kg           | mg/kg               | %       | %        |          | %           |              |               | %     | %          |
| Anthracene           | 0.116              | ND                       | 0.0917          | 0.351               | 78.8    | 301      | 1        | 10.0-145    |              | J3 J5 V3      | 117   | 30         |
| Benzo(a)anthracene   | 0.116              | ND                       | 0.0980          | 0.0948              | 84.1    | 81.4     | 1        | 10.0-139    |              |               | 3.32  | 30         |
| Benzo(a)pyrene       | 0.116              | ND                       | 0.0875          | 0.0834              | 72.4    | 68.9     | 1        | 10.0-141    |              |               | 4.77  | 31         |
| Benzo(b)fluoranthene | 0.116              | 0.0550                   | 0.0890          | 0.0875              | 29.1    | 27.9     | 1        | 10.0-140    |              |               | 1.65  | 36         |
| Benzo(k)fluoranthene | 0.116              | ND                       | 0.0839          | 0.0833              | 72.0    | 71.5     | 1        | 10.0-137    |              |               | 0.697 | 31         |
| Chrysene             | 0.116              | ND                       | 0.0964          | 0.109               | 75.8    | 86.3     | 1        | 10.0-145    |              |               | 11.9  | 30         |
| Fluoranthene         | 0.116              | 0.0293                   | 0.0628          | 0.419               | 28.8    | 335      | 1        | 10.0-153    |              | J3 J5 V3      | 148   | 33         |
| Naphthalene          | 0.116              | ND                       | 0.0794          | 0.0808              | 64.7    | 65.9     | 1        | 10.0-135    |              |               | 1.82  | 27         |
| Pyrene               | 0.116              | 0.210                    | 0.326           | 1.85                | 100     | 1410     | 1        | 10.0-148    |              | <u>J3 J5</u>  | 140   | 35         |
| (S) Nitrobenzene-d5  |                    |                          |                 |                     | 155     | 141      |          | 14.0-149    | <u>J1</u>    |               |       |            |
| (S) 2-Fluorobiphenyl |                    |                          |                 |                     | 55.0    | 26.0     |          | 34.0-125    |              | J2            |       |            |

23.0-120

188

111

J1



















## **GLOSSARY OF TERMS**

### ONE LAB. NATIONWIDE.

## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

### Abbreviations and Definitions

| Appreviations and               | Definitions  |
|---------------------------------|--|
| (dry)                           | Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].   |
| MDL                             | Method Detection Limit.  |
| MDL (dry)                       | Method Detection Limit.  |
| ND                              | Not detected at the Reporting Limit (or MDL where applicable).   |
| RDL                             | Reported Detection Limit.  |
| RDL (dry)                       | Reported Detection Limit.  |
| Rec.                            | Recovery.  |
| RPD                             | Relative Percent Difference.   |
| SDG                             | Sample Delivery Group.   |
| (S)                             | Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.   |
| U                               | Not detected at the Reporting Limit (or MDL where applicable).   |
| Analyte                         | The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.   |
| Dilution                        | If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.  |
| Limits                          | These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.  |
| Original Sample                 | The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.  |
| Qualifier                       | This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.  |
| Result                          | The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte. |
| Uncertainty<br>(Radiochemistry) | Confidence level of 2 sigma.   |
| Case Narrative (Cn)             | A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.  |
| Quality Control<br>Summary (Qc) | This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.  |
| Sample Chain of<br>Custody (Sc) | This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.  |
| Sample Results (Sr)             | This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.   |
| Sample Summary (Ss)             | This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.  |

#### Qualifier Description

| В  | The same analyte is found in the associated blank.   |
|----|--|
| J  | The identification of the analyte is acceptable; the reported value is an estimate.  |
| J1 | Surrogate recovery limits have been exceeded; values are outside upper control limits.   |
| J2 | Surrogate recovery limits have been exceeded; values are outside lower control limits.   |
| J3 | The associated batch QC was outside the established quality control range for precision.   |
| J4 | The associated batch QC was outside the established quality control range for accuracy.  |
| J5 | The sample matrix interfered with the ability to make any accurate determination; spike value is high.   |
| J6 | The sample matrix interfered with the ability to make any accurate determination; spike value is low.  |
| V3 | The internal standard exhibited poor recovery due to sample matrix interference. The analytical results will be biased high. BDL results will be unaffected. |

ACCOUNT: PROJECT: DATE/TIME: PAGE: SDG: Tetra Tech EMI - Spokane, WA L1114273 07/11/19 22:51 19 of 21

















## **ACCREDITATIONS & LOCATIONS**





### **State Accreditations**

| Alabama                | 40660       |
|------------------------|-------------|
| Alaska                 | 17-026      |
| Arizona                | AZ0612      |
| Arkansas               | 88-0469     |
| California             | 2932        |
| Colorado               | TN00003     |
| Connecticut            | PH-0197     |
| Florida                | E87487      |
| Georgia                | NELAP       |
| Georgia <sup>1</sup>   | 923         |
| Idaho                  | TN00003     |
| Illinois               | 200008      |
| Indiana                | C-TN-01     |
| Iowa                   | 364         |
| Kansas                 | E-10277     |
| Kentucky 16            | 90010       |
| Kentucky <sup>2</sup>  | 16          |
| Louisiana              | Al30792     |
| Louisiana <sup>1</sup> | LA180010    |
| Maine                  | TN0002      |
| Maryland               | 324         |
| Massachusetts          | M-TN003     |
| Michigan               | 9958        |
| Minnesota              | 047-999-395 |
| Mississippi            | TN00003     |
| Missouri               | 340         |
| Montana                | CERT0086    |

| Nebraska                    | NE-OS-15-05      |
|-----------------------------|------------------|
| Nevada                      | TN-03-2002-34    |
| New Hampshire               | 2975             |
| New Jersey-NELAP            | TN002            |
| New Mexico <sup>1</sup>     | n/a              |
| New York                    | 11742            |
| North Carolina              | Env375           |
| North Carolina 1            | DW21704          |
| North Carolina <sup>3</sup> | 41               |
| North Dakota                | R-140            |
| Ohio-VAP                    | CL0069           |
| Oklahoma                    | 9915             |
| Oregon                      | TN200002         |
| Pennsylvania                | 68-02979         |
| Rhode Island                | LAO00356         |
| South Carolina              | 84004            |
| South Dakota                | n/a              |
| Tennessee 1 4               | 2006             |
| Texas                       | T104704245-18-15 |
| Texas <sup>5</sup>          | LAB0152          |
| Utah                        | TN00003          |
| Vermont                     | VT2006           |
| Virginia                    | 460132           |
| Washington                  | C847             |
| West Virginia               | 233              |
| Wisconsin                   | 9980939910       |
| Wyoming                     | A2LA             |
|                             |                  |

### Third Party Federal Accreditations

| A2LA – ISO 17025   | 1461.01 |
|--------------------|---------|
| A2LA - ISO 17025 5 | 1461.02 |
| Canada             | 1461.01 |
| EPA-Crypto         | TN00003 |

| AIHA-LAP,LLC EMLAP | 100789        |
|--------------------|---------------|
| DOD                | 1461.01       |
| USDA               | P330-15-00234 |
|                    |               |

<sup>&</sup>lt;sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Wastewater n/a Accreditation not applicable

### Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















PAGE:

20 of 21

| - '  |                                     |                     |                  |                          |              |                 | 1 Sept. 100 | 1000             |                      |                   | Analysis   | Contain   | CI / IICS | -1404.40  |          | The second second         | 37.70                                  |   |                      |
|--|-------------------------------------|---------------------|------------------|--------------------------|--------------|-----------------|-------------|------------------|----------------------|-------------------|------------|-----------|-----------|---|----------|---------------------------|--|---|----------------------|
| etra Tech EMI - Spokar 212 N. Washington Street  | ne, WA Accounts Payable 415 Oak St. |                     | Accounts Payable |                          | Pres<br>Chk  |                 |             |                  |                      |                   |            |           |           |   | 1        | Pace Al<br>National Cente | nalytical* ur for Testing & Innovation |   |                      |
| uite 208   |                                     |                     |                  |                          |              |                 |             |                  |                      |                   |            |           |           |   |          |                           |  |   | - W                  |
| nokane WA 99201  |                                     |                     | Email To: Jo     | on.Welge@tetr            | atech        | .com;           |             |                  |                      | M-8               |            |           |           |   |          |                           | Mo                                     | 065 Lebanon Rd<br>ount Juliet, TN 3712                |                      |
| eport to:<br>on Welge  |                                     |                     | shannon.bi       | rattebo@tetra            | tech.c       | om              | 1           |                  |                      | Pre               |            |           |           |   |          |                           | Ph                                     | one: 615-758-5858<br>one: 800-767-5859                |                      |
| roject STIMON ATLAS escription:  | MILL                                |                     |                  | City/State<br>Collected: | ID           | AHIO            |             | Oroc             |                      | oN-di             |            |           |           |   |          |                           | L                                      | # 111 4   | 273                  |
|  | Client Project #                    |                     |                  | Lab Project # TETRASPV   |              | TIMATLAS        |             | Anarch, Nobrac   | ON-ING               | 40mIAmb-NoPres-WI |            |           |           |   |          |                           |  | A204  |                      |
|  | Site/Facility ID                    | #                   |                  | P.O.#                    |              |                 |             |                  | 0 1                  | 8270SIM 4         |            |           |           |   |          |                           |  | cctnum: TETF<br>emplate:T15:                          |                      |
| ollected by (signature):   | Same Day                            | 5 Day               |                  | Quote #                  | Result       | s Needed        | No.         | 30200            |                      | water PAHs 827    |            |           |           |   |          |                           | Т                                      | relogin: <b>P71!</b><br>SR: <b>110 - Bria</b> r<br>B: |                      |
| Immediately Packed on Ice N Y  | Two Day Three Da                    | ALTONOMY STATE OF A | y (Rad Omy)      |                          |              |                 | of          | 1                | PAHS                 | er P              |            |           |           |   |          |                           | S                                      | hipped Via:   |                      |
| A CONTRACTOR OF THE CONTRACTOR | Comp/Grab                           | Matrix *            | Depth            | Date                     |              | Time            | Cnt         | S                | -                    | wat               |            |           |           |   |          |                           |  | Remarks   | Sample # (lab only)  |
| SAM-DU-WEST-1  | COMP                                | SS                  |                  | 4/25/1                   | 7            | 1600            | 1           |                  | X                    |                   |            | E .       |           |   |          |                           |  |   | -02                  |
| SAM-DU-SD-1  | COMP                                | SS                  |                  | 4/25                     | D            | 11.00           |             |                  | X                    |                   |            |           | 7         |   |          |                           |  |   | -03                  |
| SAM-DI-WEST-2  | COMP                                | SS                  | A SPECIAL STATES | 4/24                     | 9            | 1147            | - /         |                  | X                    |                   |            |           |           |   |          |                           |  |   | 1-04                 |
| SAM-DU-WEST-3  | COMP                                | SS                  |                  | 4/24/1                   | 9            | 1402            | -           | - worth distance | X                    |                   |            |           | 100 C     |   |          |                           |  |   | -05                  |
| SAM-DU-NDETH-1   | comp                                | SS                  |                  | 4/27                     | 19           | 1702            | 1           | 12000 0000       | X                    | 100               |            |           |           |   |          |                           |  |   | -06                  |
| SAM-DU-NDETH-1-RB  | DOMP                                | 58/1                | 1                | 4/27/1                   | 9            | 1635            | 1           | and the same     | constant<br>constant | X                 | 10/10/10   |           |           |   |          |                           |  |   |                      |
| SAM- DU-WBJ-3PB  | COMP                                | 55                  |                  | 10/24/1                  | 9            | 1118            | 6           | 7                |                      | X                 |            |           |           |   | - 1- A-1 |                           |  |   | -07                  |
| Shirt box 423. 3 FD  | H300 - 1000                         | GW                  |                  |                          |              |                 |             |                  |                      |                   |            |           | -         |   | -        |                           |  |   |                      |
|  |                                     | GW                  |                  |                          |              |                 |             |                  |                      |                   |            |           |           |   |          |                           | ***                                    |   |                      |
|  | 7 2                                 | GW                  |                  |                          |              |                 |             |                  |                      |                   |            |           | 1         | Statistics.   |          |                           | Camp                                   | le Receipt  | Checklist            |
| * Matrix:<br>SS - Soil AIR - Air F - Filter<br>GW - Groundwater B - Bioassay   | Remarks:                            | and the second      |                  |                          |              |                 |             |                  |                      |                   |            | рН        |           | mp  |          | COC S<br>Bottl            | eal Pr<br>igned/<br>es arr             | esent/Intac<br>Accurate:<br>ive intact:               | t: NP Zy -           |
| GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water OT - Other W WATEL Samples retur   |                                     | rned via:           | ourier           |                          | Tr           | racking# 4      | 79          | 4                | 8                    | 840               | Flow Other |           | Suffi     | Correct bottles used: Sufficient volume sent:  If Applicable  VOA Zero Headspace: Preservation Correct/Checked:  Y  Y |          |                           |  |   |                      |
| Relinquished by : (Signature)  |                                     | Date;               | A CONTRACTOR     | Time:                    | 2012/09/2016 | eceived by: (Si | gnatur      | e)               | 3/                   | 4 6               | Tri        | p Blank R | eceived:  | HCL7  | MeoH     |                           |  |   | 0.5 mR/hr            |
| Relinquished by : (Signature)  | utr                                 | U/28                | 3/19             | 1030                     |              | eceived by: (Si | gnatur      | e)               |                      |                   | Te         | mp: A3i   | IF°C E    | TBR<br>Bottles Rec  | eived:   | Section 2015              | -                                      |   | Login: Date/Time     |
| Relinquished by : (Signature)  |                                     | Date:               |                  | Time:                    | R            | eceived for lal | b by: (S    | ispat            | ure)                 |                   |            | .5±0:     |           | Time:   | K        | Hold:                     |  |   | Condition<br>NCF / Ø |

## APPENDIX F – QUALITY CONTROL REVIEW DATA

## DATA REVIEW, VERIFICATION, & VALIDATION REPORT

### 1. INTRODUCTION

| General Project Information |   |                             |          |  |  |  |
|-----------------------------|---|-----------------------------|----------|--|--|--|
| Project Name:               | Stimson Atlas Mill  | Date Validated:             | 7/29/19  |  |  |  |
| Tetra Tech Project Number:  | 102-RED-T38956  | Data Validated By:          | B. Craig |  |  |  |
| Sample Start and End Dates: | 6/24-26/2019  | Laboratory Name:            | SVL      |  |  |  |
| Sample Matrix:              | Solid, Soil, Sediment, & Rinsate  | Laboratory Project ID#:     | X9F0660  |  |  |  |
| Analytical Parameters:      | Metals (total) by EPA 6010D. Mercury by EPA 7471B. Percent solids (moisture)            |                             |          |  |  |  |
| Name & Date of Approved     | Quality Assurance Project Plan, Limited Site Investigation, Stimson Atlas Mill Property |                             |          |  |  |  |
| SAP, QAPP, Work Plan, Etc.  | 3074 West Seltice Way, CdA, Idah  | o 83814. Dated June 5, 2019 | 9.       |  |  |  |

### 2. LABORATORY METHODS AND SAMPLE HANDLING

Validation Criteria Used:

- X USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Methods Data Review. Dated January 2017.
- X Quality Assurance Project Plan, Limited Site Investigation, Stimson Atlas Mill Property 3074 West Seltice Way, CdA, Idaho 83814. Dated June 5, 2019.

## 3. LIST OF SAMPLES VALIDATED IN THIS REPORT

List all samples in the sample delivery group that were validated in this report.

| Validated Samples             |                          |   |  |  |  |  |
|-------------------------------|--------------------------|---|--|--|--|--|
| Field Sample ID#              | Laboratory Sample<br>ID# | Sample Type<br>(Solid, Soil, Sediment, Duplicate,<br>Rinsate, etc.) |  |  |  |  |
| SAM-SHORE-1 (0.5)             | X9F0660-01               | Sediment  |  |  |  |  |
| SAM-SHORE-2 (0.5)             | X9F0660-02               | Sediment  |  |  |  |  |
| SAM-SHORE-3 (0.5)             | X9F0660-03               | Sediment  |  |  |  |  |
| SAM-SHORE-4 (0.5)             | X9F0660-04               | Sediment  |  |  |  |  |
| SAM-SHORE-5 (0.5)             | X9F0660-05               | Sediment  |  |  |  |  |
| SAM-SHORE-6 (0.5)             | X9F0660-06               | Sediment  |  |  |  |  |
| SAM-SHORE-7 (0.5)             | X9F0660-07               | Sediment  |  |  |  |  |
| SAM-SHORE-8 (0.5)             | X9F0660-08               | Sediment  |  |  |  |  |
| SAM-SHORE-9 (0.5)             | X9F0660-09               | Sediment  |  |  |  |  |
| SAM-SHORE-10 (0.5)            | X9F0660-10               | Sediment  |  |  |  |  |
| SAM-SHORE-SD-1                | X9F0660-11               | Field Duplicate   |  |  |  |  |
| SAM-DU-EAST-1-RB              | X9F0660-12               | Rinsate Blank   |  |  |  |  |
| SAM-SHORE-10 (RB)             | X9F0660-13               | Rinsate Blank   |  |  |  |  |
| SAM-DU-SD-1                   | X9F0660-14               | Field Duplicate   |  |  |  |  |
| SAM-DU-SD-1 (DUP)             | X9F0660-15               | Field Duplicate   |  |  |  |  |
| SAM-DU EAST-2                 | X9F0660-16               | Soil  |  |  |  |  |
| SAM-DU-EAST-3                 | X9F0660-17               | Soil  |  |  |  |  |
| SAM-DU-WEST-1                 | X9F0660-18               | Soil  |  |  |  |  |
| SAM-DU-EAST-1                 | X9F0660-19               | Soil  |  |  |  |  |
| SAM-DU-WEST-2                 | X9F0660-20               | Soil  |  |  |  |  |
| UNPROCESSED SILICA SAND BLANK | X9F0660-21               | Solid   |  |  |  |  |
| PROCESSED SILICA SAND BLANK   | X9F0660-22               | Solid   |  |  |  |  |



### 4. FIELD COMPLIANCE WITH PROJECT REQUIREMENTS

Were all the required samples collected as specified in the SAP/QAPP, and field and analytical methods? Discuss.

Yes, all samples were collected as per the QAPP and field and analytical methods with the exception of the deviations listed in Section 12:

### 5. DATA QUALIFIERS

|                | Data Evaluation Qualifiers   |
|----------------|--|
| Data Qualifier | Qualifier Description (as per USEPA 2008 CLP Guidelines)   |
| U              | The analyte was analyzed for but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method.   |
| J              | The analyte was positively identified, and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL). |
| J+             | The result is an estimated quantity that may be biased high due to associated laboratory QA/QC result being outside control limits.  |
| J-             | The result is an estimated quantity that may be biased low due to associated laboratory QA/QC result being outside control limits.   |
| UJ             | The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.  |
| R              | The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.  |

Laboratory-specific data qualifiers are provided in each individual laboratory analytical report.

# 6. LABORATORY NARRATIVE, CHAIN-OF-CUSTODY, AND SAMPLE RECEIPT CHECKLIST

Was a laboratory narrative provided and were there any non-conformance issues with the analytical data? Identify and discuss.

The laboratory provided a general narrative that stated all QC met criteria unless otherwise noted. Sections 7 and 8 discuss any required qualifications.

Were any issues or discrepancies noted on the Sample Receipt Checklist (a.k.a. Non-Conformance Form)? Identify and discuss.

No non-conformance issues were noted.

Were sample Chain-of-Custody (CoC) forms complete? Describe.

Yes. All required areas of the CoC were completed and the forms signed by field and laboratory personnel.

Were the requested analytical methods in compliance with project requirements (i.e., QAPP, SAP, etc.)? Explain and, if not in compliance, discuss how this affects the data.

Yes. The samples were analyzed under for metals as specified in the QAPP.

Were samples received in good condition within method specified requirements? Explain any exceptions and how sample conditions may affect the results.

Yes, no deviations were noted by the laboratory.

### 7. LABORATORY COMPLIANCE WITH PROJECT REQUIREMENTS

Were samples analyzed within method-specified or technical holding times? Explain any exceptions and how this may affect the results.

Yes, all samples were collected on June 24 through 26, 2019, and prepared and analyzed between July 11 and 16, 2019.



Does the laboratory report include all constituents requested to be analyzed on the CoC or under the QAPP, SAP, or other applicable document? Explain.

Yes. All samples were analyzed for the required analytical parameters.

Were reported units appropriate for the associated sample matrix/matrices and method(s) of analyses? Explain.

Yes. The samples were analyzed by the methods specified in the QAPP and units were reported as mg/kg (ppm) for comparison with corresponding standards. Solid samples (solids, soil, sediment) were analyzed on an as received, wet-weight basis.

Rinsate blank samples were reported to mg/L (ppm).

Were detection limits reported by the laboratory in accordance with the project requirements? Discuss and list.

MDLs and RLs met project requirements. None of the samples required dilution.

Results qualified by the laboratory based on the laboratory reporting limit. Discuss, as needed.

Results less than the reporting limit (RL) were not qualified by the laboratory or provided as an estimated quantity.

### 8. LABORATORY QA/QC

### 8a. Continuing Calibration Verification (CCV) Standard

Was there indication from the laboratory that the initial or CCV results were within acceptable limits? Explain and include discussion on how any out-of-control results affect the accuracy of the data.

The laboratory provided a narrative that stated that all QC met criteria unless otherwise noted. There were no notations regarding non-compliance with the CCV standard and none of the notations or qualifiers in the report pertained to the CCV standard being out of compliance.

### 8b. Laboratory Control Samples (LCSs)

Was the reference material used for the laboratory control standard (LCSs) the correct matrix and concentration? Explain and include a discussion on how any matrix differences affects the accuracy of the data.

Yes, LCSs were performed on each sample matrix; solid LCSs for soil, sediment and solids and aqueous LCSs for rinsate blank samples.

Was the total number of LCSs analyzed equal to at least 5% (1 in 20) of the total number of samples, or analyzed as required by the method? Explain.

Yes. At least one LCS (1 per 17 natural samples) was analyzed for each analytical group for the samples in this SDG at a frequency of greater than 5%.

Were LCSs prepared the same way as the associated samples? Explain and include a discussion of how any deviations affect the accuracy of the data.

Yes, the samples were prepared the same way as the associated samples.

Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within laboratory QC limits? Explain and discuss on how any out-of-control results affect the accuracy of the data.

All LCS/LCSD RPDs were within control limits. No qualifications were required.

### 8c. Laboratory Blank Samples

Was the total number of method blank samples prepared equal to at least 5% (1 in 20) of the total number of samples, or analyzed as required by the method? Explain.

Yes. At least one method blank was analyzed for each analytical group for the samples in this SDG.

In addition, SVL analyzed two sample preparation blank samples UNPROCESSED SILICA SAND BLANK and PROCESSED SILICA SAND BLANK

Were laboratory blank samples free of analyte contamination? Explain.

All method blank results were not detected above the method reporting limit (MRL).



Both sample preparation blanks results were also not detected above the MRL.

### 8d. Matrix Spike / Matrix Spike Duplicates

### What project-specific samples were used to prepare the MS and MSD samples?

Matrix spike/matrix spike duplicate (MS/MSD) laboratory QC samples were prepared from SAM-DU-EAST-3 and from SAM-SHORE-5 (0.5). MS/MSD total recoverable metals samples were prepared from another non-Project-specific set of samples. In addition, mercury analysis under EPA method 74770A was prepared from a non-Project-specific sample batch (Batch X927039).

Was the total number of MS samples prepared equal to at least 5% (1 in 20) of the total number of samples, or analyzed as required by the method? Explain.

Yes. At least one MS/MSD was analyzed for each parameter and sample media/sample methodology, as applicable.

Were MS percent recoveries and all MS/MSD relative percent differences (RPDs) within data validation or laboratory QC limits? Explain and include a discussion on how this affects the data.

All %Rs and RPDs were within control limits for the MS/MSD samples analyzed.

### 8e. Laboratory Duplicates

Were laboratory duplicate RPD values within laboratory-specified limits? Explain and include discussion of how this affects the data.

One laboratory duplicate was analyzed per the ISM sample methodology. SAM-DU-SD-1 (DUP) is presumably a laboratory duplicate of the field duplicate sample SAM-DU-SD-1.

| Analytical<br>Parameter | SAM-DU-SD-1 | SAM-DU-SD-1<br>(DUP)<br>Result | RPD<br>% |
|-------------------------|-------------|--------------------------------|----------|
| Arsenic                 | 28.2        | 26.6                           | 6        |
| Barium                  | 136         | 137                            | 1        |
| Cadmium                 | 1.40        | 0.62                           | 77       |
| Chromium                | 22.2        | 22.5                           | 1        |
| Lead                    | 32.4        | 32.6                           | 1        |
| Selenium                | <4.0        | <4.0                           | N/A      |
| Silver                  | <1.00       | <1.00                          | N/A      |
| Mercury                 | <0.033      | < 0.033                        | N/A      |

The RPD for the laboratory duplicate was within acceptance criteria (50%) with the exception of cadmium (77%) which was outside of the control limit. Because both the natural and its laboratory duplicate had detectable concentrations greater than 5x> the CRQL (MRL) then the cadmium result in the natural sample SAM-DU-SD-1 should be flagged J -as estimated.

### 8f. Surrogates

Were surrogate recoveries within laboratory QC limits? Explain and include discussion on how this affects the data.

Surrogate sample results were not reported by the laboratory and are not typically conducted on metals analysis.

### 9. FIELD QA/QC

## 9a. Trip and Field Blanks

Were the number of equipment, trip, or field blanks collected equal to at least 10% of the total number of samples, or as required by the project requirements, QAPP, or SAP? Explain and include how this affects the data.

No trip blanks were submitted for analysis.

Two rinsate blanks were collected from rinsing water through the non-disposable field sampling equipment and labeled SAM-SHORE-10 (RB) and SAM-DU-EAST-1-RB). Samples were analyzed for the same suite of metals as its associated sampling media (sediment- cadmium, lead, and zinc and soil- arsenic, barium, cadmium, chromium, lead, selenium, and silver).



Were the trip blank, field blank, and/or equipment blank samples free of analyte contamination? Explain and include discussion of how this affects the data.

No constituents were detected in the SAM-SHORE-10 (RB) rinsate blank associated with the sediment samples; however, several constituents were detected in the rinsate blank associated with the ISM area (SAM-DU-EAST-1-RB).

| Blank Analyte | Sample           | Result      |
|---------------|------------------|-------------|
| Barium        | SAM-DU-EAST-1-RB | 0.0050 mg/L |
| Lead          |                  | 0.0204 mg/L |

Concentrations observed in the rinsate blank were converted to mg/kg using the following equation:

$$Blank \; Result \; in \frac{mg}{kg} = \frac{\left(Blank \; Result \; in \frac{mg}{L} \; x \; Initial \; Sample \; Volume \; in \; mL\right)}{Initial \; Sample \; Weight \; in \; g} \; x \; \frac{1}{1000 \; mL} \; x \; \frac{1000 \; g}{1 \; kg}$$

Where:

Blank Result in mg/L = Blank result

Initial Sample Volume in mg/L = Sample volume used by the laboratory to run sample Initial Sample Weight in g = Sample weight used by the laboratory for soil sample run  $1/1000 \ mg/L * 1000 \ g/1 \ kg = Conversion factor from <math>mg/L$  to mg/kg

The laboratory provided the following information for the rinsate blank and X9F0660 samples. Based on the data provided, Tetra Tech used 1 g weight for EPA 6010D and 100 mL sample volume for soils metal digestion to provide an equivalent concentration rinsate blank results in mg/L to mg/kg.

| SOIL EQUIPMENT RINSATE BLANK RESULTS |               |              |  |  |  |  |
|--------------------------------------|---------------|--------------|--|--|--|--|
| Original Blank Converted             |               |              |  |  |  |  |
| Analyte                              | Sample Result | Blank Result |  |  |  |  |
|                                      | (mg/L)        | (mg/kg)      |  |  |  |  |
| Barium                               | 0.0050 mg/L   | 0.5 mg/kg    |  |  |  |  |
| Lead                                 | 0.0204 mg/L   | 2.04 mg/kg   |  |  |  |  |

All barium and lead results in the samples collected from the ISM methodology were greater than 10x the converted blank results from SAM-DU-EAST-1-RB; therefore, no qualifications were made.

### 9b. Field Duplicates

Were the field duplicates collected as required by the project requirements, QAPP or SAP? Include a table of duplicate samples. Explain and include discussion of how this affects the data.

Yes, one duplicate was collected for each sample matrix/sample method at a ratio of 5% (1 in 20 natural samples) or greater. Field duplicate SAM-DU-SD-1 was collected from the ISM sample SAM-DU-EAST-2, and SAM-SHORE-SD-1 was collected from shoreline sample SAM-SHORE-7 (0.5). A comparison of results from the natural sample and its duplicate are provided in the following table.

| ISM SAMPLES |               |             |     |  |  |  |  |
|-------------|---------------|-------------|-----|--|--|--|--|
| Analytical  | SAM-DU-EAST-2 | SAM-DU-SD-1 | RPD |  |  |  |  |
| Parameter   | Result        | Result      | %   |  |  |  |  |
| Arsenic     | 24.8          | 28.2        | 13  |  |  |  |  |
| Barium      | 134           | 136         | 1   |  |  |  |  |
| Cadmium     | <0.40         | 1.40J       | 111 |  |  |  |  |
| Chromium    | 20.7          | 22.2        | 7   |  |  |  |  |
| Lead        | 29.9          | 32.4        | 8   |  |  |  |  |
| Selenium    | <4.0          | <4.0        | N/A |  |  |  |  |
| Silver      | <1.00         | <1.00       | N/A |  |  |  |  |
| Mercury     | < 0.033       | < 0.033     | N/A |  |  |  |  |

| SHORE SAMPLES                                   |        |        |     |  |  |  |
|---|--------|--------|-----|--|--|--|
| Analytical SAM-SHORE-7 (0.5) SAM-SHORE-SD-1 RPD |        |        |     |  |  |  |
| Parameter                                       | Result | Result | %   |  |  |  |
| Cadmium   | <0.40  | <0.40  | N/A |  |  |  |
| Lead  | 6.9    | 7.6    | 10  |  |  |  |
| Zinc  | 64.2   | 81.5   | 24  |  |  |  |

Were field duplicate RPD values within data validation QC limits? Explain and include discuss of how this affects the data.

All RPDs were within the project control limit of 50% as specified in the QAPP with the exception of cadmium in the ISM metals duplicate analysis between SAM-DU-EAST-2 and its field duplicate SAM-DU-SD-1. Because the natural sample or duplicate cadmium sample results were <5x the CRQL (including non-detects) and the absolute difference between the sample and the duplicate where > CRQL, then the non-detection cadmium sample results for the ISM DU-EAST area should be qualified as UJ- the analyte was analyzed for but was not detected; the reported quantitation limit is approximate and may be inaccurate or imprecise.

| Sample  | Analytical<br>Parameter | Result<br>mg/L | Qualifier | Reason  |
|---|-------------------------|----------------|-----------|---|
| SAM-DU-EAST-2<br>SAM-DU-EAST-3<br>SAM-DU-EAST-1 | Cadmium                 | <0.040         | UJ        | Based on field duplicate SAM-DU-SD-1 of ISM soil sample SAM-DU-EAST-2: RPD outside of control limits AND natural sample or duplicate sample results were <5x the CRQL (including non-detects) and the absolute difference between the sample and the duplicate> CRQL, then all of the non-detection natural sample cadmium results from the SAM-DU-EAST sample area should be qualified as UJ- the analyte was analyzed for but was not detected; the reported quantitation limit is approximate and may be inaccurate or imprecise. In addition, all detection for natural samples from SAM-DU-EAST area should be flagged a J- estimated. |

No other qualifications were made.

### 10.OTHER

Did EPA or other entities collect split samples? If so, explain how those results compare to the natural sample.

No split samples were collected.

Other comments or observations.

None.

### 11. SUMMARY OF QUALIFIED DATA

The following data was qualified during this data validation effort.

| Sample      | Analytical<br>Parameter | Result<br>mg/kg | Qualifier | Reason  |
|-------------|-------------------------|-----------------|-----------|---|
| SAM-DU-SD-1 | Cadmium                 | 1.40            | J         | Based on laboratory duplicate SAM-DU-SD-1 (DUP) of field duplicate sample SAM-DU-SD-1: RPD outside of control limits AND laboratory duplicate and its natural sample had detectable concentrations greater than 5x> the CRQL (MRL), so the cadmium result in the "natural" sample SAM-DU-SD-1 should be flagged J -as estimated |



| Sample        | Analytical<br>Parameter | Result<br>mg/kg | Qualifier | Reason   |
|---------------|-------------------------|-----------------|-----------|--|
| SAM-DU-EAST-2 | Cadmium                 | <0.040          | UJ        | Based on field duplicate SAM-DU-SD-1 of ISM soil sample SAM-DU-EAST-2: RPD outside of control limits AND natural sample or duplicate sample results were <5x the CRQL (including non-detects) and the absolute difference between the sample and the duplicate> CRQL, then all of the non-detection natural sample cadmium results from the SAM-DU-EAST sample area should be qualified as UJ- the analyte was analyzed for but was not detected; the reported quantitation limit is approximate and may be inaccurate or imprecise. |
| SAM-DU-EAST-3 | Cadmium                 | <0.040          | UJ        | Based on field duplicate SAM-DU-SD-1 of ISM soil sample SAM-DU-EAST-2: RPD outside of control limits AND natural sample or duplicate sample results were <5x the CRQL (including non-detects) and the absolute difference between the sample and the duplicate> CRQL, then all of the non-detection natural sample cadmium results from the SAM-DU-EAST sample area should be qualified as UJ- the analyte was analyzed for but was not detected; the reported quantitation limit is approximate and may be inaccurate or imprecise. |
| SAM-DU-EAST-1 | Cadmium                 | <0.040          | UJ        | Based on field duplicate SAM-DU-SD-1 of ISM soil sample SAM-DU-EAST-2: RPD outside of control limits AND natural sample or duplicate sample results were <5x the CRQL (including non-detects) and the absolute difference between the sample and the duplicate> CRQL, then all of the non-detection natural sample cadmium results from the SAM-DU-EAST sample area should be qualified as UJ- the analyte was analyzed for but was not detected; the reported quantitation limit is approximate and may be inaccurate or imprecise. |

### 12. DEVIATIONS FROM THE QAPP

### List and discuss deviations from the QAPP identified during this review.

- The QAPP specified the preparation of one MS/MSD sample per media type from Project-specific samples. Project-specific samples for MS/MSD preparation were to be listed on the COC by field sampling personnel. They were not noted on the COC in the Final laboratory report provided. Upon later consultation with field sampling personnel, it was determined that MS/MSDs were prepared for the IMS metals sample area from SAM-DU-EAST-3 and for the shore area from SAM-SHORE-5 (0.5).
- The MS/MSD total recoverable metals samples were prepared from another a non-Project-specific sample; calling into question their comparability with Project total recoverable metals sample data.
- SVL laboratories prepared and analyzed two internal sample preparation blanks UNPROCESSED SILICA SAND BLANK and PROCESSED SILICA SAND BLANK. This procedure was not specifically called out in the QAPP and the results are listed as client submitted samples on laboratory report sample summary sheet.

These QAPP deviations resulted in no effects on the laboratory data as the QC review was able to determine which Project-specific samples were used for MS/MSD preparation and all %Recoveries and RPDs were within control limits for the MS/MSD samples analyzed. No data were affected or qualified. According to SVL project manager Dianne Gardner, EPA 6010D metals sample preparation blank QC analyses are a common laboratory procedure. No qualifications were made.



### 13. ACCEPTABILITY AND USABILITY OF THE DATA

A review of the chain of custody forms and laboratory case narratives indicate that proper chain of custody was maintained, samples were received intact and in good condition, cooler temperatures were within control limits, and samples were preserved as required. Laboratory quality control (QC) sample analyses performed for each analytical method are summarized as part of the laboratory analytical package.

The following Stage 2A verification and manual validation checks were performed as part of this project:

- 1. Requested methods were performed;
- 2. Method dates for handling, preparation and analysis were present, as appropriate;
- Sample-related QC data and QC acceptance criteria were provided in the laboratory report and linked to the project samples including the field QC samples (rinsate blanks);
- 4. Requested spike analytes were added, as appropriate;
- 5. Sample holding times were evaluated;
- 6. Frequency of QC samples was checked and considered appropriate; and
- 7. Sample results were evaluated by comparing holding times and sample-related QC data to EPA and project data validation guidelines.

### Precision

Precision is the measure of agreement among individual measurements of the same property under similar conditions. Precision for this project has been expressed in terms of the relative percent difference (RPD) between two samples. Duplicate samples can be evaluated quantitatively for precision only when contaminants are detected in both the sample and the duplicate. Duplicates with RPDs within the control limits indicate adequate sampling practices and/or good analytical precision. Duplicates with RPDs outside the control limits may result from inappropriate sampling procedures, matrix interferences, or non-homogeneity of the sample matrix. In addition, poor precision can be attributed to deviations from the analytical methodology or to poor reproducibility of target analyte concentrations at or near the detection limits.

Precision was evaluated for this project by comparing field duplicate results, LCS/LCSD, and MS/MSD RPD results.

Overall the level of precision for the Project sampling meets QAPP objectives for all constituents analyzed. The only data qualified were the cadmium concentrations noted by the laboratory as non-detections from the ISM methodology samples. These were further qualified as UJ based on the QC comparison between the natural sample and field duplicate RPD% from this sample area.

### Accuracy

The assessment of accuracy is evaluated by comparing the percent recoveries (%R) computed from the known concentration of analyte spikes and their recovered concentration versus the analytical method acceptance criteria. Spike recoveries provide an indication of bias, where the reported data may either overestimate or underestimate the actual concentration of detected compounds and/or the detection limits.

Accuracy was assessed using LCS/LCSD and MS/MSD recovery data for Project samples.

Overall the level of accuracy for the Project sampling meets QAPP objectives for all constituents analyzed, and there were no data qualified due to QC accuracy issues.

### Representativeness

Representativeness of the environmental sample analytical data was assessed by evaluating holding times, trip or field blanks, and laboratory method blank results.

Holding Times. All samples were analyzed within the method-required preparation and analytical holding times.



- Equipment rinsate blanks either did not have any detected analytes or did not require qualification.
- Method Blanks. All method blanks were free of contamination or did not require qualification.

### Comparability

All samples were analyzed using appropriate EPA analytical methods. Sample results were reported in appropriate units. The analytical methods are considered acceptable for generating analytical data for the purpose of this project.

### Completeness

Completeness is the quantitative measure of the amount of data obtained from a measurement process compared with the amount expected to be obtained under the conditions of measurement. The overall data quality objective for completeness is >80%; completeness for the project has been met.

### Sensitivity

Reporting limits and method detection limits were below the screening levels. If a compound was detected below the reporting limit, the laboratory qualified the value as non-detection. The sensitivity of the reporting limit for cadmium from the ISM sample methodology area is considered is approximate and may be inaccurate or imprecise based on review of the field duplicate and its natural sample.

The laboratory-assigned notations/qualifiers are often for informational purposes. The laboratory-assigned notations/qualifiers do not necessarily indicate that the results should be considered estimated but may help in evaluating whether results should be considered estimated through this data validation effort. However, exceptions include those samples that were specified by the laboratory to be estimated due to issues or concerns identified within the data package.

### Summary

Overall the analytical data are considered acceptable and have met the quality control and quality assurance objectives and goals of this project. No data were rejected. All results, as qualified, are considered usable for meeting project objectives. Qualifications made during this project are discussed above.

## DATA REVIEW, VERIFICATION, & VALIDATION REPORT

### 1. INTRODUCTION

| General Project Information                              |   |                    |          |  |  |
|--|---|--------------------|----------|--|--|
| Project Name: Stimson Atlas Mill Date Validated: 7/30/19 |   |                    |          |  |  |
| Tetra Tech Project Number:                               | 102-RED-T38956  | Data Validated By: | B. Craig |  |  |
| Sample Start and End Dates:                              | 6/26-27/2019 Laboratory Name: SVL   |                    |          |  |  |
| Sample Matrix:   | Solid, Soil, Sediment, & Rinsate Laboratory Project ID#: X9F0708                        |                    |          |  |  |
| Analytical Parameters:                                   | Metals (total) by EPA 6010D. Mercury by EPA 7471B. Percent solids (moisture)            |                    |          |  |  |
| Name & Date of Approved                                  | Quality Assurance Project Plan, Limited Site Investigation, Stimson Atlas Mill Property |                    |          |  |  |
| SAP, QAPP, Work Plan, Etc.                               | 3074 West Seltice Way, CdA, Idaho 83814. Dated June 5, 2019.                            |                    |          |  |  |

### 2. LABORATORY METHODS AND SAMPLE HANDLING

Validation Criteria Used:

- X USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Methods Data Review. Dated January 2017.
- X Quality Assurance Project Plan, Limited Site Investigation, Stimson Atlas Mill Property 3074 West Seltice Way, CdA, Idaho 83814. Dated June 5, 2019.

## 3. LIST OF SAMPLES VALIDATED IN THIS REPORT

List all samples in the sample delivery group that were validated in this report.

| Validated Samples     |                          |   |  |
|-----------------------|--------------------------|---|--|
| Field Sample ID#      | Laboratory Sample<br>ID# | Sample Type<br>(Solid, Soil, Sediment, Duplicate,<br>Rinsate, etc.) |  |
| SAM-BERM-1 (0-3)      | X9F0708-01               | Soil  |  |
| SAM-BERM-1 (9-12)     | X9F0708-02               | Soil  |  |
| SAM-BERM-2 (0-3)      | X9F0708-03               | Soil  |  |
| SAM-BERM-2 (7.5-10)   | X9F0708-04               | Soil  |  |
| SAM-BERM-3 (0-3)      | X9F0708-05               | Soil  |  |
| SAM-BERM-3 (5.5-8)    | X9F0708-06               | Soil  |  |
| SAM-BERM-4 (0-3.2)    | X9F0708-07               | Soil  |  |
| SAM-BERM-4 (8-11)     | X9F0708-08               | Soil  |  |
| SAM-BERM-5 (0-3)      | X9F0708-09               | Soil  |  |
| SAM-BERM-5 (5-8)      | X9F0708-10               | Soil  |  |
| SAM-BERM-6 (0-3)      | X9F0708-11               | Soil  |  |
| SAM-BERM-6 (8.5-11.5) | X9F0708-12               | Soil  |  |
| SAM-BERM-7 (0-3)      | X9F0708-13               | Soil  |  |
| SAM-BERM-7 (11-14)    | X9F0708-14               | Soil  |  |
| SAM-BERM-8 (0-3)      | X9F0708-15               | Soil  |  |
| SAM-BERM-8 (13-16)    | X9F0708-16               | Soil  |  |
| SAM-BERM-9 (0-3)      | X9F0708-17               | Soil  |  |
| SAM-BERM-9 (12.5-13)  | X9F0708-18               | Soil  |  |
| SAM-BERM-10 (0-3)     | X9F0708-19               | Soil  |  |
| SAM-BERM-10 (9-12)    | X9F0708-20               | Soil  |  |
| SAM-BERM-SD-1         | X9F0708-21               | Soil  |  |
| SAM-DU-WEST-3         | X9F0708-22               | Soil  |  |
| SAM-DU-NORTH-1        | X9F0708-23               | Soil  |  |
| SAM-DU-WEST-3-RB      | X9F0708-24               | Rinsate   |  |
| SAM-DU-NORTH-1-RB     | X9F0708-25               | Rinsate   |  |
| SAM-BERM-1 (9-12) RB  | X9F0708-26               | Rinsate   |  |



### 4. FIELD COMPLIANCE WITH PROJECT REQUIREMENTS

Were all the required samples collected as specified in the SAP/QAPP, and field and analytical methods? Discuss.

Yes, all samples were collected as per the QAPP and field and analytical methods with the exception of the deviations listed in Section 12:

### 5. DATA QUALIFIERS

|                | Data Evaluation Qualifiers   |  |  |
|----------------|--|--|--|
| Data Qualifier | Qualifier Description (as per USEPA 2008 CLP Guidelines)   |  |  |
| U              | The analyte was analyzed for but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method.   |  |  |
| J              | The analyte was positively identified, and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL). |  |  |
| J+             | The result is an estimated quantity that may be biased high due to associated laboratory QA/QC result being outside control limits.  |  |  |
| J-             | The result is an estimated quantity that may be biased low due to associated laboratory QA/QC result being outside control limits.   |  |  |
| UJ             | The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.  |  |  |
| R              | The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.  |  |  |

Laboratory-specific data qualifiers are provided in each individual laboratory analytical report.

# 6. LABORATORY NARRATIVE, CHAIN-OF-CUSTODY, AND SAMPLE RECEIPT CHECKLIST

Was a laboratory narrative provided and were there any non-conformance issues with the analytical data? Identify and discuss.

The laboratory provided a general narrative that stated all QC met criteria unless otherwise noted. Sections 7 and 8 discuss any required qualifications.

Were any issues or discrepancies noted on the Sample Receipt Checklist (a.k.a. Non-Conformance Form)? Identify and discuss.

No non-conformance issues were noted.

Were sample Chain-of-Custody (CoC) forms complete? Describe.

Yes. All required areas of the CoC were completed and the forms signed by field and laboratory personnel.

Were the requested analytical methods in compliance with project requirements (i.e., QAPP, SAP, etc.)? Explain and, if not in compliance, discuss how this affects the data.

Yes. The samples were analyzed under for metals as specified in the QAPP.

Were samples received in good condition within method specified requirements? Explain any exceptions and how sample conditions may affect the results.

Yes, no deviations were noted by the laboratory. The samples were hand delivered to the laboratory and the temperature blank was  $5^{\circ}$  Celsius (the QAPP specified temperature control was  $\leq 4^{\circ}$  celcius.

### 7. LABORATORY COMPLIANCE WITH PROJECT REQUIREMENTS

Were samples analyzed within method-specified or technical holding times? Explain any exceptions and how this may affect the results.

Yes, all samples were collected on June 26 and 27, 2019, and prepared and analyzed between July 16 and 17, 2019.



Does the laboratory report include all constituents requested to be analyzed on the CoC or under the QAPP, SAP, or other applicable document? Explain.

Yes. All samples were analyzed for the required analytical parameters.

Were reported units appropriate for the associated sample matrix/matrices and method(s) of analyses? Explain.

Yes. The samples were analyzed by the methods specified in the QAPP and units were reported as mg/kg (ppm) for comparison with corresponding standards. Solid samples (soil) were analyzed on an as received, wet-weight basis.

Rinsate blank samples were reported to mg/L (ppm).

Were detection limits reported by the laboratory in accordance with the project requirements? Discuss and list.

MDLs and RLs met project requirements. None of the samples required dilution.

Results qualified by the laboratory based on the laboratory reporting limit. Discuss, as needed.

Results less than the reporting limit (RL) were not qualified by the laboratory or provided as an estimated quantity.

### 8. LABORATORY QA/QC

### 8a. Continuing Calibration Verification (CCV) Standard

Was there indication from the laboratory that the initial or CCV results were within acceptable limits? Explain and include discussion on how any out-of-control results affect the accuracy of the data.

The laboratory provided a narrative that stated that all QC met criteria unless otherwise noted. There were no notations regarding non-compliance with the CCV standard and none of the notations or qualifiers in the report pertained to the CCV standard being out of compliance.

### 8b. Laboratory Control Samples (LCSs)

Was the reference material used for the laboratory control standard (LCSs) the correct matrix and concentration? Explain and include a discussion on how any matrix differences affects the accuracy of the data.

Yes, LCSs were performed on each sample matrix; solid LCSs for soil, sediment and solids and aqueous LCSs for rinsate blank samples.

Was the total number of LCSs analyzed equal to at least 5% (1 in 20) of the total number of samples, or analyzed as required by the method? Explain.

No. One LCS/LCSD sample pair was analyzed for 26 laboratory samples in this analytical group, at a frequency of approximately 4%.

Were LCSs prepared the same way as the associated samples? Explain and include a discussion of how any deviations affect the accuracy of the data.

Yes, the samples were prepared the same way as the associated samples.

Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within laboratory QC limits? Explain and discuss on how any out-of-control results affect the accuracy of the data.

All LCS/LCSD RPDs were within control limits No qualifications were required.

### 8c. Laboratory Blank Samples

Was the total number of method blank samples prepared equal to at least 5% (1 in 20) of the total number of samples, or analyzed as required by the method? Explain.

No. One method blank was analyzed for 26 laboratory samples in this analytical group, at a frequency of approximately 4%.

Were laboratory blank samples free of analyte contamination? Explain.

All method blank results were not detected above the method reporting limit (MRL).



### 8d. Matrix Spike / Matrix Spike Duplicates

### What project-specific samples were used to prepare the MS and MSD samples?

Matrix spike/matrix spike duplicate (MS/MSD) laboratory QC samples for total metals sample batch X928221 were prepared from SAM-BERM-5 (0-3) and for total metals sample batch X928222 from SAM-BERM-8 (0-3). MS/MSD total recoverable metals samples from batch X927072 were prepared from another non-Project-specific set of samples. In addition, mercury MS/MSD samples under EPA method 74770A methodology was prepared from sample batch X929046.

Was the total number of MS samples prepared equal to at least 5% (1 in 20) of the total number of samples, or analyzed as required by the method? Explain.

Yes. Two MS/MSD total metals sample pairs were analyzed for 23 soil laboratory samples in two digestion batches X928221 and X928222 at a frequency greater than 5%. One MS/MSD total recoverable metals pair was analyzed for three rinsate samples in batch X927072, a frequency of 33%.

Were MS percent recoveries and all MS/MSD relative percent differences (RPDs) within data validation or laboratory QC limits? Explain and include a discussion on how this affects the data.

All %Rs and RPDs were within control limits for the MS/MSD samples analyzed.

### 8e. Laboratory Duplicates

Were laboratory duplicate RPD values within laboratory-specified limits? Explain and include discussion of how this affects the data.

Two laboratory QC duplicates were run for percent solids, one under batch X928207 and one under batch X928208. No other laboratory duplicates were analyzed. It is unclear which natural samples were selected by the laboratory for duplicate analysis because natural samples were not identified in the laboratory report for the duplicate QC samples; however, based on matching the reported natural sample concentrations the duplicate for batch X928207 must have been from SA-BERM-5 (0-3) and batch X929208 from SAM-BERM-SD-1.

| Analytical<br>Parameter | Natural Sample | Duplicate<br>Result | RPD<br>% |
|-------------------------|----------------|---------------------|----------|
| % Solids                | 90.5           | 90.1                | 0.4      |
| % Solids                | 95.5           | 96.3                | 0.9      |

The RPD for the laboratory duplicate was within acceptance criteria, no qualifications were made for percent solids.

### 8f. Surrogates

Were surrogate recoveries within laboratory QC limits? Explain and include discussion on how this affects the data.

Surrogate sample results were not reported by the laboratory and are not typically conducted on metals analysis.

### 9. FIELD QA/QC

### 9a. Trip and Field Blanks

Were the number of equipment, trip, or field blanks collected equal to at least 10% of the total number of samples, or as required by the project requirements, QAPP, or SAP? Explain and include how this affects the data.

No trip blanks were submitted for analysis.

Yes, three rinsate blanks were collected from rinsing water through the non-disposable field sampling equipment and labeled SAM-DU-WEST-3-RB, SAM-DU-NORTH-1-RB, and SAM-BERM-1 (9-12) RB; at a frequency greater than 5%. Samples were analyzed for the same suite of metals as the soil sample but as total recoverable metals.

Were the trip blank, field blank, and/or equipment blank samples free of analyte contamination? Explain and include discussion of how this affects the data.

No. low concentrations of barium and lead were detected in rinsate sample SAM-DU-WEST-3-RB. No other constituents were detected in the sample or the other two rinsate blanks above their respective MRL.



| Blank Analyte | Sample           | Result      |
|---------------|------------------|-------------|
| Barium        | SAM-DU-WEST-3-RB | 0.0049 mg/L |
| Lead          |                  | 0.0507 mg/L |

Concentrations observed in the rinsate blank were converted to mg/kg using the following equation:

$$Blank \; Result \; in \frac{mg}{kg} = \frac{\left(Blank \; Result \; in \frac{mg}{L} \, x \; Initial \; Sample \; Volume \; in \; mL\right)}{Initial \; Sample \; Weight \; in \; g} \; x \; \frac{1}{1000 \; mL} \; x \; \frac{1000 \; g}{1 \; kg}$$

#### Where:

Blank Result in mg/L = Blank result Initial Sample Volume in mg/L = Sample volume used by the laboratory to run sample Initial Sample Weight in g = Sample weight used by the laboratory for soil sample run  $1/1000 \ mg/L * 1000 \ g/1 \ kg = Conversion factor from mg/L to mg/kg$ 

The laboratory provided the following information for the rinsate blank and X9F0708 samples. Based on the data provided, Tetra Tech used 1 g weight for EPA 6010D and 100 mL sample volume for soils metal digestion to provide an equivalent concentration rinsate blank results in mg/L to mg/kg.

| SOIL EQUIPMENT RINSATE BLANK RESULTS                                      |             |            |  |  |
|---|-------------|------------|--|--|
| Original Blank Sample Converted Blan Analyte Result Result (mg/kg) (mg/L) |             |            |  |  |
| Barium  | 0.0049 mg/L | 0.49 mg/kg |  |  |
| Lead  | 0.0507 mg/L | 5.07 mg/kg |  |  |

The barium result in sample SAM-DU-WEST-3 was greater than the MRL and greater than 10X the adjusted blank result, therefore no qualification was made. The lead result in SAM-DU-WEST was greater than the MRL but less than 10X the blank result; therefore, the lead result should be reported as the adjusted rinsate blank result (5.07 mg/kg) and qualified with J+ -the result is an estimated quantity that may be biased high due to associated laboratory QA/QC result being outside control limits.

### 9b. Field Duplicates

Were the field duplicates collected as required by the project requirements, QAPP or SAP? Include a table of duplicate samples. Explain and include discussion of how this affects the data.

Yes, one duplicate was collected for each sample matrix/sample method at a ratio of 5% (1 in 20 natural samples) or greater. Field duplicate SAM-BERM-SD-1 was collected from the berm sample location SAM-BERM-7 (11-14). Field duplicate SAM-DU-SD-1 was collected from the ISM sample area using SAM-DU-EAST-2 under a separate lab submittal (Report X9F0660) and analyzed under a separate data validation review report. A comparison of results from the natural sample SAM-BERM-7 (11-14) and its duplicate are provided in the following table.

| BERM SAMPLES            |                              |                         |          |  |
|-------------------------|------------------------------|-------------------------|----------|--|
| Analytical<br>Parameter | SAM-BERM-7 (11-14)<br>Result | SAM-BERM-SD-1<br>Result | RPD<br>% |  |
| Arsenic                 | 14.8                         | 11.2                    | 28       |  |
| Barium                  | 163                          | 131                     | 22       |  |
| Cadmium                 | <0.40                        | <0.4                    | N/A      |  |
| Chromium                | 20.7                         | 20.7                    | 0        |  |
| Lead                    | 17.5                         | 19.6                    | 11       |  |
| Selenium                | <4.0                         | <4.0                    | N/A      |  |
| Silver                  | <1.00                        | <1.00                   | N/A      |  |
| Mercury                 | < 0.033                      | < 0.033                 | N/A      |  |



Were field duplicate RPD values within data validation QC limits? Explain and include discuss of how this affects the data.

All RPDs were within the project control limit of 50% as specified in the QAPP. No sample results were qualified based on field duplicate to natural sample comparisons.

### 10.OTHER

Did EPA or other entities collect split samples? If so, explain how those results compare to the natural sample.

No split samples were collected.

Other comments or observations.

None.

### 11. SUMMARY OF QUALIFIED DATA

The following data was qualified during this data validation effort.

| Sample        | Analytical<br>Parameter | Result<br>mg/kg  | Qualifier | Reason   |
|---------------|-------------------------|--|-----------|--|
| SAM-DU-WEST-3 | Lead                    | Adjust result from 40.4 mg/kg to rinsate blank result 5.27 mg/kg and qualify as estimated. | J+        | Based on rinsate blank contamination and sample result comparison. Sample result ≥CRQL (i.e. MRL) but less than 10X rinsate blank result; report as rinsate blank result and qualify results as estimated high due to associated laboratory QA/QC result being outside control limits. |

### 12. DEVIATIONS FROM THE QAPP

### List and discuss deviations from the QAPP identified during this review.

The QAPP specified the preparation of one MS/MSD sample per media type from Project-specific samples. Project-specific samples for MS/MSD preparation were to be listed on the COC by field sampling personnel. They were not noted on the COC in the Final laboratory report provided. Upon later consultation with the laboratory project manager Dianne Gardner, it was determined that the MS/MSDs were prepared for total metals sample batch X928221 from SAM-BERM-5 (0-3) and for total metals sample batch X928222 from SAM-BERM-8 (0-3). Total recoverable metals samples MS/MSD samples from batch X927072 were prepared from another non-Project-specific set of samples. In addition, total metals mercury MS/MSD samples under EPA method 74770A methodology was prepared from sample batch X929046. No data were qualified based on the MS/MSD analyses from this report.

The sample preservation requirement (≤4° Celsius) specified in the QAPP was slightly exceeded when the samples were submitted to the laboratory (5° Celsius). The deviation will unlikely affect the laboratory data since the standard requirement is typically 4° C +/- 2.

### 13. ACCEPTABILITY AND USABILITY OF THE DATA

A review of the chain of custody forms and laboratory case narratives indicate that proper chain of custody was maintained, samples were received intact and in good condition, and were preserved as required; with the exception of the slightly elevated cooler temperature above control limits which should not affect the data acceptability/usability in any way. Laboratory quality control (QC) sample analyses performed for each analytical method are summarized as part of the laboratory analytical package.

The following Stage 2A verification and manual validation checks were performed as part of this project:

- 1. Requested methods were performed;
- 2. Method dates for handling, preparation and analysis were present, as appropriate;



- 3. Sample-related QC data and QC acceptance criteria were provided in the laboratory report and linked to the project samples including the field QC samples (rinsate blanks);
- 4. Requested spike analytes were added, as appropriate;
- Sample holding times were evaluated;
- 6. Frequency of QC samples was checked and considered appropriate; and
- Sample results were evaluated by comparing holding times and sample-related QC data to EPA and project data validation guidelines.

#### Precision

Precision is the measure of agreement among individual measurements of the same property under similar conditions. Precision for this project has been expressed in terms of the relative percent difference (RPD) between two samples. Duplicate samples can be evaluated quantitatively for precision only when contaminants are detected in both the sample and the duplicate. Duplicates with RPDs within the control limits indicate adequate sampling practices and/or good analytical precision. Duplicates with RPDs outside the control limits may result from inappropriate sampling procedures, matrix interferences, or non-homogeneity of the sample matrix. In addition, poor precision can be attributed to deviations from the analytical methodology or to poor reproducibility of target analyte concentrations at or near the detection limits.

Precision was evaluated for this project by comparing field duplicate results, LCS/LCSD, and MS/MSD RPD results.

Overall the level of precision for the Project sampling meets QAPP objectives for all constituents analyzed, and there were no data qualified due to QC precision issues.

### Accuracy

The assessment of accuracy is evaluated by comparing the percent recoveries (%R) computed from the known concentration of analyte spikes and their recovered concentration versus the analytical method acceptance criteria. Spike recoveries provide an indication of bias, where the reported data may either overestimate or underestimate the actual concentration of detected compounds and/or the detection limits.

Accuracy was assessed using LCS/LCSD and MS/MSD recovery data for Project samples.

Overall the level of accuracy for the Project sampling meets QAPP objectives for all constituents analyzed, and there were no data qualified due to QC accuracy issues.

### Representativeness

Representativeness of the environmental sample analytical data was assessed by evaluating holding times, trip or field blanks, and laboratory method blank results.

- Holding Times. All samples were analyzed within the method-required preparation and analytical holding times.
- One sample had its total lead result adjusted to match the equipment rinsate blank contaminant concentration based on comparison of the field sample concentration to the rinsate blank concentration. The sample result was adjusted to match the rinsate blank sample result adjusted for mg/kg and flagged as estimated J+. No other qualifications were made.
- Method Blanks. All method blanks were free of contamination or did not require qualification.

### Comparability

All samples were analyzed using appropriate EPA analytical methods. Sample results were reported in appropriate units. The analytical methods are considered acceptable for generating analytical data for the purpose of this project.

### **Completeness**

Completeness is the quantitative measure of the amount of data obtained from a measurement process compared with the amount expected to be obtained under the conditions of measurement. The overall data quality objective for completeness is >80%; completeness for the project has been met.

### Sensitivity

Reporting limits and method detection limits were below the screening levels. If a compound was detected below the reporting limit, the laboratory qualified the value as non-detection.

The laboratory-assigned notations/qualifiers are often for informational purposes. The laboratory-assigned notations/qualifiers do not necessarily indicate that the results should be considered estimated but may help in evaluating whether results should be considered estimated through this data validation effort. However, exceptions include those samples that were specified by the laboratory to be estimated due to issues or concerns identified within the data package.

### Summary

Overall the analytical data are considered acceptable and have met the quality control and quality assurance objectives and goals of this project. No data were rejected. All results, as qualified, are considered usable for meeting project objectives. Qualifications made during this project are discussed above.



## DATA REVIEW, VERIFICATION, & VALIDATION REPORT

### 1. INTRODUCTION

| General Project Information |   |                    |          |  |  |  |
|-----------------------------|---|--------------------|----------|--|--|--|
| Project Name:               | Project Name: Stimson Atlas Mill Date Validated: 7/25/19                                |                    |          |  |  |  |
| Tetra Tech Project Number:  | 102-RED-T38956  | Data Validated By: | B. Craig |  |  |  |
| Sample Start and End Dates: | 6/25-26/2019 Laboratory Name: Pace Analytical   |                    |          |  |  |  |
| Sample Matrix:              | Solids & Aqueous QC Laboratory Project ID#: L1114273                                    |                    |          |  |  |  |
| Analytical Parameters:      | Total solids by 2540 G-2011, PAHS by SVOCs 8270C-SIM                                    |                    |          |  |  |  |
| Name & Date of Approved     | Quality Assurance Project Plan, Limited Site Investigation, Stimson Atlas Mill Property |                    |          |  |  |  |
| SAP, QAPP, Work Plan, Etc.  | 3074 West Seltice Way, CdA, Idaho 83814. Dated June 5, 2019.                            |                    |          |  |  |  |

## 2. LABORATORY METHODS AND SAMPLE HANDLING

Validation Criteria Used:

- X USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review. Dated January 2017.
- X Quality Assurance Project Plan, Limited Site Investigation, Stimson Atlas Mill Property 3074 West Seltice Way, CdA, Idaho 83814. Dated June 5, 2019.

### 3. LIST OF SAMPLES VALIDATED IN THIS REPORT

List all samples in the sample delivery group that were validated in this report.

| Validated Samples |                          |   |  |
|-------------------|--------------------------|---|--|
| Field Sample ID#  | Laboratory Sample<br>ID# | Sample Type<br>(Natural, Duplicate, Field Blank,<br>Etc.) |  |
| SAM-DU-WEST-1     | L1114273-01              | Natural   |  |
| SAM-DU-SD-1       | L1114273-02              | Duplicate   |  |
| SAM-DU-WEST-2     | L1114273-03              | Natural   |  |
| SAM-DU-WEST-3     | L1114273-04              | Natural   |  |
| SAM-DU-NORTH-1    | L1114273-05              | Natural   |  |
| SAM-DU-WEST-1-RB  | L1114273-06              | Rinsate Blank   |  |
| SAM-DU-WEST-3-RB  | L1114273-07              | Rinsate Blank   |  |

Two rinsate blanks were collected and submitted for analysis and analyzed for polycyclic aromatic hydrocarbons (PAHs) analyzed under EPA 8270-SIM Semivolatile Organic Compounds (SVOCs).



### 4. FIELD COMPLIANCE WITH PROJECT REQUIREMENTS

Were all the required samples collected as specified in the SAP/QAPP, and field and analytical methods? Discuss.

Yes, all samples were collected as per the QAPP and field and analytical methods with the exception of the deviations listed in Section 12:

### 5. DATA QUALIFIERS

|                | Data Evaluation Qualifiers   |  |  |
|----------------|--|--|--|
| Data Qualifier | Qualifier Description (as per USEPA 2008 CLP Guidelines)   |  |  |
| U              | The analyte was analyzed for but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method.   |  |  |
| J              | The analyte was positively identified, and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL). |  |  |
| J+             | The result is an estimated quantity that may be biased high due to associated laboratory QA/QC result being outside control limits.  |  |  |
| J-             | The result is an estimated quantity that may be biased low due to associated laboratory QA/QC result being outside control limits.   |  |  |
| UJ             | The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.  |  |  |
| R              | The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.  |  |  |

Laboratory-specific data qualifiers are provided in each individual laboratory analytical report.

# 6. LABORATORY NARRATIVE, CHAIN-OF-CUSTODY, AND SAMPLE RECEIPT CHECKLIST

Was a laboratory narrative provided and were there any non-conformance issues with the analytical data? Identify and discuss.

The laboratory provided a general narrative that stated all QC met criteria unless otherwise noted. Sections 7 and 8 discuss any required qualifications.

Were any issues or discrepancies noted on the Sample Receipt Checklist (a.k.a. Non-Conformance Form)? Identify and discuss.

No non-conformance issues were noted.

Were sample Chain-of-Custody (CoC) forms complete? Describe.

Yes. All required areas of the CoC were completed and the forms signed by field and laboratory personnel.

Were the requested analytical methods in compliance with project requirements (i.e., QAPP, SAP, etc.)? Explain and, if not in compliance, discuss how this affects the data.

Yes. The samples were analyzed under SVOC 8270C-SIM PAHs as specified in the QAPP.

Were samples received in good condition within method specified requirements? Explain any exceptions and how sample conditions may affect the results.

Yes, no deviations were noted by the laboratory.

### 7. LABORATORY COMPLIANCE WITH PROJECT REQUIREMENTS

Were samples analyzed within method-specified or technical holding times? Explain any exceptions and how this may affect the results.

Yes, all samples were collected on June 25 & 26, 2019, and prepared and analyzed between July 2 and 11, 2019.



Does the laboratory report include all constituents requested to be analyzed on the CoC or under the QAPP, SAP, or other applicable document? Explain.

Yes. All samples were analyzed for the required analytical parameters.

Were reported units appropriate for the associated sample matrix/matrices and method(s) of analyses? Explain.

Yes. The samples were analyzed by the methods specified in the QAPP and units were reported as mg/kg (ppm) for comparison with corresponding standards. Rinsate blank samples were reported to mg/L (ppm).

Were detection limits reported by the laboratory in accordance with the project requirements? Discuss and list.

Several SVOC constituent analyses of samples required a 5X dilution. Reporting limits were increased where samples required dilution. Samples requiring qualification due to detected concentrations between the RL and the MDL are presented below.

### Results qualified by the laboratory based on the laboratory reporting limit. Discuss, as needed.

Qualified sample results due to the detected concentration being between the RL and MDL are listed.

| Sample           | Analytical           | Result    | Qualifier |
|------------------|----------------------|-----------|-----------|
|                  | Parameter            |           |           |
| SAM-DU-WEST-1    | Anthracene           | 0.00111   | J         |
|                  | Benzo(a)anthracene   | 0.00216   | J         |
|                  | Benzo(a)pyrene       | 0.00432   | J         |
|                  | Benzo(b)fluoranthene | 0.00575   | J         |
|                  | Benzo(k)fluoranthene | 0.00158   | J         |
|                  | Chrysene             | 0.00246   | J         |
|                  | Naphthalene          | 0.00331   | J         |
|                  | Pyrene               | 0.00496   | J         |
| SAM-DU-SD-1      | Anthracene           | 0.00124   | J         |
|                  | Benzo(a)anthracene   | 0.00245   | J         |
|                  | Benzo(a)pyrene       | 0.00422   | J         |
|                  | Benzo(b)fluoranthene | 0.00535   | J         |
|                  | Benzo(k)fluoranthene | 0.00140   | J         |
|                  | Chrysene             | 0.00215   | J         |
|                  | Naphthalene          | 0.00311   | J         |
|                  | Pyrene               | 0.00538   | J         |
| SAM-DU-WEST-2    | Anthracene           | 0.00582   | J         |
|                  | Fluoranthene         | 0.0193    | J         |
|                  | Fluorene             | 0.00106   | J         |
| SAM-DU-WEST-3    | Anthracene           | 0.00115   | J         |
|                  | Benzo(a)anthracene   | 0.00263   | J         |
|                  | Benzo(b)fluoranthene | 0.00546   | J         |
|                  | Chrysene             | 0.00258   | J         |
|                  | Fluoranthene         | 0.00576   | J         |
|                  | Pyrene               | 0.00453   | J         |
| SAM-DU-NORTH-1   | Anthracene           | 0.0142    | J         |
|                  | Fluorene             | 0.00549   | J         |
| SAM-DU-WEST-1-RB | Naphthalene          | 0.0000300 | J         |
| SAM-DU-WEST-3-RB | Naphthalene          | 0.0000316 | J         |

### 8. LABORATORY QA/QC

### 8a. Continuing Calibration Verification (CCV) Standard

Was there indication from the laboratory that the initial or CCV results were within acceptable limits? Explain and include discussion on how any out-of-control results affect the accuracy of the data.

The laboratory provided a narrative that stated that all QC met criteria unless otherwise noted. There were no notations regarding non-compliance with the CCV standard and none of the notations or qualifiers in the report pertained to the CCV standard being out of compliance.

### 8b. Laboratory Control Samples (LCSs)

Was the reference material used for the laboratory control standard (LCSs) the correct matrix and concentration? Explain and include a discussion on how any matrix differences affects the accuracy of the data.

Yes, LCSs were performed on each sample matrix; solid LCSs for soil PAHs and aqueous LCSs for rinsate blank samples.

Was the total number of LCSs analyzed equal to at least 5% (1 in 20) of the total number of samples, or analyzed as required by the method? Explain.

Yes. At least one LCS was analyzed for each analytical group for the samples in this SDG.

Were LCSs prepared the same way as the associated samples? Explain and include a discussion of how any deviations affect the accuracy of the data.

Yes, the samples were prepared the same way as the associated samples.

Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within laboratory QC limits? Explain and discuss on how any out-of-control results affect the accuracy of the data.

No.

The LCSD sample percent recovery for naphthalene for batch WG1304606 (59.5%) was less than the method allowable range of recovery (61-137%) and the RPD (21.7%) was greater than the control limit (<20%). The sample results for naphthalene in both QC rinsate blank samples (batch WG1304606) were flagged by the laboratory as (*J*3) -the associated batch QC was outside the established quality control range for precision and as (*J*4) -the associated batch QC was outside the established quality control range for accuracy. Therefore, all detections of naphthalene in rinsate blank samples from this batch should be flagged as (*J*-), the result is an estimated quantity, but the result may be biased low.

The LCS sample percent recovery for naphthalene for batch WG1307549 (49.6%) was less than the method allowable range of recovery (50-120%). The sample results for naphthalene in batch WG1307549 were flagged by the laboratory as (J4) -the associated batch QC was outside the established quality control range for accuracy. Therefore, all detections of naphthalene in soil samples from this batch should be flagged as (J-), the result is an estimated quantity, but the result may be biased low.

### 8c. Laboratory Blank Samples

Was the total number of method blank samples prepared equal to at least 5% (1 in 20) of the total number of samples, or analyzed as required by the method? Explain.

Yes. At least one method blank was analyzed for each analytical group for the samples in this SDG.

### Were laboratory blank samples free of analyte contamination? Explain.

No, the method blank QC sample for batch WG1304606 contained 0.0000214 mg/L naphthalene, which was between the MDL and RDL and flagged by the laboratory as (*J*), estimated. Consequently, the two rinsate blank sample results in batch WG1304606 were flagged by the laboratory as (*B*), the same analytes were found in the associated blank. Because both rinsate blank samples (SAM-DU-WEST-1-RB and SAM-DU-WEST-3-RB) contained naphthalene detected between the MDL and RDL (similar to the laboratory blank result) the rinsate blank results should both be flagged (<u>UJ</u>), the analyte was analyzed for but was not detected due to the reported quantitation limit being approximate and may be inaccurate or imprecise.



### 8d. Matrix Spike / Matrix Spike Duplicates

### What Project-specific samples were used to prepare the MS and MSD samples?

No Project-specific samples were used by the laboratory for the MS/MSD. MS/MSD samples were prepared from the following non-project samples:

- L1113997-03 07/09/19 15:57
- L1114322-30 07/10/19 23:27

Was the total number of MS samples prepared equal to at least 5% (1 in 20) of the total number of samples, or analyzed as required by the method? Explain.

Yes, Two MS/MSD sample pairs were analyzed by the laboratory for five soil sample submitted; however, MS/MSD samples were only analyzed by the laboratory for the soil sample SVOCs (PAHs) analyses. This is due to the fact that the only aqueous samples submitted were field blanks and they cannot be use for MS/MSD preparation and analysis.

The original samples used to prepare the MS/MSD QC samples were not from the Project.

Were MS percent recoveries and all MS/MSD relative percent differences (RPDs) within data validation or laboratory QC limits? Explain and include a discussion on how this affects the data.

No. Matrix spike percent recovery was less than the minimum recovery on batch WG1307910 for benzo(a)pyrene. The MS and MSD results were qualified by the laboratory as (*J6*), the sample matrix interfered with the ability to make any accurate determination; spike value is low.

MS/MSD sample RPDs for batch WG1308630 were outside of control limits for anthracene, fluoranthene, and pyrene and were flagged accordingly by the laboratory with several qualifiers; however, because the MS/MSD samples were prepared with non-Project-specific samples, it couldn't be confirmed that the sample matrix was sufficiently similar to Project soil types; therefore, no qualifications were made based on the %REC and RPDs alone being outside control limits.

### 8e. Laboratory Duplicates

Were laboratory duplicate RPD values within laboratory-specified limits? Explain and include discussion of how this affects the data.

All laboratory RPDs were within control limits with the exception of the aforementioned LCS/LCSD and MS/MSD RPD values outside of control limits.

### 8f. Surrogates

Were surrogate recoveries within laboratory QC limits? Explain and include discussion on how this affects the data.

All surrogates were within control limits with the exception of the batch WG1308630 MS sample for surrogate nitrobenzene-d5 which was qualified by the laboratory as (J1), Surrogate recovery limits have been exceeded; values are outside upper control limits; and MSD sample analyses for surrogates 2-Fluorobiphenyl and p-Terphenyl-d14 which were qualified by the laboratory as (J2), Surrogate recovery limits have been exceeded; values are outside lower control limits and (J1), respectively.

Because the MS/MSD samples were prepared with non-Project-specific samples, it couldn't be confirmed that the sample matrix was sufficiently similar to Project-specific samples; therefore, no qualifications were made based on the surrogate recoveries being outside control limits.

### 9. FIELD QA/QC

### 9a. Trip and Field Blanks

Were the number of equipment, trip, or field blanks collected equal to at least 10% of the total number of samples, or as required by the project requirements, QAPP, or SAP? Explain and include how this affects the data.

No trip blanks were submitted for analysis. Two rinsate blanks (SAM-DU-WEST-1-RB and SAM-DU-WEST-3-RB) were analyzed for PAHs in this laboratory report.



Were the trip blank, field blank, and/or equipment blank samples free of analyte contamination? Explain and include discussion of how this affects the data.

All rinsate blank results were non-detect with the exception of naphthalene which was detected at very low concentrations in both blanks between the MDL and RDL; however as previously mentioned the sample results were qualified by the laboratory as (B), having the same analyte in the method blank, (J), estimated, (J3), the associated batch QC was outside the established quality control range for precision, and (J4), the associated batch QC was outside the established quality control range for accuracy.

Based on the aforementioned laboratory QC qualifications regarding the method blank contamination and the LCSD %REC and RPD for batch WG1304606, the rinsate blank results should both be flagged (UJ)- the analyte was analyzed for but was not detected due to the reported quantitation limit being approximate and may be inaccurate or imprecise.

### 9b. Field Duplicates

Were the field duplicates collected as required by the project requirements, QAPP or SAP? Include a table of duplicate samples. Explain and include discussion of how this affects the data.

Yes, one duplicate was collected for four natural samples. Field duplicate SAM-DU-SD-1 was collected from the SAM-DU-WEST-1 ISM sample location.

| Analytical           | SAM-DU-WEST-1 | SAM-DU-SD-1 | RPD |
|----------------------|---------------|-------------|-----|
| Parameter            | Result        | Result      | %   |
| Anthracene           | 0.00111       | 0.00124     | 11  |
| Benzo(a)anthracene   | 0.00216       | 0.00245     | 13  |
| Benzo(a)pyrene       | 0.00432       | 0.00422     | 2   |
| Benzo(b)fluoranthene | 0.00575       | 0.00535     | 7   |
| Benzo(k)fluoranthene | 0.00158       | 0.00140     | 12  |
| Chrysene             | 0.00246       | 0.00215     | 13  |
| Naphthalene          | 0.00331       | 0.00311     | 6   |
| Pyrene               | 0.00496       | 0.00538     | 8   |

Were field duplicate RPD values within data validation QC limits? Explain and include discuss of how this affects the

All RPDs were within the project control limit of 50%. No qualifications were made.

### 10.OTHER

Did EPA or other entities collect split samples? If so, explain how those results compare to the natural sample.

No split samples were collected.

Other comments or observations.

None.

### 11. SUMMARY OF QUALIFIED DATA

The following data was qualified during this data validation effort.

| Sample            | Analytical<br>Parameter | Result<br>mg/kg | Qualifier | Reason   |
|-------------------|-------------------------|-----------------|-----------|--|
| SAM-DU-<br>WEST-1 | Anthracene              | 0.00111         | J         | Sample result estimated; results >MDL and<br><rdl< td=""></rdl<> |
|                   | Benzo(a)anthracene      | 0.00216         | J         | Sample result estimated; results >MDL and <rdl< td=""></rdl<>    |
|                   | Benzo(a)pyrene          | 0.00432         | J         | Sample result estimated; results >MDL and <rdl< td=""></rdl<>    |
|                   | Benzo(b)fluoranthene    | 0.00575         | J         | Sample result estimated; results >MDL and <rdl< td=""></rdl<>    |
|                   | Benzo(k)fluoranthene    | 0.00158         | J         | Sample result estimated; results >MDL and <rdl< td=""></rdl<>    |



| Sample               | Analytical<br>Parameter | Result<br>mg/kg | Qualifier    | Reason   |
|----------------------|-------------------------|-----------------|--------------|--|
|                      | Chrysene                | 0.00246         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
|                      | Naphthalene             | 0.00331         | J, <b>J-</b> | Sample result estimated; results >MDL and <rdl. be="" biased="" low.<="" may="" results="" sample="" td=""></rdl.>   |
|                      | Pyrene                  | 0.00496         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
| SAM-DU-SD-1          | Anthracene              | 0.00124         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
|                      | Benzo(a)anthracene      | 0.00245         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
|                      | Benzo(a)pyrene          | 0.00422         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
|                      | Benzo(b)fluoranthene    | 0.00535         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
|                      | Benzo(k)fluoranthene    | 0.00140         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
|                      | Chrysene                | 0.00215         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
|                      | Naphthalene             | 0.00311         | J, <b>J-</b> | Sample result estimated; results >MDL and <rdl. be="" biased="" low.<="" may="" results="" sample="" td=""></rdl.>   |
|                      | Pyrene                  | 0.00538         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
| SAM-DU-<br>WEST-2    | Anthracene              | 0.00582         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
|                      | Fluoranthene            | 0.0193          | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
|                      | Fluorene                | 0.00106         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
| SAM-DU-<br>WEST-3    | Anthracene              | 0.00115         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
|                      | Benzo(a)anthracene      | 0.00263         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
|                      | Benzo(b)fluoranthene    | 0.00546         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
|                      | Chrysene                | 0.00258         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
|                      | Fluoranthene            | 0.00576         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
|                      | Pyrene                  | 0.00453         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
| SAM-DU-<br>NORTH-1   | Anthracene              | 0.0142          | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
|                      | Fluorene                | 0.00549         | J            | Sample result estimated; results >MDL and <rdl< td=""></rdl<>  |
| Sample               | Analytical<br>Parameter | Result<br>mg/L  | Qualifier    | Reason   |
| SAM-DU-<br>WEST-1-RB | Naphthalene             | 0.0000300       | J, <b>UJ</b> | Sample result estimated; results >MDL and <rdl. analyte="" analyzed="" and="" approximate="" be="" being="" but="" detected="" due="" for,="" imprecise<="" inaccurate="" limit="" may="" not="" or="" quantitation="" reported="" td="" the="" to="" was=""></rdl.> |
| SAM-DU-<br>WEST-3-RB | Naphthalene             | 0.0000316       | J, <b>UJ</b> | Sample result estimated; results >MDL and <rdl. analyte="" analyzed="" and="" approximate="" be="" being="" but="" detected="" due="" for,="" imprecise<="" inaccurate="" limit="" may="" not="" or="" quantitation="" reported="" td="" the="" to="" was=""></rdl.> |

## 12. DEVIATIONS FROM THE QAPP

List and discuss deviations from the QAPP identified during this review.



- The QAPP specified the preparation of one MS/MSD sample from an ISM sample. Field personnel didn't specify on the chain of custody form which ISM sample will undergo MS/MSD analysis, but later did so by communicating with the lab.
- The laboratory prepared the MS/MSD QC samples from a non-project-specific samples. This deviation resulted in no qualifications being made based on the MS/MSD %REC and RPDs alone being outside control limits.

### 13. ACCEPTABILITY AND USABILITY OF THE DATA

A review of the chain of custody forms and laboratory case narratives indicate that proper chain of custody was maintained, samples were received intact and in good condition, cooler temperatures were within control limits, and samples were preserved as required. Laboratory quality control (QC) sample analyses performed for each analytical method are summarized as part of the laboratory analytical package.

The following Stage 2A verification and manual validation checks were performed as part of this project:

- 1. Requested methods were performed;
- Method dates for handling, preparation and analysis were present, as appropriate;
- 3. Sample-related QC data and QC acceptance criteria were provided in the laboratory report and linked to the project samples including the field QC samples (rinsate blanks);
- 4. Requested spike analytes were added, as appropriate;
- 5. Sample holding times were evaluated;
- 6. Frequency of QC samples was checked and considered appropriate; and
- Sample results were evaluated by comparing holding times and sample-related QC data to EPA and project data validation guidelines.

### Precision

Precision is the measure of agreement among individual measurements of the same property under similar conditions. Precision for this project has been expressed in terms of the relative percent difference (RPD) between two samples. Duplicate samples can be evaluated quantitatively for precision only when contaminants are detected in both the sample and the duplicate. Duplicates with RPDs within the control limits indicate adequate sampling practices and/or good analytical precision. Duplicates with RPDs outside the control limits may result from inappropriate sampling procedures, matrix interferences, or non-homogeneity of the sample matrix. In addition, poor precision can be attributed to deviations from the analytical methodology or to poor reproducibility of target analyte concentrations at or near the detection limits.

Precision was evaluated for this project by comparing field duplicate results, and laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD results. Project-specific MS/MSDs were not collected in the field by Tetra Tech and analyzed by the laboratory; therefore, any laboratory qualified data due to MS/MSD RPD qualifiers were not applied to the Project sample results. The field duplicate sample was within the QC limits. The LCS/LCSD RPD for naphthalene in batch WG1304606 was outside the acceptable control limits for precision. The sample results for naphthalene this batch were flagged by the laboratory as (*J3*) -the associated batch QC was outside the established quality control range for precision.

Overall the level of precision for the Project sampling meets QAPP objectives for all constituents analyzed with the exception of the noted naphthalene laboratory precision on LCS/LCSD samples from batch WG1304606 which indicate the estimated results from the rinsate blanks may be biased low.

### Accuracy

The assessment of accuracy is evaluated by comparing the percent recoveries (%R) computed from the known concentration of analyte spikes and their recovered concentration versus the analytical method acceptance criteria. Spike recoveries provide



an indication of bias, where the reported data may either overestimate or underestimate the actual concentration of detected compounds and/or the detection limits.

Accuracy was assessed using surrogate recovery data, LCS/LCSD recovery data for Project samples. MS/MSD recovery data for Project samples could not be used to assess laboratory method accuracy due to the fact they were not prepared from Project-specific soil samples. The LCS sample percent recovery for naphthalene for batch WG1307549 and the LCSD sample percent recovery in batch WG1304606 were outside the QC control limits. The naphthalene sample results for were flagged by the laboratory as (*J4*) -the associated batch QC was outside the established quality control range for accuracy.

Overall the level of accuracy for the Project sampling meets QAPP objectives for all constituents analyzed with the exception of the noted naphthalene laboratory LCS/LCSD samples which indicate the estimated naphthalene results may be biased low.

### Representativeness

Representativeness of the environmental sample analytical data was assessed by evaluating holding times, trip or field blanks, and laboratory method blank results.

- Holding Times. All samples were prepared and analyzed within the method-required preparation and analytical holding times.
- The rinsate blanks contained naphthalene above the MDL but were below the RDL and were reported by the lab as (J), estimated. Laboratory QC method blank sample analysis from this batch of analytes indicate that naphthalene may be present as a laboratory contaminant. Because both samples (SAM-DU-WEST-1-RB and SAM-DU-WEST-3-RB) contained naphthalene detected between the MDL and RDL (similar to the laboratory blank result) the rinsate blank results were flagged (UJ) the analyte was analyzed for but was not detected due to the reported quantitation limit being approximate and may be inaccurate or imprecise.

### Comparability

All samples were analyzed using appropriate EPA analytical methods. Sample results were reported in appropriate units. The analytical methods are considered acceptable for generating analytical data for the purpose of this project.

### **Completeness**

Completeness is the quantitative measure of the amount of data obtained from a measurement process compared with the amount expected to be obtained under the conditions of measurement. The overall data quality objective for completeness is >80%; completeness for the project has been met.

### Sensitivity

Reporting limits and method detection limits were below the screening levels. If a compound was detected below the reporting limit, but above the MDL, the laboratory qualified the value as estimated and assigned a (*J*) qualifier. These laboratory-assigned (*J*) qualified results are considered estimated results.

The laboratory-assigned notations/qualifiers are often for informational purposes. The laboratory-assigned notations/qualifiers do not necessarily indicate that the results should be considered estimated but may help in evaluating whether results should be considered estimated through this data validation effort. However, exceptions include those samples that were specified by the laboratory to be estimated due to issues or concerns identified within the data package.

### Summary

Overall the analytical data are considered acceptable and have met the quality control and quality assurance objectives and goals of this project. No data were rejected. All results, as qualified, are considered usable for meeting project objectives. Qualifications made during this project are discussed above.

## APPENDIX G – PHOTOGRAPHS



**Photo 1:** Looking westerly across the northern portion of DU-North that occupies the northern central portion of the Site. The asphalt across this location is approximately eight inches thick and is tough as concrete.



**Photo 2:** Looking northeast across DU-East during incremental sampling using the GeoProbe (direct-push) drill rig. DU-East occupies the central and eastern portions of the Site.



**Photo 3:** Looking west across DU-West during incremental sampling. DU-West occupies the western third of the Site. Shown are collected push-probe soil cores in Macrocore (PVC) liners and soil sieving.



**Photo 4:** Looking at soil collected from DU-West. A cone of soil was created (cone-and-quarter process) in the effort collect a representative sample of homogenized and sieved soil for eventual PAH analysis.



**Photo 5:** Looking southeast at shoreline sampling along the southeast leg of the Site. GPS Coordinates were collected at each sample location.



Photo 6: Looking northwest at soil boring along a western portion of the berm on Site.



**Photo 7:** Looking northeast at the location of SAM-Berm-1 (flag). Sample locations were generally flagged beforehand.



**Photo 8:** Looking south proximal to SAM-Berm-2. A walk of the Site was completed beforehand to resolve access concerns.