DESIGN PHASE – SOIL RECLAMATION

SPRING MEADOW LAKE RESIDENTIAL AREAS

SPRING MEADOW LAKE

HELENA, MONTANA

July 16, 2013

Project #: 776-020-002

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1.0 INTRODUCTION

The Spring Meadow Lake site is located on the northwestern edge of the city of Helena, Montana, in Lewis and Clark County. The Spring Meadow Lake site consists of Spring Meadow Lake State Park (Park) and Montana WILD/Montana Wildlife Center (MWC). In 1910, the Northwestern Metals Company operated an ore processing facility which deposited ore processing wastes in the MWC area. Northwestern Metals Company went bankrupt in 1915 and in 1916 the New York-Montana Metals Testing and Engineering Company took over the MWC property and operated another ore processing facility until 1920. Ore from Butte, Philipsburg, and local sources were processed at the facilities. From the early 1920s to the early 1960s, the Park and MWC property were used for various gravel mining operations which resulted in the creation of Spring Meadow Lake. In 1981, The State of Montana purchased the 42-acre gravel pit and an additional 4.1 acre parcel (Tetra Tech, 2010).

As a result of years of ore processing, the Park and MWC area were contaminated with high levels of heavy metals in soil and sediment that posed a threat to human health and the environment. In 2009, Montana Department of Environmental Quality (DEQ) Abandoned Mine Lands (AML) Program performed reclamation activities at the Park and MWC area to reduce risks to visitors (Tetra Tech, 2010). In early 2013, DEQ received information that soils impacted with heavy metals, including arsenic and lead, might extend beyond the Park and MWC area onto adjacent residential properties. The residential properties adjacent to the Park and MWC area are the focus of the investigation described in this report.

DEQ Site Response Section (SRS) tasked Trihydro with performing a surface soil and domestic groundwater sampling investigation in the Spring Meadow Lake residential area; the objective of the sampling investigation was to determine the presence of metals in surface soil and groundwater which may potentially be associated with the Spring Meadow Lake site. Work conducted for this investigation was prescribed in the February 12, 2013 Sampling and Analysis Plan (SAP) to conduct surface soil and domestic water well sampling for the study area (Trihydro, 2013a). The results of the investigation were documented in the April 16, 2013 Spring Meadow Lake Residential Area Investigation report (Trihydro, 2013b). The results of the investigation indicated that three residential properties were impacted by arsenic, lead, and manganese in the surface soil at concentrations in excess of established action levels; these three properties were therefore designated for reclamation of impacted soil at each.

Subsequent to submittal of the report to DEQ-SRS, the DEQ-AML requested that Trihydro conduct further investigation at the three impacted properties in order to refine an estimate for potential removal action. Work conducted for this secondary investigation was prescribed in the May 21, 2013 SAP which addressed the design phase for soil reclamation in the residential area (Trihydro, 2013c). The properties targeted in this study are located to the

east of Spring Meadow Lake, and consist of three adjacent residential parcels and an undeveloped easement area (included to better characterize the lateral extent of the high metals concentrations), comprising approximately 1 acre in total. There are homes and a number of outbuildings on each of the parcels, as shown on Figure 1-1 which presents an overhead view of the properties. Property legal descriptions are contained in Table 1-1.

2.0 SAMPLE COLLECTION AND MANAGEMENT

2.1 SAMPLE LOCATIONS

The conceptual sample locations presented on Figure 2-1 illustrate the division of the target properties into sample grids of approximately 25 feet by 25 feet. As shown on Figure 2-1, some grids included structures or locations that were otherwise inaccessible for sampling, and were therefore not sampled; however, this grid design was selected to retain adequate sample density to represent irregularly-shaped or isolated sections of the properties. Actual sample locations were repositioned within each grid as necessary, as shown on Figure 2-2, and were defined in the field using a combination of visual evaluation of features shown on aerial photographs and a wide area augmentation system-enabled global position system (GPS) device**.** Soil samples were obtained using a hand Geoprobe® sampler and were screened for arsenic and lead at 12-inch depth intervals using a portable X-ray Fluorescence (XRF) analyzer. In addition to screening with the XRF analyzer, a number of samples were submitted for laboratory analysis, as discussed in Section 2.2.4.

Prior to conducting soil sampling activities, DEQ arranged with property owners for the sampling team to access the various sampling locations and utility locates were performed prior to commencement of sampling operations. Based on the locations of the proposed sample locations presented in the SAP, six public utilities were contacted, including:

- Northwestern Energy Electrical
- Northwestern Energy Natural Gas
- Qwest Communications
- Phillips 66 Pipeline LLC
- Bresnan Communications
- The City of Helena

The utility locates were conducted by ELM and public utilities prior to commencement of sampling on May 28, 2013; records of the utility locating activities are contained in Appendix A.

Notes regarding general activities associated with conducting sampling the residential area were recorded in a site sampling logbook, presented in Appendix B.

2.2 SAMPLE COLLECTION

2.2.1 COLLECTION USING GEOPROBE®

Soil samples were collected using a hand Geoprobe®. At each sample location the Geoprobe® was used to obtain samples in 2-foot increments. The Geoprobe® was manually advanced into the soil to a depth of 2 feet or until refusal was encountered, as described below. The Geoprobe® was extracted from the ground after the target depth was achieved and the soil core was removed and the soils were screened for arsenic and lead at each 12-inch interval using the XRF analyzer. .

2.2.2 SCREENING USING XRF

A portable XRF analyzer was used to screen soil samples for arsenic and lead in the field. Prior to each day's calibration of the unit was verified using the procedures detailed in the instrument operating procedures. A copy of the calibration forms was retained with the field notes in Appendix B. Samples for XRF analysis were taken from the sample core at each 12-inch interval. For the most consistent results, the analyzer window was placed in direct contact with the soil during measurement. Analysis results for arsenic and lead were recorded for each sample interval in the field sample log which is also contained in Appendix B.

If the XRF analysis of the 12-24 inch sample indicated arsenic or lead concentrations greater than their respective action levels (arsenic, 49.6 milligrams per kilogram [mg/kg]; lead, 400 mg/kg), another soil sample was obtained from the same or an immediately adjacent borehole, sampling the 2- to 4-foot interval. This process was continued in successive 2-foot intervals until Geoprobe® advancement refusal was encountered or arsenic and lead concentrations were measured below their respective screening levels.

Although the XRF analyzer was used as a screening tool, it is important to note that the readings obtained from this instrument are not as reliable in determining actual metals concentrations as is analysis by a certified environmental laboratory; thus the measurements obtained using the XRF analyzer were considered estimates and a statistical correlation analysis was performed as described in Section 4.2.

2.2.3 SAMPLES FOR LABORATORY ANALYSES

2.2.3.1 TOTAL METALS ANALYSIS

The locations of concentrations of arsenic, lead, and manganese in excess of their respective action levels were shown in the Trihydro report (Trihydro, 2013b) to be highly correlated; i.e. where high levels of manganese occurred, there were corresponding high concentrations of arsenic and/or lead. Thus removal of soils containing high levels of arsenic

or lead is also expected to address areas with high concentrations of manganese. Soil samples for laboratory analysis of total arsenic and total lead were collected at a minimum frequency of one per eight XRF-screened samples, where an XRF-screened sample is defined as a 12-inch (one-foot) interval of the soil core. Wherever possible, samples submitted for laboratory analysis were from alternating extremes of concentration, as measured by the XRF analyzer; i.e. if the previous laboratory sample was taken from a 12-inch interval that the XRF analyzer indicated had a high concentration of arsenic or lead, then the next laboratory sample was taken from an interval with lower readings. This provided for laboratory confirmation of the XRF analyzer results over a broader range of operation. Results of the laboratory analyses and the corresponding XRF analyzer readings were statistically evaluated as discussed in Section 4.2 to determine a best-fit correlation equation, so that XRF readings can be used to more accurately characterize metals concentrations without requiring laboratory analyses of each sample; the information obtained from the correlation analyses will also be applicable, should real-time screening of soil using the XRF analyzer be required during excavation activities.

Soil from each sample location designated for laboratory analysis was transferred directly from the acetate sample sleeve to the appropriate sample container using a decontaminated stainless-steel spoon or spatula. The sample containers were labeled with the project identifier (ID) (SMLRY) followed by a unique sample location (1 through 60; see Figure 2-1) and sample depth in inches (e.g. 12-24). Each sample ID was also preceded by the alpha character identifying the property from which it was taken. For example, the 0-12 inch sample from location 58 (located in lot D) was labeled D-SMLRY-58-0-12. The date and time were also recorded on the labels.

2.2.3.2 TOXICITY CHARACTERISTIC LEACHING PROCEDURE METALS ANALYSIS

Analysis for arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver using the Toxicity Characteristic Leaching Procedure (TCLP) is necessary to characterize the soil that will be delivered for disposal at a Class II landfill. The TCLP analysis is designed to determine the mobility of inorganic (and organic) analytes present in waste, and is intended to simulate landfill conditions. A composite sample frequency of 1 sample per 400 cubic yards of soil is required and samples were selected so as to best characterize the overall metals concentrations in the soil; i.e. samples indicated by XRF analysis to have low concentrations were not designated for laboratory analysis by the TCLP method.

Three samples from each of the four parcels were collected and submitted for TCLP analyses. Actual location of the borings sampled for TCLP analysis was determined in the field; those sample locations are shown ion Figure 2-3, and were recorded on the field sampling log Appendix B. The sample used for TCLP analysis was taken from the entire soil core, which was thoroughly mixed and screened with the XRF prior to transferring to sample containers. This

compositing approach is intended to avoid over- or under-representing the level of contamination in the soil destined for landfill disposal.

Soil from each designated sample location was transferred directly from the sample core to the appropriate sample container using a decontaminated stainless-steel spoon or spatula. The sample containers were labeled with the project identifier (ID) (SMLRY-TCLP) followed by a unique sample location (1 through 12) and sample depth in inches (e.g. 0-24). Each sample id was also preceded by the alpha character identifying the property from which it was taken. For example, a 0-48 inch sample from location 8 and located in lot C was labeled C-SMLRY- TCLP-8-0-48. The date and time were also recorded on the labels. These soil samples were submitted to the laboratory for TCLP analysis of arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver concentrations.

2.2.4 QA/QC SAMPLES

In addition to the 30 investigative soil samples provided for laboratory analysis, 7 quality assurance/quality control (QA/QC) samples were collected, including 4 blind field duplicates and 3 equipment rinsate blanks. The number of QA/QC samples was chosen to represent a QA/QC sample frequency of at least 1 per 10 investigative samples collected.

Blind duplicate samples were generated by splitting the samples from a set of sample aliquots into pairs of samples. The duplicate samples were collected by first transferring the soil from a sample into a zip-lock plastic bag. The soil in the bag was then mixed thoroughly using a stainless-steel spoon and then was transferred from the bag to the appropriate sample containers. One sample container was labeled with the project ID (SMLRY) followed by the unique sample location, and sample depth interval, and preceded by the alpha character identifying the property from which is taken. The date and time were also recorded on the label. The second (duplicate sample) container was labeled with the project ID (SMLRY) followed by the sample location plus 100, the sample depth interval, and the sample date but not the sample time. This sample identification was also preceded by the alpha character identifying the property. For example if the sample noted above (D-SMLRY-58-0-12) was split for field duplicate purposes, the duplicate sample for this sample would be labeled D-SMLC-158-0-12. The field logbooks contain a record of the specific time and sample location/interval where each duplicate was collected as a cross-reference. The blind duplicate sample evaluates the precision of sampling data and the laboratory was not made aware of what samples were duplicated.

The soil samples were analyzed for metals as directed in the DEQ scope of work and as presented in Table 2-1. Field sampling equipment was decontaminated between sampling locations using the procedures outlined in Section 3.5 of the Design Phase SAP.

Equipment rinsate blanks were collected by pouring deionized water through or over decontaminated sampling equipment and into appropriate sample containers. The purpose of the equipment rinsate blank sample is to test for cross-contamination related to decontamination procedures. The equipment rinsate blanks collected alternated between each of the pieces of sampling equipment requiring decontamination between samples (stainless–steel spoons, hook knives, etc.). The equipment rinsate blanks were labeled with the project ID (SMLRY) followed by the equipment rinsate blank ID (e.g. EB-1, EB-2, etc), and the sample date and time. The rinsate samples were analyzed for metals as presented in Table 2-1.

2.3 SAMPLE HANDLING AND ANALYTICAL REQUIREMENTS

Labeled sample containers were carefully packaged to reduce the chance for breakage and the coolers containing the samples were secured using chain-of-custody procedures until ready for shipment to the laboratory, which occurred at the end of the sampling activities. Samples were maintained under chain-of-custody procedures. The samples were analyzed for metals following the appropriate United States Environmental Protection Agency (EPA) Method, as listed in Table 2-1. The analyses were performed by Pace Laboratories Inc. in Minneapolis, MN. As required by DEQ, the samples were analyzed under an expedited analytical schedule with a five-day turnaround time.

2.4 DECONTAMINATION

Sampling equipment that is not expendable was thoroughly decontaminated prior to use. The sampling devices were decontaminated in the field prior to sampling. Non-disposable field equipment was decontaminated as follows: Equipment was first be wiped with paper towels to remove as much material as possible. It was then washed in tap water with Alconox (or similar detergent) and then tap water. The equipment was then rinsed with deionized water and then towel-dried and placed in a plastic bag until used.

2.5 INVESTIGATIVE DERIVED WASTE

Soil generated from the sampling activities that was not containerized and submitted for laboratory analysis was containerized, tagged with the sample identification number, and was retained at the Trihydro field office in Helena, for disposal with the excavated soil from the subsequent removal action. Disposable field equipment was wiped with paper towels to remove as much material as possible, and decontaminated as necessary, and was disposed as general refuse.

2.6 COMPLIANCE WITH THE APPROVED SAP

Work was conducted in accordance with the May 2013 SAP (Trihydro, 2013c). The SAP-specified procedure for determining the TCLP sample locations was discussed with the DEQ Project Manager and subsequently modified to allow the acquisition of TCLP samples from the established sample locations, rather than determining new sample locations for each. There were no other deviations from the approved SAP.

3.0 LAB ANALYSIS AND QUALITY ASSURANCE/QUALITY CONTROL

3.1 DATA QUALITY OBJECTIVES

Data quality objectives (DQOs) are qualitative and quantitative statements that clarify the purpose of the study, define the most appropriate data to collect and the conditions from which to collect the data, and specify tolerable limits on decision errors. These limits are then used as the basis for establishing the quantity and quality of data needed to derive a defensible decision.

This soil investigation required that a sufficient number of samples be collected from soil locations such that the vertical extent of concentrations of metals, in particular arsenic and lead, can be reliably characterized. To ensure adequate characterization and identification of potential risk, it is necessary that the data meet specific criteria for precision, accuracy, and representativeness.

The DQOs for the data collected during the investigation activities are listed in Table 3-1, and required the analysis of samples using EPA approved methods and the laboratory analysis of blank, laboratory control, duplicate, and matrix spike quality control samples. The information listed in Table 3-1 includes the constituent, analytical method, reporting limit specified by DEQ, maximum relative percent difference (RPD), and acceptable recovery range.

The DQO's for the project were met and the data validation (Section 3.3) discusses the laboratory data and compliance with DQOs.

3.2 LABORATORY ANALYSIS

Samples collected during this investigation were maintained under chain-of-custody (COC) procedures. The COC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt. Samples were determined to have been received in good condition, intact, and within acceptable temperatures. Copies of the COCs receipts are provided with the laboratory data package in Appendix C.

Pace Laboratories Inc. in Minneapolis, Minnesota performed the analysis of the soils collected during this investigation. The samples were analyzed for total lead and total arsenic following EPA Method 6010, and a subset of samples were analyzed for arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver following EPA Method 1311/6010C as required by the SAP, with a requested a 5-day turnaround time.

3.3 DATA VALIDATION AND DATA USABILITY

were evaluated in general accordance with validation criteria set forth in the EPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Superfund Data Review, document number EPA 540R-10-011, January 2010 (EPA 2010), with additional reference to the EPA CLP National Functional Guidelines for Inorganic Superfund Data Review, document number EPA 540-R-04-004, October 2004 (EPA 2004). Review of duplicates was conducted in accordance with EPA Region 1 Laboratory Data Validation Functional Guidelines for Evaluation of Organic Analysis, December 1996 (EPA 1996) or as specified by the method (as applicable).

The data validation process assessed data for precision, accuracy, method compliance, and completeness. The assessment of these components resulted in the following conclusions:

- The calculated RPD values for Matrix Spike / Matrix Spike Duplicates were reported to be within data validation or laboratory QC limits.
- Field duplicate samples were collected in accordance with SAP requirements. Data QC limits for field duplicate RPDs, as specified in the project-specific SAP, were set at 0-35 percent (%) for soil samples.
- Analytes were not detected in the equipment blank samples for this sample collection effort.
- Reported MS/MSD recoveries were within the data validation QC limits.
- The criteria for data quality objectives were met for method compliance and instrument performance.
- The SAP required that the percentage of useable sample data points be equal to 100% of the total number of data points expected from the planned sample analyses. The completeness of the data validated was measured to be 100%.

All soil sample data were determined to have acceptable quality for use in this site evaluation. No data were rejected or otherwise qualified, and sample analyses were performed as requested. Detailed data validation reports are presented in Appendix D.

4.0 ASSESSMENT RESULTS AND DISCUSSION

4.1 SOIL RESULTS AND DISCUSSION

A total of 145 soil samples from 47 sample locations were analyzed for arsenic and lead with the XRF analyzer; of these, 30 samples were also submitted to the laboratory for analysis. Table 4-1 presents the results of the XRF and the laboratory analyses for total arsenic and total lead and Table 4-2 presents the results of the laboratory TCLP analyses for metals; the EPA Soil Screening Level, and Regional Screening Level (EPA 2012) for each of the listed metals are also shown, as are the EPA Regulatory Limits for the TCLP analyses..

4.2 CORRELATION OF XRF AND LABORATORY ANALYSES

Since the XRF analyzer was used for analysis of most of the soil samples collected at this site, and in the future may be used for real-time verification of metals concentrations in the field during potential reclamation activities, it is desirable to estimate how closely the XRF results represent laboratory analytical results. To this end, a statistical correlation was performed, evaluating the 30 pairs of XRF and laboratory data using Statistical Analysis System statistical software. The results of this regression analysis are shown in Appendix E which includes the tabular output from the regression analyses as well as plots displaying the results.

The plots shown in Figures APP-E-1 and APP-E-2 display a best-fit linear regression line and the associated equation of that line for arsenic and lead, respectively; they also show the R-squared (Rsq) value which can be used to give an idea of the fit of the equation to the data as it tells how much of the variability in the data is explained or accounted for by the model (equation). For instance, in Figure APP-E-1, the Rsq=0.8110 indicates that approximately 81 percent of the variability in the arsenic data is accounted for by the derived regression equation. As shown in the plots, the regression equations for arsenic and lead are, respectively:

$$As = 218.65 + 0.6549 * As_{XRF}$$

and

$$Pb = 42.206 + 1 * Pb_{XRF}$$

In other words, given an XRF analyzer reading for arsenic or lead, one should be able to apply the appropriate multiplier and then add the indicated constants in these equations to produce a concentration value that is close to the value that would be determined in a laboratory analysis of arsenic or lead concentrations.

The plots in Plots APP-E-1 and APP-E-2 show that many of the data used in the regression analyses have concentrations (both XEF and laboratory results) that are much higher than the action levels in place for this site (arsenic, 49.6 mg/kg; lead, 400 mg/kg). It is also evident from the plots that although the Rsq values suggest a reasonable fit in both cases, there are many points located a distance from the regression line for each model. In order to improve the model, particularly in the range of concentrations nearer the action levels for arsenic and lead, the analysis was repeated with extreme values removed; the removed values included the highest concentrations and data pairs that exhibit the poorest fit to the model. The repeat of the regression analysis therefore used the remaining data pairs (8 for arsenic and 16 for lead); the results are included in Appendix E and plots are shown in Plots APP-E-3 and APP-E-4 for arsenic and lead respectively.

As shown in the plots for the regression analysis on the reduced data, the Rsq values still indicate that the model provides a reasonable fit and most of the data pairs conform reasonably well to the best fit equation, i.e. all appear to be reasonably represented by the modeled equation. The regression equations resulting from the analysis performed on the reduced data sets as shown on the plots for arsenic and lead are respectively:

$$As = -11.112 + 1.0237 * As_{XRF}$$

and

$$Pb = 74.458 + 0.4523 * Pb_{XRF}$$

These values were applied to the results obtained from the XRF analyses of soil samples obtained during this sampling event as shown in Table 4-3, where samples that contain calculated concentrations of arsenic or lead that exceed the respective action levels are shown in bold. Figure 4-1 illustrates the depths in soil at which the calculated arsenic or lead concentrations exist at levels exceeding their respective action levels (arsenic, 49.6 mg/kg; lead, 400 mg/kg). Figure 4-1 also shows that impact depths range from 0 feet (not impacted) to 5 feet. It is important to note that for several sample locations, these depths are the maximum depth at which sampling and analysis were performed due to Geoprobe® advancement refusal; the sample locations that were affected in this manner include C-26, C-32, C-34, E-7, E-8, E-9, E-10, E-11, E-13, E-15, E-18, and Z-2.

4.3 RESULTS OF TCLP ANALYSIS

A total of 12 samples were submitted for arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver TCLP analysis; as stated in Section 2.2.4.2, this analysis method is designed to simulate landfill conditions. Table 4-2 contains the results of the laboratory analyses and also lists the EPA regulatory limit for each metal analyzed using this

method. As shown in Table 4-2, none of the samples exceeded the regulatory limit and therefore any soil excavated from this site should be acceptable for disposal at a Class II landfill.

5.0 RECLAMATION ANALYSIS

5.1 ACTION LEVELS

5.1.1 ARSENIC

Risk-based screening levels for arsenic in residential soil may range from 0.39 to less than 10 mg/kg. However, arsenic is a naturally-occurring element in the western United States with published regional concentrations ranging from 4 to 16.5 mg/kg (Schacklette and Boerngen, 1984). In 2005, DEQ established a Montana-specific background value for arsenic in surface soil by calculating the 95% upper confidence limit (UCL) of the mean arsenic concentration measured in 209 surface soil samples. The result was a statewide generic action level for arsenic in surface soil of 40 mg/kg (MDEQ, 2005; DEQ recently completed a statewide metals background study that may result in a decrease in this level.). In 2011, DEQ contracted with Trihydro to determine naturally-occurring levels of arsenic in the Helena area, specifically in the area of the Joslyn Street Tailings Facility located northeast of the study area. Trihydro acquired samples from multiple depths at 30 DEQ-selected locations and calculated a 95% UCL of the mean arsenic concentration in surface soil, of 49.6 mg/kg (Trihydro, 2011). The background arsenic levels determined in the Joslyn Street Tailings Facility study are comparable to those found in the previous Spring Meadow Lake investigations (Tetra Tech, 2006), and as the Spring Meadow Lake site is in the same drainage basin as the Joslyn Street Tailings Facility, the site-specific background action level of 49.6 mg/kg for arsenic is also appropriate for Spring Meadow Lake residential surface soils.

5.1.2 LEAD

Like arsenic, lead is naturally-occurring in the western United States. Although lead is classified as a "probable" carcinogen, other health effects caused by lead exposure occur at much lower doses than those causing cancer and include hypertensive and reproductive problems, and developmental difficulties in children; therefore and because there are no carcinogenic slope factors or reference doses for lead, the residential cleanup levels for lead were established using the integrated exposure uptake biokinetic (IEUBK) model for lead in children (EPA, 2007). The IEUBK model is used to calculate a lead concentration that will not result in more than a 5% likelihood that a child's level of lead in the blood will exceed 10 micrograms/deciliter (µg/dl) with exposure to residential soil. The residential soil lead action level (i.e. the maximum safe exposure level for the noncancerous effects of lead) is 400 mg/kg. While this level is included as an EPA RSL, including site-specific parameters in the model would not result in a different action level. In addition, the U.S. Center for Disease Control has documented that health effects may occur at blood lead concentrations of 5 µg/dl or less; therefore, while the EPA has not finalized its changes to the model or the screening levels, cleanup levels in excess of 400 mg/kg for residential soil would not be protective of human health.

5.2 RISK ANALYSIS

Previous soil investigations (e.g. Tetra Tech, 2006), have shown that the contaminants of concern for the Spring Meadow Lake site are arsenic, lead, and manganese and that the elevated concentrations of these metals are predominately co-located. Based on this observed association, addressing actionable concentrations of arsenic and lead on the residential properties sampled during this investigation are expected to address the actionable levels of manganese.

5.2.1 EVALUATION OF ARARS

Applicable or relevant and appropriate requirements (ARARs) are Federal or State environmental laws which guide or limit activities associated with a reclamation project. Applicable requirements are those environmental laws that specifically address hazardous substances, contaminants, activities, locations, or other situations that may be encountered at a specific site; relevant or appropriate requirements on the other hand, address circumstances that are sufficiently similar to situations that may be encountered at the site, that their use is appropriate at that site. The Spring Meadow Lake Residential Area Investigation report (Trihydro, 2013b) contained a discussion of the ARARs previously used to guide recommendations for reclamation in this area. Although the focus of that previous effort was on reclaiming land designated for future use as a park, no additional ARARs are required to address the residential area. The following is a description of the types of ARARs:

- Contaminant–specific ARARs establish an allowable level or concentration of a hazardous or deleterious substance in the environment or prescribe a level or method of treatment for a hazardous or deleterious substance; the Spring Meadow Lake ARARs related to arsenic, manganese, and lead in the residential area are the same as those used in the prior reclamation at the site.
- Location–specific ARARs serve as restrictions on the concentration of a hazardous or deleterious substance or the conduct of activities solely because the site is in a specific location or the action affects specified types of areas; the Spring Meadow Lake residential area is adjacent to Spring Meadow Lake site with no additional extenuating factors.
- Action–specific ARARs are triggered by the performance of a certain activity as part of a particular remedy. They do not, in themselves, determine the remedy but rather indicate the manner in which the remedy must be executed. The remedy will not involve any additional actions that require compliance with additional ARARs.

Thus the results of the analysis of ARARs that was previously completed by DEQ will be used for the current work at the Spring Meadow Lake residential area.

5.3 RECLAMATION

General potential response actions to satisfy reclamation objectives for the Spring Meadow Lake Site have been evaluated and the following recommendations are based on DEQ's direction that reclamation efforts will employ excavation and disposal at a solid waste landfill. These recommendations also recognize that these residential properties contain several large, mature trees which would not be removed, limiting excavation activities in these areas.

Under this directive, contaminated soils discovered during this investigation would be excavated and disposed of off-site at the city of Helena Landfill or the Valley View Landfill near East Helena. The reclamation approach includes the following: (1) excavating and hauling waste materials to the selected landfill; (2) backfilling and placing cover soil over the excavated areas; (3) restoring / repairing private drives, fences, etc.; and (4) revegetating the disturbed areas at each site.

The disturbed areas would be prepared for revegetation; the excavated areas will be backfilled and graded to restore landscaping and drainage, match the contour of the land surface, and cover soil will be applied to the disturbed areas.

Efforts would be made to spare or replace other vegetation (trees/shrubs) to the maximum extent practicable. Revegetation would likely take place during the late summer of the year. Lawns would be sodded and back lots will be seeded; where seeding is performed, the seed mixture and fertilizer would be simultaneously drilled into the prepared seed beds, and mulch will be applied to promote temporary protection of the disturbed erodible surfaces.

Some ancillary infrastructure (e.g. above-ground decks, planters, sidewalks, driveway surfacing, etc.) may be removed to facilitate the excavation; in the event that this is necessary, they will be replaced in kind, at equal or greater value.

Heavy equipment may be required to implement this alternative efficiently; however; the relatively constricted area in some of the residential lots may require the use of smaller, more agile equipment. Multiple large capacity haul trucks, bulldozers, front-end loaders, excavators, and compactors may nevertheless be needed to excavate, haul the material, and restore the residential yards.

5.3.1 EXCAVATION ALTERNATIVES

As noted in Section 4.2, contamination depth ranges from 0 to 5 feet in different sections of the residential yards; thus one excavation alternative is to excavate and backfill each sampled grid to its maximum depth of contamination, using an XRF analyzer to confirm removal of soils with concentrations of arsenic and lead in excess of the respective action levels. For example, the section represented by sample E-24 would be excavated to a depth of at least 5 feet, while

adjacent sample section E-19 would be excavated to a depth of at least 2 feet. A second option as explained in the EPA Superfund Lead-Contaminated Residential Sites Handbook (EPA, 2003) is to excavate and backfill each of the sample sections to a depth of 2 feet, which still allows for unrestricted residential use, including gardening. A third option is a combination of the first two, which is to excavate and backfill only impacted soils to a maximum depth of 2 feet.

The first alternative would result in removal and backfilling a minimum of approximately 1442 cubic yards of material while the second would result in removal and backfilling of approximately 1597 cubic yards; the third option would result in an estimated removal and backfill fill of approximately 1123 cubic yards of soil. A breakdown of the estimated minimum volumes of soil to be excavated under each option is shown in Table 5.1

6.0 RECOMMENDATIONS

The first of the three excavation approaches considered in Section 5.3.1 offers a difference from the second option of approximately 10% in estimated minimum volume of soil excavated and backfilled, and therefore may be slightly advantageous from a cost perspective. The third approach, which involves excavating only impacted soils to a maximum depth of two feet, is projected to require removal of the least amount of soil. However, from a practical perspective, the second approach, i.e. removal and backfill of to a depth of two feet across the site, appears to be more logistically practical than excavation to various depths and employs an accepted federal agency approach for residential areas. The accepted agency approach (EPA, 2003) entails:

- Remove of ancillary residential structures (e.g. wooden decks, planters, sidewalks, etc.)
- Excavate to uniform depth of 2 feet area-wide
    - Excavation to extend as closely as possible to existing trees and large bushes, leaving them intact
- Backfill with clean fill and top soil, restoring/improving grade
    - Prep and revegetate backfilled area
- Replace ancillary residential structures previously removed and resurface drive/approach areas

It is important to note that under either the second or third option, (excavating soil to a depth of 2 feet) soils containing concentrations of metals in excess of the action levels will remain in some areas of the residential properties at depths greater than 2 feet, as shown on Figure 4-1.

The timeline for the reclamation effort proposed above includes engineering design, conformation to DEQ bid advertising requirements, and execution of the work, and is illustrated in the Gantt chart contained in Appendix F. The schedule shown in Appendix F encompasses approximately 15 weeks, with an estimated completion in mid-November, 2013, and is dependent upon DEQ expediting agreements with property owners detailing the manner in which replacement or reconstruction of infrastructure will take place.

7.0 SUMMARY

As noted above, DEQ tasked Trihydro with performing a follow up soil sampling investigation at the Spring Meadow Lake residential area in Helena, Montana. The objective of this sampling investigation was to determine the depth of impact of arsenic and lead concentrations in soil that may potentially be associated with the Spring Meadow Lake site.

The results of the investigation indicate that arsenic and lead are present in the soil at concentrations exceeding their respective action levels of 49.6 and 400 mg/kg, at varying depths ranging from 0 to at least 5 feet across the site. The recommended actions for remediating the site include excavation and replacement of the upper 2 feet of soil in accordance with the approach outlined by the EPA, followed by revegetation of backfilled areas, and reconstruction/replacement of infrastructure impacted during the process. The results of the TCLP analyses indicate that soil removed from the site during this process is acceptable for disposal at a Class II landfill.

8.0 REFERENCES

EPA, 1990. USEPA Contract Laboratory Program Statement of Work.

EPA 2003. USEPA Superfund Lead-Contaminated Residential Sites Handbook.

EPA, 2004. USEPA Contract Laboratory Program, National Functional Guidelines for Inorganic Data Review.

EPA, 2012. USEPA Regional Screening Levels (November).

DEQ, 2010. Montana Department of Environmental Quality Data Validation Guidelines for Evaluating Analytical Data.

Tetra Tech, 2006. Reclamation Investigation and Expanded Engineering Evaluation and Cost Analysis, Spring Meadow Lake Site, Helena, Montana.

Tetra Tech, 2010. Tetra Tech EMI, Inc., Final Construction Report for the Spring Meadow Lake Reclamation Project, Helena, Montana MT DEQ MWCB Contract No. 41001.

Trihydro, 2011. Natural-Occurring Lead and Arsenic Investigation.

Trihydro, 2013a. Sampling and Analysis Plan Surface Soil and Domestic Water Well.

Trihydro, 2013b. Spring Meadow Lake Residential Area Investigation.

Trihydro, 2013c. Sampling and Analysis Plan, Design Phase – Soil Reclamation.

TABLES

TABLE 1-1. PROPERTY DESCRIPTIONS
SPRING MEADOW LAKE RESIDENTIAL AREAS, DESIGN PHASE, HELENA, MONTANA

Prefix	Owner Name	Property Address	Legal Description
C	Herbel	2466 COUNTRY CLUB AVE	WEST HELENA TOWNSITE, S23, T10 N, R04 W, BLOCK 9, Lot 11A, CHIEF IND 16X56 1996 TITLE E002579
D	Wegner	2460 COUNTRY CLUB AVE	WEST HELENA TOWNSITE, S23, T10 N, R04 W, BLOCK 009, Lot 9 - 10, NASHUA 14 X 66 1977
E	Wittke-Sears	2470 COUNTRY CLUB AVE	WEST HELENA TOWNSITE, S23, T10 N, R04 W, BLOCK 009, Lot 13A, COS #618927/AP
Z	P&S MT Properties	None (easement)	WEST HELENA TOWNSITE, S23, T10 N, R04 W, BLOCK 010, Lot 009

TABLE 2-1. ANALYTICAL METHODS AND SAMPLING CRITERIA
SPRING MEADOW LAKE RESIDENTIAL AREAS, DESIGN PHASE, HELENA, MONTANA

Matrix / Constituent	Analytical Method	Preservation	Holding Time	Sample Size/ Sample Container
Soil Samples				
Arsenic, Total	EPA 6010C	None	180 days (NA[1])	50 gram/plastic or glass
Lead, Total	EPA 6010C	None	180 days (NA[1])	50 gram/plastic or glass
Arsenic, TCLP	EPA 1311/EPA 6010C	None	180 days (NA[1,2])	250 gram/plastic or glass
Barium, TCLP	EPA 1311/EPA 6010C	None	180 days (NA[1,2])	250 gram/plastic or glass
Cadmium, TCLP	EPA 1311/EPA 6010C	None	180 days (NA[1,2])	250 gram/plastic or glass
Chromium, TCLP	EPA 1311/EPA 6010C	None	180 days (NA[1,2])	250 gram/plastic or glass
Lead, TCLP	EPA 1311/EPA 6010C	None	28 days (NA[1,2])	250 gram/plastic or glass
Mercury, TCLP	EPA 1311/EPA 7470A	None	180 days (NA[1,2])	250 gram/plastic or glass
Selenium, TCLP	EPA 1311/EPA 6010C	None	180 days (NA[1,2])	250 gram/plastic or glass
Silver, TCLP	EPA 1311/EPA 6010C	None	180 days (NA[1,2])	250 gram/plastic or glass

Notes:
[1] Samples to be delivered to lab within 24 hours of collection
[2] Holding time from collection to TCLP leaching is 180 days (28 days for mercury). Holding time from TCLP leaching to analysis is 180 days (28 days for mercury)

TABLE 3-1. REPORTING LIMITS AND QA/QC SPECIFICATIONS
SPRING MEADOW LAKE RESIDENTIAL AREAS, DESIGN PHASE, HELENA, MONTANA

Soil

Constituent	Analysis Method	Required Reporting Limit (mg/kg)	Maximum Field Duplicate RPD	Matrix Spike Recovery Range	Laboratory Control Sample (LCS) Recovery Range	EPA Regional Screening Levels (mg/kg)	EPA Soil Screening Levels (mg/kg)
Arsenic, Total	EPA 6010C	1	50%	75-125%	70-130%	49.6**	49.6**
Lead, Total	EPA 6010C	1	50%	75-125%	70-130%	400	140

		Required Reporting Limit (mg/L)				EPA Regulatory Limit (mg/L)
Arsenic, TCLP	EPA 1311/EPA 6010C	0.5	50%	75-125%	70-130%	5
Barium, TCLP	EPA 1311/EPA 6010C	1	50%	75-125%	70-130%	100
Cadmium, TCLP	EPA 1311/EPA 6010C	0.1	50%	75-125%	70-130%	1
Chromium, TCLP	EPA 1311/EPA 6010C	0.5	50%	75-125%	70-130%	5
Lead, TCLP	EPA 1311/EPA 6010C	0.5	50%	75-125%	70-130%	5
Mercury, TCLP	EPA 1311/EPA 7470A	0.02	50%	75-125%	70-130%	0.2
Selenium, TCLP	EPA 1311/EPA 6010C	0.1	50%	75-125%	70-130%	1
Silver, TCLP	EPA 1311/EPA 6010C	0.5	50%	75-125%	50-150%	5

**-area-specific background

TABLE 4.1. SOIL SAMPLE XRF AND LABORATORY RESULTS
SPRING MEADOW LAKE RESIDENTIAL AREAS DESIGN PHASE, HELENA, MONTANA

							ARSENIC					LEAD				
							SSL=19.6			RSL=49.6[1]		SSL=140				RSL=400
SAMPLE ID	DATE SAMPLED	PROPERTY IDENTIFIER	SAMPLE NUMBER	SAMPLE START DEPTH	SAMPLE END DEPTH	Units	XRF RESULT	XRF LIMIT	XRF DETECT	LAB RESULT	LAB DETECT	XRF RESULT	XRF LIMIT	XRF DETECT	LAB RESULT	LAB DETECT
C-SMLRY-26-0-12	5/29/2013	C	26	0	12	ppm	342.81	50	YES	--	--	108.04	60	YES	--	--
C-SMLRY-26-12-24	5/29/2013	C	26	12	24	ppm	659.3	50	YES	--	--	349.9	60	YES	--	--
C-SMLRY-26-24-36	5/29/2013	C	26	24	36	ppm	1756.32	50	YES	--	--	1316.38	60	YES	--	--
C-SMLRY-26-36-48	5/29/2013	C	26	36	48	ppm	269.03	50	YES	--	--	255.03	60	YES	--	--
C-SMLRY-27-0-12	5/29/2013	C	27	0	12	ppm	1148.12	50	YES	1120	YES	988.95	60	YES	1030	YES
C-SMLRY-27-12-24	5/29/2013	C	27	12	24	ppm	50	50	NO	--	--	60	60	NO	--	--
C-SMLRY-28-0-12	5/29/2013	C	28	0	12	ppm	173.37	50	YES	--	--	193.47	60	YES	--	--
C-SMLRY-28-12-24	5/29/2013	C	28	12	24	ppm	1160.27	50	YES	--	--	871.1	60	YES	--	--
C-SMLRY-28-24-36	5/29/2013	C	28	24	36	ppm	98.09	50	YES	--	--	60	60	NO	--	--
C-SMLRY-28-36-48	5/29/2013	C	28	36	48	ppm	50	50	NO	--	--	60	60	NO	--	--
C-SMLRY-29-0-12	5/30/2013	C	29	0	12	ppm	683.16	50	YES	--	--	578.37	60	YES	--	--
C-SMLRY-29-12-24	5/30/2013	C	29	12	24	ppm	247.18	50	YES	171	YES	265.82	60	YES	134	YES
C-SMLRY-29-24-36	5/30/2013	C	29	24	36	ppm	50	50	NO	--	--	60	60	NO	--	--
C-SMLRY-29-36-48	5/30/2013	C	29	36	48	ppm	50	50	NO	--	--	93.4	60	YES	--	--
C-SMLRY-30-0-12	5/30/2013	C	30	0	12	ppm	1083.72	50	YES	--	--	678	60	YES	--	--
C-SMLRY-30-12-24	5/30/2013	C	30	12	24	ppm	783.45	50	YES	455	YES	660.39	60	YES	776	YES
C-SMLRY-30-24-36	5/30/2013	C	30	24	36	ppm	50	50	NO	--	--	60	60	NO	--	--
C-SMLRY-30-36-48	5/30/2013	C	30	36	48	ppm	50	50	NO	--	--	60	60	NO	--	--
C-SMLRY-31-0-12	5/30/2013	C	31	0	12	ppm	1604.06	50	YES	--	--	1846.22	60	YES	--	--
C-SMLRY-31-12-24	5/30/2013	C	31	12	24	ppm	1980.22	50	YES	--	--	1544.14	60	YES	--	--
C-SMLRY-31-24-36	5/30/2013	C	31	24	36	ppm	63.02	50	YES	--	--	60	60	NO	--	--
C-SMLRY-31-36-48	5/30/2013	C	31	36	48	ppm	50	50	NO	--	--	60	60	NO	--	--
C-SMLRY-32-0-12	5/30/2013	C	32	0	12	ppm	504.56	50	YES	--	--	453.62	60	YES	--	--
C-SMLRY-32-12-24	5/30/2013	C	32	12	24	ppm	943.22	50	YES	528	YES	670.06	60	YES	429	YES
C-SMLRY-32-24-36	5/30/2013	C	32	24	36	ppm	54.16	50	YES	--	--	60	60	NO	--	--
C-SMLRY-32-36-48	5/30/2013	C	32	36	48	ppm	83.32	50	YES	--	--	60	60	NO	--	--
C-SMLRY-32-36-48*	5/30/2013	C	32	36	48	ppm	86	50	YES	--	--	60	60	NO	--	--
C-SMLRY-32-48-60	5/30/2013	C	32	48	60	ppm	157.46	50	YES	--	--	99.57	60	YES	--	--
C-SMLRY-33-0-12	5/30/2013	C	33	0	12	ppm	456.91	50	YES	--	--	1154.7	60	YES	--	--
C-SMLRY-33-24-36	5/30/2013	C	33	24	36	ppm	50	50	NO	--	--	60	60	NO	--	--
C-SMLRY-34-0-12	5/30/2013	C	34	0	12	ppm	178.31	50	YES	161	YES	270.14	60	YES	159	YES
C-SMLRY-34-12-24	5/30/2013	C	34	12	24	ppm	543.48	50	YES	--	--	404.92	60	YES	--	--
C-SMLRY-34-24-36	5/30/2013	C	34	24	36	ppm	180.27	50	YES	--	--	183.62	60	YES	--	--
C-SMLRY-34-36-48	5/30/2013	C	34	36	48	ppm	76.86	50	YES	--	--	71.73	60	YES	--	--
C-SMLRY-35-0-12	5/30/2013	C	35	0	12	ppm	933.67	50	YES	780	YES	800.05	60	YES	887	YES
C-SMLRY-35-0-12*	5/31/2013	C	35	0	12	ppm	933.67	50	YES	1080	YES	800.05	60	YES	1020	YES
C-SMLRY-35-12-24	5/30/2013	C	35	12	24	ppm	576.33	50	YES	--	--	477.96	60	YES	--	--
C-SMLRY-35-24-36	5/30/2013	C	35	24	36	ppm	50	50	NO	--	--	60	60	NO	--	--
C-SMLRY-35-36-48	5/30/2013	C	35	36	48	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-39-0-12	5/28/2013	D	39	0	12	ppm	471.68	50	YES	1290	YES	398.39	60	YES	1070	YES
D-SMLRY-39-12-24	5/28/2013	D	39	12	24	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-40-0-12	5/28/2013	D	40	0	12	ppm	111.66	50	YES	--	--	167.89	60	YES	--	--
D-SMLRY-40-12-24	5/28/2013	D	40	12	24	ppm	235.62	50	YES	--	--	312.03	60	YES	--	--
D-SMLRY-40-24-36	5/28/2013	D	40	24	36	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-40-36-48	5/28/2013	D	40	36	48	ppm	57.35	50	YES	--	--	60	60	NO	--	--
D-SMLRY-40-48-60	5/30/2013	D	40	48	60	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-40-60-72	5/30/2013	D	40	60	72	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-41-0-12	5/28/2013	D	41	0	12	ppm	692.6	50	YES	957	YES	1040.75	60	YES	1040	YES
D-SMLRY-41-12-24	5/28/2013	D	41	12	24	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-42-0-12	5/28/2013	D	42	0	12	ppm	50	50	NO	--	--	205.66	60	YES	--	--
D-SMLRY-42-12-24	5/28/2013	D	42	12	24	ppm	50	50	NO	--	--	86.03	60	YES	--	--
D-SMLRY-42-24-36	5/28/2013	D	42	24	36	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-42-36-48	5/28/2013	D	42	36	48	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-43-0-12	5/28/2013	D	43	0	12	ppm	50	50	NO	--	--	271.38	60	YES	--	--

TABLE 4.1. SOIL SAMPLE XRF AND LABORATORY RESULTS
SPRING MEADOW LAKE RESIDENTIAL AREAS DESIGN PHASE, HELENA, MONTANA

							ARSENIC					LEAD				
							SSL=19.6			RSL=49.6[1]		SSL=140				RSL=400
SAMPLE ID	DATE SAMPLED	PROPERTY IDENTIFIER	SAMPLE NUMBER	SAMPLE START DEPTH	SAMPLE END DEPTH	Units	XRF RESULT	XRF LIMIT	XRF DETECT	LAB RESULT	LAB DETECT	XRF RESULT	XRF LIMIT	XRF DETECT	LAB RESULT	LAB DETECT
D-SMLRY-43-12-24	5/28/2013	D	43	12	24	ppm	138.34	50	YES	--	--	283.94	60	YES	--	--
D-SMLRY-43-24-36	5/28/2013	D	43	24	36	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-43-36-48	5/28/2013	D	43	36	48	ppm	68.59	50	YES	--	--	60	60	NO	--	--
D-SMLRY-43-48-60	5/30/2013	D	43	48	60	ppm	50	50	NO	--	--	109.01	60	YES	--	--
D-SMLRY-45-0-12	5/28/2013	D	45	0	12	ppm	103.18	50	YES	--	--	79.12	60	YES	--	--
D-SMLRY-45-12-24	5/28/2013	D	45	12	24	ppm	59.16	50	YES	--	--	60	60	NO	--	--
D-SMLRY-45-24-36	5/30/2013	D	45	24	36	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-45-36-48	5/30/2013	D	45	36	48	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-46-0-12	5/28/2013	D	46	0	12	ppm	239.26	50	YES	87.3	YES	286.57	60	YES	110	YES
D-SMLRY-46-12-24	5/28/2013	D	46	12	24	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-47-0-12	5/28/2013	D	47	0	12	ppm	101.11	50	YES	75.4	YES	175.89	60	YES	105	YES
D-SMLRY-47-12-24	5/28/2013	D	47	12	24	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-48-0-12	5/28/2013	D	48	0	12	ppm	521.42	50	YES	212	YES	1037.38	60	YES	512	YES
D-SMLRY-48-12-24	5/28/2013	D	48	12	24	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-54-0-12	5/28/2013	D	54	0	12	ppm	50	50	NO	--	--	70.88	60	YES	--	--
D-SMLRY-54-12-24	5/28/2013	D	54	12	24	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-55-0-12	5/28/2013	D	55	0	12	ppm	101.07	50	YES	--	--	60	60	NO	--	--
D-SMLRY-55-12-24	5/28/2013	D	55	12	24	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-56-0-12	5/28/2013	D	56	0	12	ppm	128.72	50	YES	142	YES	148.75	60	YES	156	YES
D-SMLRY-56-12-24	5/28/2013	D	56	12	24	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-57-0-12	5/28/2013	D	57	0	12	ppm	87.44	50	YES	--	--	60	60	NO	--	--
D-SMLRY-57-12-24	5/28/2013	D	57	12	24	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-58-0-12	5/28/2013	D	58	0	12	ppm	133.15	50	YES	161	YES	179.26	60	YES	188	YES
D-SMLRY-58-0-12*	5/29/2013	D	58	0	12	ppm	133.15	50	YES	165	YES	179.26	60	YES	188	YES
D-SMLRY-58-12-24	5/28/2013	D	58	12	24	ppm	70.02	50	YES	--	--	60	60	NO	--	--
D-SMLRY-58-24-36	5/30/2013	D	58	24	36	ppm	50	50	NO	--	--	60	60	NO	--	--
D-SMLRY-58-36-48	5/30/2013	D	58	36	48	ppm	50	50	NO	--	--	60	60	NO	--	--
E-SMLRY-10-0-12	5/29/2013	E	10	0	12	ppm	6495.01	50	YES	5030	YES	2419.28	60	YES	3250	YES
E-SMLRY-10-12-24	5/29/2013	E	10	12	24	ppm	57.14	50	YES	--	--	60	60	NO	--	--
E-SMLRY-10-24-36	5/29/2013	E	10	24	36	ppm	381.02	50	YES	--	--	171.22	60	YES	--	--
E-SMLRY-11-0-12	5/29/2013	E	11	0	12	ppm	167.53	50	YES	237	YES	129.72	60	YES	218	YES
E-SMLRY-13-0-12	5/29/2013	E	13	0	12	ppm	129.52	50	YES	--	--	60	60	NO	--	--
E-SMLRY-13-12-24	5/29/2013	E	13	12	24	ppm	251.35	50	YES	--	--	60	60	NO	--	--
E-SMLRY-13-24-36	5/29/2013	E	13	24	36	ppm	81.98	50	YES	--	--	60	60	NO	--	--
E-SMLRY-14-0-12	5/29/2013	E	14	0	12	ppm	2426.22	50	YES	3370	YES	1569.34	60	YES	2320	YES
E-SMLRY-14-12-24	5/29/2013	E	14	12	24	ppm	50	50	NO	--	--	79.55	60	YES	--	--
E-SMLRY-15-0-12	5/29/2013	E	15	0	12	ppm	78.8	50	YES	--	--	94.96	60	YES	--	--
E-SMLRY-15-12-24	5/29/2013	E	15	12	24	ppm	322.96	50	YES	230	YES	274.41	60	YES	235	YES
E-SMLRY-16-0-12	5/29/2013	E	16	0	12	ppm	305.62	50	YES	--	--	81.97	60	YES	--	--
E-SMLRY-16-12-24	5/29/2013	E	16	12	24	ppm	102.25	50	YES	--	--	60	60	NO	--	--
E-SMLRY-16-24-36	5/29/2013	E	16	24	36	ppm	109.87	50	YES	75.7	YES	88.33	60	YES	40.9	YES
E-SMLRY-16-36-48	5/29/2013	E	16	36	48	ppm	50	50	NO	--	--	115.25	60	YES	--	--
E-SMLRY-17-0-12	5/29/2013	E	17	0	12	ppm	4117.96	50	YES	2690	YES	2199.18	60	YES	2290	YES
E-SMLRY-17-12-24	5/29/2013	E	17	12	24	ppm	226.86	50	YES	--	--	988.06	60	YES	--	--
E-SMLRY-17-24-36	5/29/2013	E	17	24	36	ppm	132.7	50	YES	965	YES	151.52	60	YES	736	YES
E-SMLRY-17-36-48	5/29/2013	E	17	36	48	ppm	50	50	NO	--	--	60	60	NO	--	--
E-SMLRY-18-0-12	5/29/2013	E	18	0	12	ppm	152.28	50	YES	--	--	130.66	60	YES	--	--
E-SMLRY-18-12-24	5/29/2013	E	18	12	24	ppm	263.52	50	YES	--	--	95.44	60	YES	--	--
E-SMLRY-18-24-36	5/29/2013	E	18	24	36	ppm	50	50	NO	--	--	108.16	60	YES	--	--
E-SMLRY-18-36-48	5/29/2013	E	18	36	48	ppm	325.63	50	YES	--	--	236.4	60	YES	--	--
E-SMLRY-19-0-12	5/29/2013	E	19	0	12	ppm	79.27	50	YES	--	--	60	60	NO	--	--
E-SMLRY-19-12-24	5/29/2013	E	19	12	24	ppm	396	50	YES	1200	YES	794.93	60	YES	875	YES
E-SMLRY-19-24-36	5/29/2013	E	19	24	36	ppm	50	50	NO	--	--	60	60	NO	--	--

TABLE 4.1. SOIL SAMPLE XRF AND LABORATORY RESULTS
SPRING MEADOW LAKE RESIDENTIAL AREAS DESIGN PHASE, HELENA, MONTANA

							ARSENIC					LEAD				
							SSL=19.6			RSL=49.6[1]		SSL=140				RSL=400
SAMPLE ID	DATE SAMPLED	PROPERTY IDENTIFIER	SAMPLE NUMBER	SAMPLE START DEPTH	SAMPLE END DEPTH	Units	XRF RESULT	XRF LIMIT	XRF DETECT	LAB RESULT	LAB DETECT	XRF RESULT	XRF LIMIT	XRF DETECT	LAB RESULT	LAB DETECT
E-SMLRY-20-0-12	5/29/2013	E	20	0	12	ppm	50	50	NO	--	--	60	60	NO	--	--
E-SMLRY-20-12-24	5/29/2013	E	20	12	24	ppm	1190.32	50	YES	--	--	1445.54	60	YES	--	--
E-SMLRY-20-24-36	5/29/2013	E	20	24	36	ppm	50	50	NO	33.6	YES	60	60	NO	29.6	YES
E-SMLRY-20-36-48	5/29/2013	E	20	36	48	ppm	50	50	NO	--	--	60	60	NO	--	--
E-SMLRY-21-0-12	5/29/2013	E	21	0	12	ppm	216.5	50	YES	252	YES	120.48	60	YES	181	YES
E-SMLRY-21-0-12*	5/29/2013	E	21	0	12	ppm	216.5	50	YES	253	YES	120.48	60	YES	196	YES
E-SMLRY-21-12-24	5/29/2013	E	21	12	24	ppm	267.76	50	YES	440	YES	228.29	60	YES	246	YES
E-SMLRY-21-24-36	5/29/2013	E	21	24	36	ppm	301.23	50	YES	--	--	164.16	60	YES	--	--
E-SMLRY-21-36-48	5/29/2013	E	21	36	48	ppm	50	50	NO	--	--	109.63	60	YES	--	--
E-SMLRY-22-0-12	5/29/2013	E	22	0	12	ppm	558.53	50	YES	--	--	268.63	60	YES	--	--
E-SMLRY-22-12-24	5/29/2013	E	22	12	24	ppm	50	50	NO	--	--	73.74	60	YES	--	--
E-SMLRY-23-0-12	5/29/2013	E	23	0	12	ppm	5055.88	50	YES	2240	YES	2441.74	60	YES	1450	YES
E-SMLRY-23-12-24	5/29/2013	E	23	12	24	ppm	90.31	50	YES	--	--	60	60	NO	--	--
E-SMLRY-23-24-36	5/30/2013	E	23	24	36	ppm	79.52	50	YES	--	--	60	60	NO	--	--
E-SMLRY-23-36-48	5/30/2013	E	23	36	48	ppm	50	50	NO	--	--	60	60	NO	--	--
E-SMLRY-24-0-12	5/29/2013	E	24	0	12	ppm	169.93	50	YES	--	--	60	60	NO	--	--
E-SMLRY-24-12-24	5/29/2013	E	24	12	24	ppm	561.37	50	YES	--	--	308.39	60	YES	--	--
E-SMLRY-24-24-36	5/29/2013	E	24	24	36	ppm	77.42	50	YES	--	--	60	60	NO	--	--
E-SMLRY-24-36-48	5/29/2013	E	24	36	48	ppm	81.01	50	YES	--	--	60	60	NO	--	--
E-SMLRY-24-48-60	5/30/2013	E	24	48	60	ppm	77.66	50	YES	--	--	60	60	NO	--	--
E-SMLRY-24-60-72	5/30/2013	E	24	60	72	ppm	50	50	NO	--	--	60	60	NO	--	--
E-SMLRY-25-0-12	5/29/2013	E	25	0	12	ppm	50	50	NO	--	--	82.57	60	YES	--	--
E-SMLRY-25-12-24	5/29/2013	E	25	12	24	ppm	690.54	50	YES	1060	YES	1431.63	60	YES	1620	YES
E-SMLRY-25-12-24*	5/29/2013	E	25	12	24	ppm	690.54	50	YES	1270		1431.63	60	YES	2420	
E-SMLRY-25-24-36	5/29/2013	E	25	24	36	ppm	93.72	50	YES	111	YES	74.94	60	YES	122	YES
E-SMLRY-25-36-48	5/29/2013	E	25	36	48	ppm	50	50	NO	--	--	60	60	NO	--	--
E-SMLRY-7-0-12	5/29/2013	E	7	0	12	ppm	130.17	50	YES	246	YES	209.13	60	YES	446	YES
E-SMLRY-8-0-12	5/29/2013	E	8	0	12	ppm	50	50	NO	--	--	126.27	60	YES	--	--
E-SMLRY-8-12-24	5/29/2013	E	8	12	24	ppm	69.28	50	YES	--	--	60	60	NO	--	--
E-SMLRY-9-0-12	5/29/2013	E	9	0	12	ppm	1126.75	50	YES	772	YES	825.8	60	YES	573	YES
E-SMLRY-9-12-24	5/29/2013	E	9	12	24	ppm	63.5	50	YES	--	--	60	60	NO	--	--
Z-SMLRY-1-0-12	5/28/2013	Z	1	0	12	ppm	50	50	NO	--	--	174.05	60	YES	--	--
Z-SMLRY-1-12-24	5/28/2013	Z	1	12	24	ppm	50	50	NO	--	--	60	60	NO	--	--
Z-SMLRY-2-0-12	5/28/2013	Z	2	0	12	ppm	104.83	50	YES	--	--	142.81	60	YES	--	--
Z-SMLRY-2-12-24	5/28/2013	Z	2	12	24	ppm	147.21	50	YES	--	--	194.52	60	YES	--	--
Z-SMLRY-2-24-36	5/28/2013	Z	2	24	36	ppm	122.86	50	YES	--	--	60	60	NO	--	--
Z-SMLRY-3-0-12	5/28/2013	Z	3	0	12	ppm	136.64	50	YES	105	YES	295.11	60	YES	273	YES
Z-SMLRY-3-12-24	5/28/2013	Z	3	12	24	ppm	50	50	NO	--	--	60	60	NO	--	--
Z-SMLRY-4-0-12	5/28/2013	Z	4	0	12	ppm	50	50	NO	--	--	60	60	NO	--	--
Z-SMLRY-4-12-24	5/28/2013	Z	4	12	24	ppm	50	50	NO	--	--	60	60	NO	--	--
Z-SMLRY-5-0-12	5/28/2013	Z	5	0	12	ppm	50	50	NO	--	--	113.37	60	YES	--	--
Z-SMLRY-5-12-24	5/28/2013	Z	5	12	24	ppm	89.55	50	YES	--	--	60	60	NO	--	--
Z-SMLRY-5-24-36	5/28/2013	Z	5	24	36	ppm	50	50	NO	--	--	60	60	NO	--	--

Notes:
1) area-specific background value
* => Field Duplicate
SSL= Soil Screening Level
RSL= Regional Screening Level
ppm=parts per million

TABLE 4.2. SOIL SAMPLE TCLP RESULTS
SPRING MEADOW LAKE RESIDENTIAL AREAS, DESIGN PHASE, HELENA, MONTANA

DATE SAMPLED	UNITS	SAMPLE	ARSENIC	BARIUM	CADMIUM	CHROMIUM	LEAD	MERCURY	SELENIUM	SILVER
		EPA Regulatory Limit (mg/L)	5	100	1	5	5	0.2	1	5
5/30/2013	ppm	C-SMLRY-TCLP-7-0-48	2.9	0.35	0.056	ND(0.05)	ND(0.05)	ND(0.0006)	0.23	ND(0.05)
5/30/2013	ppm	C-SMLRY-TCLP-8-0-48	2.5	0.15	0.031	ND(0.05)	ND(0.05)	ND(0.0006)	0.24	ND(0.05)
5/30/2013	ppm	C-SMLRY-TCLP-9-0-48	1.3	0.12	ND(0.015)	ND(0.05)	ND(0.05)	ND(0.0006)	0.25	ND(0.05)
5/30/2013	ppm	D-SMLRY-TCLP-10-0-72	0.82	0.93	ND(0.015)	ND(0.05)	ND(0.05)	ND(0.0006)	0.27	ND(0.05)
5/30/2013	ppm	D-SMLRY-TCLP-11-0-60	ND(0.5)	0.15	ND(0.015)	ND(0.05)	ND(0.05)	ND(0.0006)	0.25	ND(0.05)
5/30/2013	ppm	D-SMLRY-TCLP-12-0-48	0.9	1.1	ND(0.015)	ND(0.05)	ND(0.05)	ND(0.0006)	0.28	ND(0.05)
5/30/2013	ppm	E-SMLRY-TCLP-4-0-36	3.5	0.23	0.029	ND(0.05)	ND(0.05)	ND(0.0006)	0.2	ND(0.05)
5/30/2013	ppm	E-SMLRY-TCLP-5-0-48	1.8	0.25	0.016	ND(0.05)	ND(0.05)	ND(0.0006)	0.2	ND(0.05)
5/30/2013	ppm	E-SMLRY-TCLP-6-0-72	3.4	0.47	0.029	ND(0.05)	ND(0.05)	ND(0.0006)	0.24	ND(0.05)
5/30/2013	ppm	Z-SMLRY-TCLP-1-0-20	ND(0.5)	0.17	ND(0.015)	ND(0.05)	ND(0.05)	ND(0.0006)	ND(0.1)	ND(0.05)
5/30/2013	ppm	Z-SMLRY-TCLP-2-0-36	ND(0.5)	0.57	ND(0.015)	ND(0.05)	ND(0.05)	ND(0.0006)	0.13	ND(0.05)
5/30/2013	ppm	Z-SMLRY-TCLP-3-0-36	ND(0.5)	0.3	ND(0.015)	ND(0.05)	ND(0.05)	ND(0.0006)	0.18	ND(0.05)

Notes: ND(xx)= nondetect (detection limit)
mg/L = milligrams per liter
ppm=parts per million

TABLE 4.3. ADJUSTED SOIL SAMPLE RESULTS
SPRING MEADOW LAKE RESIDENTIAL AREAS, DESIGN PHASE, HELENA, MONTANA

							ARSENIC						LEAD					
							SSL=19.6				RSL=49.6[1]		SSL=140				RSL=400	
SAMPLE ID	DATE SAMPLED	PROPERTY IDENTIFIER	SAMPLE NUMBER	SAMPLE START DEPTH	SAMPLE END DEPTH	Units	XRF RESULT	XRF LIMIT	XRF DETECT	LAB RESULT	LAB DETECT	Adjusted[2]	XRF RESULT	XRF LIMIT	XRF DETECT	LAB RESULT	LAB DETECT	Adjusted[2]
C-SMLRY-26-0-12	**5/29/2013**	**C**	**26**	**0**	**12**	**ppm**	**342.81**	**50**	**YES**	**--**	**--**	**339.82**	**108.04**	**60**	**YES**	**--**	**--**	**123.32**
C-SMLRY-26-12-24	**5/29/2013**	**C**	**26**	**12**	**24**	**ppm**	**659.3**	**50**	**YES**	**--**	**--**	**663.81**	**349.9**	**60**	**YES**	**--**	**--**	**232.72**
C-SMLRY-26-24-36	**5/29/2013**	**C**	**26**	**24**	**36**	**ppm**	**1756.32**	**50**	**YES**	**--**	**--**	**1786.83**	**1316.38**	**60**	**YES**	**--**	**--**	**669.86**
C-SMLRY-26-36-48	**5/29/2013**	**C**	**26**	**36**	**48**	**ppm**	**269.03**	**50**	**YES**	**--**	**--**	**264.29**	**255.03**	**60**	**YES**	**--**	**--**	**189.81**
C-SMLRY-27-0-12	**5/29/2013**	**C**	**27**	**0**	**12**	**ppm**	**1148.12**	**50**	**YES**	**1120**	**YES**	**1164.22**	**988.95**	**60**	**YES**	**1030**	**YES**	**521.76**
C-SMLRY-27-12-24	5/29/2013	C	27	12	24	ppm	50	50	NO	--	--	40.07	60	60	NO	--	--	101.60
C-SMLRY-28-0-12	**5/29/2013**	**C**	**28**	**0**	**12**	**ppm**	**173.37**	**50**	**YES**	**--**	**--**	**166.37**	**193.47**	**60**	**YES**	**--**	**--**	**161.96**
C-SMLRY-28-12-24	**5/29/2013**	**C**	**28**	**12**	**24**	**ppm**	**1160.27**	**50**	**YES**	**--**	**--**	**1176.66**	**871.1**	**60**	**YES**	**--**	**--**	**468.46**
C-SMLRY-28-24-36	**5/29/2013**	**C**	**28**	**24**	**36**	**ppm**	**98.09**	**50**	**YES**	**--**	**--**	**89.30**	**60**	**60**	**NO**	**--**	**--**	**101.60**
C-SMLRY-28-36-48	5/29/2013	C	28	36	48	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
C-SMLRY-29-0-12	**5/30/2013**	**C**	**29**	**0**	**12**	**ppm**	**683.16**	**50**	**YES**	**--**	**--**	**688.24**	**578.37**	**60**	**YES**	**--**	**--**	**336.05**
C-SMLRY-29-12-24	**5/30/2013**	**C**	**29**	**12**	**24**	**ppm**	**247.18**	**50**	**YES**	**171**	**YES**	**241.93**	**265.82**	**60**	**YES**	**134**	**YES**	**194.69**
C-SMLRY-29-24-36	5/30/2013	C	29	24	36	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
C-SMLRY-29-36-48	5/30/2013	C	29	36	48	ppm	50	50	NO	--	--	40.07	93.4	60	**YES**	--	--	116.70
C-SMLRY-30-0-12	**5/30/2013**	**C**	**30**	**0**	**12**	**ppm**	**1083.72**	**50**	**YES**	**--**	**--**	**1098.29**	**678**	**60**	**YES**	**--**	**--**	**381.12**
C-SMLRY-30-12-24	**5/30/2013**	**C**	**30**	**12**	**24**	**ppm**	**783.45**	**50**	**YES**	**455**	**YES**	**790.91**	**660.39**	**60**	**YES**	**776**	**YES**	**373.15**
C-SMLRY-30-24-36	5/30/2013	C	30	24	36	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
C-SMLRY-30-36-48	5/30/2013	C	30	36	48	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
C-SMLRY-31-0-12	**5/30/2013**	**C**	**31**	**0**	**12**	**ppm**	**1604.06**	**50**	**YES**	**--**	**--**	**1630.96**	**1846.22**	**60**	**YES**	**--**	**--**	**909.50**
C-SMLRY-31-12-24	**5/30/2013**	**C**	**31**	**12**	**24**	**ppm**	**1980.22**	**50**	**YES**	**--**	**--**	**2016.04**	**1544.14**	**60**	**YES**	**--**	**--**	**772.87**
C-SMLRY-31-24-36	**5/30/2013**	**C**	**31**	**24**	**36**	**ppm**	**63.02**	**50**	**YES**	**--**	**--**	**53.40**	**60**	**60**	**NO**	**--**	**--**	**101.60**
C-SMLRY-31-36-48	5/30/2013	C	31	36	48	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
C-SMLRY-32-0-12	**5/30/2013**	**C**	**32**	**0**	**12**	**ppm**	**504.56**	**50**	**YES**	**--**	**--**	**505.41**	**453.62**	**60**	**YES**	**--**	**--**	**279.63**
C-SMLRY-32-12-24	**5/30/2013**	**C**	**32**	**12**	**24**	**ppm**	**943.22**	**50**	**YES**	**528**	**YES**	**954.46**	**670.06**	**60**	**YES**	**429**	**YES**	**377.53**
C-SMLRY-32-24-36	5/30/2013	C	32	24	36	ppm	54.16	50	**YES**	--	--	44.33	60	60	**NO**	--	--	101.60
C-SMLRY-32-36-48	**5/30/2013**	**C**	**32**	**36**	**48**	**ppm**	**83.32**	**50**	**YES**	**--**	**--**	**74.18**	**60**	**60**	**NO**	**--**	**--**	**101.60**
C-SMLRY-32-36-48*	**5/30/2013**	**C**	**32**	**36**	**48**	**ppm**	**86**	**50**	**YES**	**--**	**--**	**76.93**	**60**	**60**	**NO**	**--**	**--**	**101.60**
C-SMLRY-32-48-60	**5/30/2013**	**C**	**32**	**48**	**60**	**ppm**	**157.46**	**50**	**YES**	**--**	**--**	**150.08**	**99.57**	**60**	**YES**	**--**	**--**	**119.49**
C-SMLRY-33-0-12	**5/30/2013**	**C**	**33**	**0**	**12**	**ppm**	**456.91**	**50**	**YES**	**--**	**--**	**456.63**	**1154.7**	**60**	**YES**	**--**	**--**	**596.73**
C-SMLRY-33-24-36	5/30/2013	C	33	24	36	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
C-SMLRY-34-0-12	**5/30/2013**	**C**	**34**	**0**	**12**	**ppm**	**178.31**	**50**	**YES**	**161**	**YES**	**171.42**	**270.14**	**60**	**YES**	**159**	**YES**	**196.64**
C-SMLRY-34-12-24	**5/30/2013**	**C**	**34**	**12**	**24**	**ppm**	**543.48**	**50**	**YES**	**--**	**--**	**545.25**	**404.92**	**60**	**YES**	**--**	**--**	**257.60**
C-SMLRY-34-24-36	**5/30/2013**	**C**	**34**	**24**	**36**	**ppm**	**180.27**	**50**	**YES**	**--**	**--**	**173.43**	**183.62**	**60**	**YES**	**--**	**--**	**157.51**
C-SMLRY-34-36-48	**5/30/2013**	**C**	**34**	**36**	**48**	**ppm**	**76.86**	**50**	**YES**	**--**	**--**	**67.57**	**71.73**	**60**	**YES**	**--**	**--**	**106.90**
C-SMLRY-35-0-12	**5/30/2013**	**C**	**35**	**0**	**12**	**ppm**	**933.67**	**50**	**YES**	**780**	**YES**	**944.69**	**800.05**	**60**	**YES**	**887**	**YES**	**436.32**
C-SMLRY-35-12-24	**5/30/2013**	**C**	**35**	**12**	**24**	**ppm**	**576.33**	**50**	**YES**	**--**	**--**	**578.88**	**477.96**	**60**	**YES**	**--**	**--**	**290.64**
C-SMLRY-35-24-36	5/30/2013	C	35	24	36	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
C-SMLRY-35-36-48	5/30/2013	C	35	36	48	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
D-SMLRY-39-0-12	**5/28/2013**	**D**	**39**	**0**	**12**	**ppm**	**471.68**	**50**	**YES**	**1290**	**YES**	**471.75**	**398.39**	**60**	**YES**	**1070**	**YES**	**254.65**
D-SMLRY-39-12-24	5/28/2013	D	39	12	24	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
D-SMLRY-40-0-12	**5/28/2013**	**D**	**40**	**0**	**12**	**ppm**	**111.66**	**50**	**YES**	**--**	**--**	**103.19**	**167.89**	**60**	**YES**	**--**	**--**	**150.39**
D-SMLRY-40-12-24	**5/28/2013**	**D**	**40**	**12**	**24**	**ppm**	**235.62**	**50**	**YES**	**--**	**--**	**230.09**	**312.03**	**60**	**YES**	**--**	**--**	**215.59**
D-SMLRY-40-24-36	5/28/2013	D	40	24	36	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
D-SMLRY-40-36-48	5/28/2013	D	40	36	48	ppm	57.35	50	**YES**	--	--	47.60	60	60	**NO**	--	--	101.60
D-SMLRY-40-48-60	5/30/2013	D	40	48	60	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
D-SMLRY-40-60-72	5/30/2013	D	40	60	72	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
D-SMLRY-41-0-12	**5/28/2013**	**D**	**41**	**0**	**12**	**ppm**	**692.6**	**50**	**YES**	**957**	**YES**	**697.90**	**1040.75**	**60**	**YES**	**1040**	**YES**	**545.19**
D-SMLRY-41-12-24	5/28/2013	D	41	12	24	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
D-SMLRY-42-0-12	5/28/2013	D	42	0	12	ppm	50	50	NO	--	--	40.07	205.66	60	**YES**	--	--	167.48
D-SMLRY-42-12-24	5/28/2013	D	42	12	24	ppm	50	50	NO	--	--	40.07	86.03	60	**YES**	--	--	113.37
D-SMLRY-42-24-36	5/28/2013	D	42	24	36	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
D-SMLRY-42-36-48	5/28/2013	D	42	36	48	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
D-SMLRY-43-0-12	5/28/2013	D	43	0	12	ppm	50	50	NO	--	--	40.07	271.38	60	**YES**	--	--	197.20
D-SMLRY-43-12-24	**5/28/2013**	**D**	**43**	**12**	**24**	**ppm**	**138.34**	**50**	**YES**	**--**	**--**	**130.51**	**283.94**	**60**	**YES**	**--**	**--**	**202.88**

TABLE 4.3. ADJUSTED SOIL SAMPLE RESULTS
SPRING MEADOW LAKE RESIDENTIAL AREAS, DESIGN PHASE, HELENA, MONTANA

							ARSENIC						LEAD					
							SSL=19.6			RSL=49.6[1]			SSL=140			RSL=400		
SAMPLE ID	DATE SAMPLED	PROPERTY IDENTIFIER	SAMPLE NUMBER	SAMPLE START DEPTH	SAMPLE END DEPTH	Units	XRF RESULT	XRF LIMIT	XRF DETECT	LAB RESULT	LAB DETECT	Adjusted[2]	XRF RESULT	XRF LIMIT	XRF DETECT	LAB RESULT	LAB DETECT	Adjusted[2]
D-SMLRY-43-24-36	5/28/2013	D	43	24	36	ppm	50	50	NO	--	--	40.07	60	60	NO	--	--	101.60
D-SMLRY-43-36-48	**5/28/2013**	**D**	**43**	**36**	**48**	**ppm**	**68.59**	**50**	**YES**	**--**	**--**	**59.10**	**60**	**60**	**NO**	**--**	**--**	**101.60**
D-SMLRY-43-48-60	5/30/2013	D	43	48	60	ppm	50	50	NO	--	--	40.07	109.01	60	YES	--	--	123.76
D-SMLRY-45-0-12	**5/28/2013**	**D**	**45**	**0**	**12**	**ppm**	**103.18**	**50**	**YES**	**--**	**--**	**94.51**	**79.12**	**60**	**YES**	**--**	**--**	**110.24**
D-SMLRY-45-12-24	5/28/2013	D	45	12	24	ppm	59.16	50	YES	--	--	49.45	60	60	NO	--	--	101.60
D-SMLRY-45-24-36	5/30/2013	D	45	24	36	ppm	50	50	NO	--	--	40.07	60	60	NO	--	--	101.60
D-SMLRY-45-36-48	5/30/2013	D	45	36	48	ppm	50	50	NO	--	--	40.07	60	60	NO	--	--	101.60
D-SMLRY-46-0-12	**5/28/2013**	**D**	**46**	**0**	**12**	**ppm**	**239.26**	**50**	**YES**	**87.3**	**YES**	**233.82**	**286.57**	**60**	**YES**	**110**	**YES**	**204.07**
D-SMLRY-46-12-24	5/28/2013	D	46	12	24	ppm	50	50	NO	--	--	40.07	60	60	NO	--	--	101.60
D-SMLRY-47-0-12	**5/28/2013**	**D**	**47**	**0**	**12**	**ppm**	**101.11**	**50**	**YES**	**75.4**	**YES**	**92.39**	**175.89**	**60**	**YES**	**105**	**YES**	**154.01**
D-SMLRY-47-12-24	5/28/2013	D	47	12	24	ppm	50	50	NO	--	--	40.07	60	60	NO	--	--	101.60
D-SMLRY-48-0-12	**5/28/2013**	**D**	**48**	**0**	**12**	**ppm**	**521.42**	**50**	**YES**	**212**	**YES**	**522.67**	**1037.38**	**60**	**YES**	**512**	**YES**	**543.66**
D-SMLRY-48-12-24	5/28/2013	D	48	12	24	ppm	50	50	NO	--	--	40.07	60	60	NO	--	--	101.60
D-SMLRY-54-0-12	5/28/2013	D	54	0	12	ppm	50	50	NO	--	--	40.07	70.88	60	YES	--	--	106.52
D-SMLRY-54-12-24	5/28/2013	D	54	12	24	ppm	50	50	NO	--	--	40.07	60	60	NO	--	--	101.60
D-SMLRY-55-0-12	**5/28/2013**	**D**	**55**	**0**	**12**	**ppm**	**101.07**	**50**	**YES**	**--**	**--**	**92.35**	**60**	**60**	**NO**	**--**	**--**	**101.60**
D-SMLRY-55-12-24	5/28/2013	D	55	12	24	ppm	50	50	NO	--	--	40.07	60	60	NO	--	--	101.60
D-SMLRY-56-0-12	**5/28/2013**	**D**	**56**	**0**	**12**	**ppm**	**128.72**	**50**	**YES**	**142**	**YES**	**120.66**	**148.75**	**60**	**YES**	**156**	**YES**	**141.74**
D-SMLRY-56-12-24	5/28/2013	D	56	12	24	ppm	50	50	NO	--	--	40.07	60	60	NO	--	--	101.60
D-SMLRY-57-0-12	**5/28/2013**	**D**	**57**	**0**	**12**	**ppm**	**87.44**	**50**	**YES**	**--**	**--**	**78.40**	**60**	**60**	**NO**	**--**	**--**	**101.60**
D-SMLRY-57-12-24	5/28/2013	D	57	12	24	ppm	50	50	NO	--	--	40.07	60	60	NO	--	--	101.60
D-SMLRY-58-0-12	**5/28/2013**	**D**	**58**	**0**	**12**	**ppm**	**133.15**	**50**	**YES**	**161**	**YES**	**125.19**	**179.26**	**60**	**YES**	**188**	**YES**	**155.54**
D-SMLRY-58-12-24	**5/28/2013**	**D**	**58**	**12**	**24**	**ppm**	**70.02**	**50**	**YES**	**--**	**--**	**60.57**	**60**	**60**	**NO**	**--**	**--**	**101.60**
D-SMLRY-58-24-36	5/30/2013	D	58	24	36	ppm	50	50	NO	--	--	40.07	60	60	NO	--	--	101.60
D-SMLRY-58-36-48	5/30/2013	D	58	36	48	ppm	50	50	NO	--	--	40.07	60	60	NO	--	--	101.60
E-SMLRY-10-0-12	**5/29/2013**	**E**	**10**	**0**	**12**	**ppm**	**6495.01**	**50**	**YES**	**5030**	**YES**	**6637.83**	**2419.28**	**60**	**YES**	**3250**	**YES**	**1168.70**
E-SMLRY-10-12-24	5/29/2013	E	10	12	24	ppm	57.14	50	YES	--	--	47.38	60	60	NO	--	--	101.60
E-SMLRY-10-24-36	**5/29/2013**	**E**	**10**	**24**	**36**	**ppm**	**381.02**	**50**	**YES**	**--**	**--**	**378.94**	**171.22**	**60**	**YES**	**--**	**--**	**151.90**
E-SMLRY-11-0-12	**5/29/2013**	**E**	**11**	**0**	**12**	**ppm**	**167.53**	**50**	**YES**	**237**	**YES**	**160.39**	**129.72**	**60**	**YES**	**218**	**YES**	**133.13**
E-SMLRY-13-0-12	**5/29/2013**	**E**	**13**	**0**	**12**	**ppm**	**129.52**	**50**	**YES**	**--**	**--**	**121.48**	**60**	**60**	**NO**	**--**	**--**	**101.60**
E-SMLRY-13-12-24	**5/29/2013**	**E**	**13**	**12**	**24**	**ppm**	**251.35**	**50**	**YES**	**--**	**--**	**246.19**	**60**	**60**	**NO**	**--**	**--**	**101.60**
E-SMLRY-13-24-36	**5/29/2013**	**E**	**13**	**24**	**36**	**ppm**	**81.98**	**50**	**YES**	**--**	**--**	**72.81**	**60**	**60**	**NO**	**--**	**--**	**101.60**
E-SMLRY-14-0-12	**5/29/2013**	**E**	**14**	**0**	**12**	**ppm**	**2426.22**	**50**	**YES**	**3370**	**YES**	**2472.61**	**1569.34**	**60**	**YES**	**2320**	**YES**	**784.27**
E-SMLRY-14-12-24	5/29/2013	E	14	12	24	ppm	50	50	NO	--	--	40.07	79.55	60	YES	--	--	110.44
E-SMLRY-15-0-12	**5/29/2013**	**E**	**15**	**0**	**12**	**ppm**	**78.8**	**50**	**YES**	**--**	**--**	**69.56**	**94.96**	**60**	**YES**	**--**	**--**	**117.41**
E-SMLRY-15-12-24	**5/29/2013**	**E**	**15**	**12**	**24**	**ppm**	**322.96**	**50**	**YES**	**230**	**YES**	**319.50**	**274.41**	**60**	**YES**	**235**	**YES**	**198.57**
E-SMLRY-16-0-12	**5/29/2013**	**E**	**16**	**0**	**12**	**ppm**	**305.62**	**50**	**YES**	**--**	**--**	**301.75**	**81.97**	**60**	**YES**	**--**	**--**	**111.53**
E-SMLRY-16-12-24	**5/29/2013**	**E**	**16**	**12**	**24**	**ppm**	**102.25**	**50**	**YES**	**--**	**--**	**93.56**	**60**	**60**	**NO**	**--**	**--**	**101.60**
E-SMLRY-16-24-36	**5/29/2013**	**E**	**16**	**24**	**36**	**ppm**	**109.87**	**50**	**YES**	**75.7**	**YES**	**101.36**	**88.33**	**60**	**YES**	**40.9**	**YES**	**114.41**
E-SMLRY-16-36-48	5/29/2013	E	16	36	48	ppm	50	50	NO	--	--	40.07	115.25	60	YES	--	--	126.59
E-SMLRY-17-0-12	**5/29/2013**	**E**	**17**	**0**	**12**	**ppm**	**4117.96**	**50**	**YES**	**2690**	**YES**	**4204.44**	**2199.18**	**60**	**YES**	**2290**	**YES**	**1069.15**
E-SMLRY-17-12-24	**5/29/2013**	**E**	**17**	**12**	**24**	**ppm**	**226.86**	**50**	**YES**	**--**	**--**	**221.12**	**988.06**	**60**	**YES**	**--**	**--**	**521.36**
E-SMLRY-17-24-36	**5/29/2013**	**E**	**17**	**24**	**36**	**ppm**	**132.7**	**50**	**YES**	**965**	**YES**	**124.73**	**151.52**	**60**	**YES**	**736**	**YES**	**142.99**
E-SMLRY-17-36-48	5/29/2013	E	17	36	48	ppm	50	50	NO	--	--	40.07	60	60	NO	--	--	101.60
E-SMLRY-18-0-12	**5/29/2013**	**E**	**18**	**0**	**12**	**ppm**	**152.28**	**50**	**YES**	**--**	**--**	**144.78**	**130.66**	**60**	**YES**	**--**	**--**	**133.56**
E-SMLRY-18-12-24	**5/29/2013**	**E**	**18**	**12**	**24**	**ppm**	**263.52**	**50**	**YES**	**--**	**--**	**258.65**	**95.44**	**60**	**YES**	**--**	**--**	**117.63**
E-SMLRY-18-24-36	5/29/2013	E	18	24	36	ppm	50	50	NO	--	--	40.07	108.16	60	YES	--	--	123.38
E-SMLRY-18-36-48	**5/29/2013**	**E**	**18**	**36**	**48**	**ppm**	**325.63**	**50**	**YES**	**--**	**--**	**322.24**	**236.4**	**60**	**YES**	**--**	**--**	**181.38**
E-SMLRY-19-0-12	**5/29/2013**	**E**	**19**	**0**	**12**	**ppm**	**79.27**	**50**	**YES**	**--**	**--**	**70.04**	**60**	**60**	**NO**	**--**	**--**	**101.60**
E-SMLRY-19-12-24	**5/29/2013**	**E**	**19**	**12**	**24**	**ppm**	**396**	**50**	**YES**	**1200**	**YES**	**394.27**	**794.93**	**60**	**YES**	**875**	**YES**	**434.00**
E-SMLRY-19-24-36	5/29/2013	E	19	24	36	ppm	50	50	NO	--	--	40.07	60	60	NO	--	--	101.60
E-SMLRY-20-0-12	5/29/2013	E	20	0	12	ppm	50	50	NO	--	--	40.07	60	60	NO	--	--	101.60
E-SMLRY-20-12-24	**5/29/2013**	**E**	**20**	**12**	**24**	**ppm**	**1190.32**	**50**	**YES**	**--**	**--**	**1207.42**	**1445.54**	**60**	**YES**	**--**	**--**	**728.28**

TABLE 4.3. ADJUSTED SOIL SAMPLE RESULTS
SPRING MEADOW LAKE RESIDENTIAL AREAS, DESIGN PHASE, HELENA, MONTANA

							ARSENIC						LEAD					
							SSL=19.6			RSL=49.6[1]			SSL=140			RSL=400		
SAMPLE ID	DATE SAMPLED	PROPERTY IDENTIFIER	SAMPLE NUMBER	SAMPLE START DEPTH	SAMPLE END DEPTH	Units	XRF RESULT	XRF LIMIT	XRF DETECT	LAB RESULT	LAB DETECT	Adjusted[2]	XRF RESULT	XRF LIMIT	XRF DETECT	LAB RESULT	LAB DETECT	Adjusted[2]
E-SMLRY-20-24-36	5/29/2013	E	20	24	36	ppm	50	50	NO	33.6	**YES**	40.07	60	60	**NO**	29.6	**YES**	101.60
E-SMLRY-20-36-48	5/29/2013	E	20	36	48	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
E-SMLRY-21-0-12	**5/29/2013**	**E**	**21**	**0**	**12**	**ppm**	**216.5**	**50**	**YES**	**252**	**YES**	**210.52**	**120.48**	**60**	**YES**	**181**	**YES**	**128.95**
E-SMLRY-21-12-24	**5/29/2013**	**E**	**21**	**12**	**24**	**ppm**	**267.76**	**50**	**YES**	**440**	**YES**	**262.99**	**228.29**	**60**	**YES**	**246**	**YES**	**177.71**
E-SMLRY-21-24-36	**5/29/2013**	**E**	**21**	**24**	**36**	**ppm**	**301.23**	**50**	**YES**	**--**	**--**	**297.26**	**164.16**	**60**	**YES**	**--**	**--**	**148.71**
E-SMLRY-21-36-48	5/29/2013	E	21	36	48	ppm	50	50	NO	--	--	40.07	109.63	60	**YES**	--	--	124.04
E-SMLRY-22-0-12	**5/29/2013**	**E**	**22**	**0**	**12**	**ppm**	**558.53**	**50**	**YES**	**--**	**--**	**560.66**	**268.63**	**60**	**YES**	**--**	**--**	**195.96**
E-SMLRY-22-12-24	5/29/2013	E	22	12	24	ppm	50	50	NO	--	--	40.07	73.74	60	**YES**	--	--	107.81
E-SMLRY-23-0-12	**5/29/2013**	**E**	**23**	**0**	**12**	**ppm**	**5055.88**	**50**	**YES**	**2240**	**YES**	**5164.59**	**2441.74**	**60**	**YES**	**1450**	**YES**	**1178.86**
E-SMLRY-23-12-24	**5/29/2013**	**E**	**23**	**12**	**24**	**ppm**	**90.31**	**50**	**YES**	**--**	**--**	**81.34**	**60**	**60**	**NO**	**--**	**--**	**101.60**
E-SMLRY-23-24-36	**5/30/2013**	**E**	**23**	**24**	**36**	**ppm**	**79.52**	**50**	**YES**	**--**	**--**	**70.29**	**60**	**60**	**NO**	**--**	**--**	**101.60**
E-SMLRY-23-36-48	5/30/2013	E	23	36	48	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
E-SMLRY-24-0-12	**5/29/2013**	**E**	**24**	**0**	**12**	**ppm**	**169.93**	**50**	**YES**	**--**	**--**	**162.85**	**60**	**60**	**NO**	**--**	**--**	**101.60**
E-SMLRY-24-12-24	**5/29/2013**	**E**	**24**	**12**	**24**	**ppm**	**561.37**	**50**	**YES**	**--**	**--**	**563.56**	**308.39**	**60**	**YES**	**--**	**--**	**213.94**
E-SMLRY-24-24-36	**5/29/2013**	**E**	**24**	**24**	**36**	**ppm**	**77.42**	**50**	**YES**	**--**	**--**	**68.14**	**60**	**60**	**NO**	**--**	**--**	**101.60**
E-SMLRY-24-36-48	**5/29/2013**	**E**	**24**	**36**	**48**	**ppm**	**81.01**	**50**	**YES**	**--**	**--**	**71.82**	**60**	**60**	**NO**	**--**	**--**	**101.60**
E-SMLRY-24-48-60	**5/30/2013**	**E**	**24**	**48**	**60**	**ppm**	**77.66**	**50**	**YES**	**--**	**--**	**68.39**	**60**	**60**	**NO**	**--**	**--**	**101.60**
E-SMLRY-24-60-72	5/30/2013	E	24	60	72	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
E-SMLRY-25-0-12	5/29/2013	E	25	0	12	ppm	50	50	NO	--	--	40.07	82.57	60	**YES**	--	--	111.80
E-SMLRY-25-12-24	**5/29/2013**	**E**	**25**	**12**	**24**	**ppm**	**690.54**	**50**	**YES**	**1060**	**YES**	**695.79**	**1431.63**	**60**	**YES**	**1620**	**YES**	**721.98**
E-SMLRY-25-24-36	**5/29/2013**	**E**	**25**	**24**	**36**	**ppm**	**93.72**	**50**	**YES**	**111**	**YES**	**84.83**	**74.94**	**60**	**YES**	**122**	**YES**	**108.35**
E-SMLRY-25-36-48	5/29/2013	E	25	36	48	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
E-SMLRY-7-0-12	**5/29/2013**	**E**	**7**	**0**	**12**	**ppm**	**130.17**	**50**	**YES**	**246**	**YES**	**122.14**	**209.13**	**60**	**YES**	**446**	**YES**	**169.05**
E-SMLRY-8-0-12	5/29/2013	E	8	0	12	ppm	50	50	NO	--	--	40.07	126.27	60	**YES**	--	--	131.57
E-SMLRY-8-12-24	**5/29/2013**	**E**	**8**	**12**	**24**	**ppm**	**69.28**	**50**	**YES**	**--**	**--**	**59.81**	**60**	**60**	**NO**	**--**	**--**	**101.60**
E-SMLRY-9-0-12	**5/29/2013**	**E**	**9**	**0**	**12**	**ppm**	**1126.75**	**50**	**YES**	**772**	**YES**	**1142.34**	**825.8**	**60**	**YES**	**573**	**YES**	**447.97**
E-SMLRY-9-12-24	**5/29/2013**	**E**	**9**	**12**	**24**	**ppm**	**63.5**	**50**	**YES**	**--**	**--**	**53.89**	**60**	**60**	**NO**	**--**	**--**	**101.60**
Z-SMLRY-1-0-12	5/28/2013	Z	1	0	12	ppm	50	50	NO	--	--	40.07	174.05	60	**YES**	--	--	153.18
Z-SMLRY-1-12-24	5/28/2013	Z	1	12	24	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
Z-SMLRY-2-0-12	**5/28/2013**	**Z**	**2**	**0**	**12**	**ppm**	**104.83**	**50**	**YES**	**--**	**--**	**96.20**	**142.81**	**60**	**YES**	**--**	**--**	**139.05**
Z-SMLRY-2-12-24	**5/28/2013**	**Z**	**2**	**12**	**24**	**ppm**	**147.21**	**50**	**YES**	**--**	**--**	**139.59**	**194.52**	**60**	**YES**	**--**	**--**	**162.44**
Z-SMLRY-2-24-36	**5/28/2013**	**Z**	**2**	**24**	**36**	**ppm**	**122.86**	**50**	**YES**	**--**	**--**	**114.66**	**60**	**60**	**NO**	**--**	**--**	**101.60**
Z-SMLRY-3-0-12	**5/28/2013**	**Z**	**3**	**0**	**12**	**ppm**	**136.64**	**50**	**YES**	**105**	**YES**	**128.77**	**295.11**	**60**	**YES**	**273**	**YES**	**207.94**
Z-SMLRY-3-12-24	5/28/2013	Z	3	12	24	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
Z-SMLRY-4-0-12	5/28/2013	Z	4	0	12	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
Z-SMLRY-4-12-24	5/28/2013	Z	4	12	24	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60
Z-SMLRY-5-0-12	5/28/2013	Z	5	0	12	ppm	50	50	NO	--	--	40.07	113.37	60	**YES**	--	--	125.74
Z-SMLRY-5-12-24	**5/28/2013**	**Z**	**5**	**12**	**24**	**ppm**	**89.55**	**50**	**YES**	**--**	**--**	**80.56**	**60**	**60**	**NO**	**--**	**--**	**101.60**
Z-SMLRY-5-24-36	5/28/2013	Z	5	24	36	ppm	50	50	NO	--	--	40.07	60	60	**NO**	--	--	101.60

Notes:
1) area-specific background value
2) calculated with values from correlation equation
Bolded values indicate samples that exceed arsenic and/or lead action levels
SSL=Soil Screening Level
RSL=Regional Screening Level
ppm=parts per million

TABLE 5.1. ESTIMATED SOIL VOLUMES TO BE EXCAVATED
SPRING MEADOW LAKE RESIDENTIAL AREAS, DESIGN PHASE, HELENA, MONTANA

					EXCAVATION OPTION #1 (Depth by Grid)[2]		EXCAVATION OPTION #2 (EPA, 2003)[3]		EXCAVATION OPTION #3 (COMBINATION)	
PROPERTY IDENTIFIER	SAMPLE NUMBER	EXCAVATION DEPTH (INCHES)	EXCAVATION DEPTH (FEET)	PORTION OF GRID EXCAVATED[1]	CUBIC FEET EXCAVATED	CUBIC YARDS EXCAVATED	CUBIC FEET EXCAVATED	CUBIC YARDS EXCAVATED	CUBIC FEET EXCAVATED	CUBIC YARDS EXCAVATED
Z	1	0	0	1	0	0.0	1150	42.6	0	0.0
Z	2	36	3	1	1725	63.9	1150	42.6	1150	42.6
Z	3	12	1	1	575	21.3	1150	42.6	575	21.3
Z	4	0	0	1	0	0.0	1150	42.6	0	0.0
Z	5	24	2	1	1150	42.6	1150	42.6	1150	42.6
E	7	12	1	0.5	287.5	10.6	575	21.3	287.5	10.6
E	8	24	2	0.5	575	21.3	575	21.3	575	21.3
E	9	24	2	0.25	287.5	10.6	287.5	10.6	287.5	10.6
E	10	36	3	0.25	431.25	16.0	287.5	10.6	287.5	10.6
E	11	12	1	1	575	21.3	1150	42.6	575	21.3
E	13	36	3	0.5	862.5	31.9	575	21.3	575	21.3
E	14	12	1	0.5	287.5	10.6	575	21.3	287.5	10.6
E	15	24	2	1	1150	42.6	1150	42.6	1150	42.6
E	16	36	3	1	1725	63.9	1150	42.6	1150	42.6
E	17	36	3	0.5	862.5	31.9	575	21.3	575	21.3
E	18	48	4	0.5	1150	42.6	575	21.3	575	21.3
E	19	24	2	1	1150	42.6	1150	42.6	1150	42.6
E	20	24	2	0.5	575	21.3	575	21.3	575	21.3
E	21	36	3	1	1725	63.9	1150	42.6	1150	42.6
E	22	12	1	0.25	143.75	5.3	287.5	10.6	143.75	5.3
E	23	36	3	0.25	431.25	16.0	287.5	10.6	287.5	10.6
E	24	60	5	0.5	1437.5	53.2	575	21.3	575	21.3
E	25	36	3	0.5	862.5	31.9	575	21.3	575	21.3
C	26	48	4	1	2300	85.2	1150	42.6	1150	42.6
C	27	12	1	1	575	21.3	1150	42.6	575	21.3
C	28	36	3	1	1725	63.9	1150	42.6	1150	42.6
C	29	24	2	1	1150	42.6	1150	42.6	1150	42.6
C	30	24	2	0.75	862.5	31.9	862.5	31.9	862.5	31.9
C	31	36	3	0.5	862.5	31.9	575	21.3	575	21.3
C	32	60	5	0.5	1437.5	53.2	575	21.3	575	21.3
C	33	12	1	0.5	287.5	10.6	575	21.3	287.5	10.6
C	34	48	4	0.5	1150	42.6	575	21.3	575	21.3
C	35	24	2	0.5	575	21.3	575	21.3	575	21.3
D	39	12	1	2	1150	42.6	2300	85.2	1150	42.6
D	40	24	2	1.25	1437.5	53.2	1437.5	53.2	1437.5	53.2
D	41	12	1	1.25	718.75	26.6	1437.5	53.2	718.75	26.6
D	42	0	0	0.5	0	0.0	575	21.3	0	0.0
D	43	60	5	0.5	1437.5	53.2	575	21.3	575	21.3
D	45	12	1	1.5	862.5	31.9	1725	63.9	862.5	31.9
D	46	12	1	1.5	862.5	31.9	1725	63.9	862.5	31.9
D	47	12	1	1.5	862.5	31.9	1725	63.9	862.5	31.9
D	48	12	1	1.5	862.5	31.9	1725	63.9	862.5	31.9
D	54	0	0	0.75	0	0.0	862.5	31.9	0	0.0
D	55	12	1	0.75	431.25	16.0	862.5	31.9	431.25	16.0
D	56	12	1	0.5	287.5	10.6	575	21.3	287.5	10.6
D	57	12	1	0.5	287.5	10.6	575	21.3	287.5	10.6
D	58	24	2	0.75	862.5	31.9	862.5	31.9	862.5	31.9
				TOTAL EXCAVATION (CU YDS)		**1442.8**		**1597.2**		**1123.4**

Notes: 1) Estimate of prtion of grid available for excavation
2) Each grid excavated to individual depth of impact
3) All grids excavated to 2 ft depth (USEPA Superfund Lead-Contaminated Residential Sites Handbook)

FIGURES

EXPLANATION

RECLAMATION AREA

LAND OWNERSHIP PARCELS

N

0 50'

Trihydro CORPORATION
1252 Commerce Drive
Laramie, WY 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 1-1

PROPERTIES DESIGNATED FOR RECLAMATION

SPRING MEADOW LAKE RESIDENTIAL AREAS
DESIGN PHASE
HELENA, MONTANA

Drawn By: PH	Checked By: JG	Scale: 1" = 50'	Date: 6/27/13	File: MDEQ_Properties_Figure1-1.mxd

EXPLANATION

- PROPOSED SAMPLING LOCATION
- SOIL SAMPLING GRID

N

0 50'

Trihydro CORPORATION
1252 Commerce Drive
Laramie, WY 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 2-1

SOIL SAMPLING GRID AND CONCEPTUAL SAMPLING LOCATIONS

SPRING MEADOW LAKE RESIDENTIAL AREAS DESIGN PHASE HELENA, MONTANA

Drawn By: PH	Checked By: JG	Scale: 1" = 50'	Date: 6/28/13	File: MDEQ_SoilSamples_Figure2-1.mxd

EXPLANATION

- SOIL SAMPLE LOCATION

N

0 50'

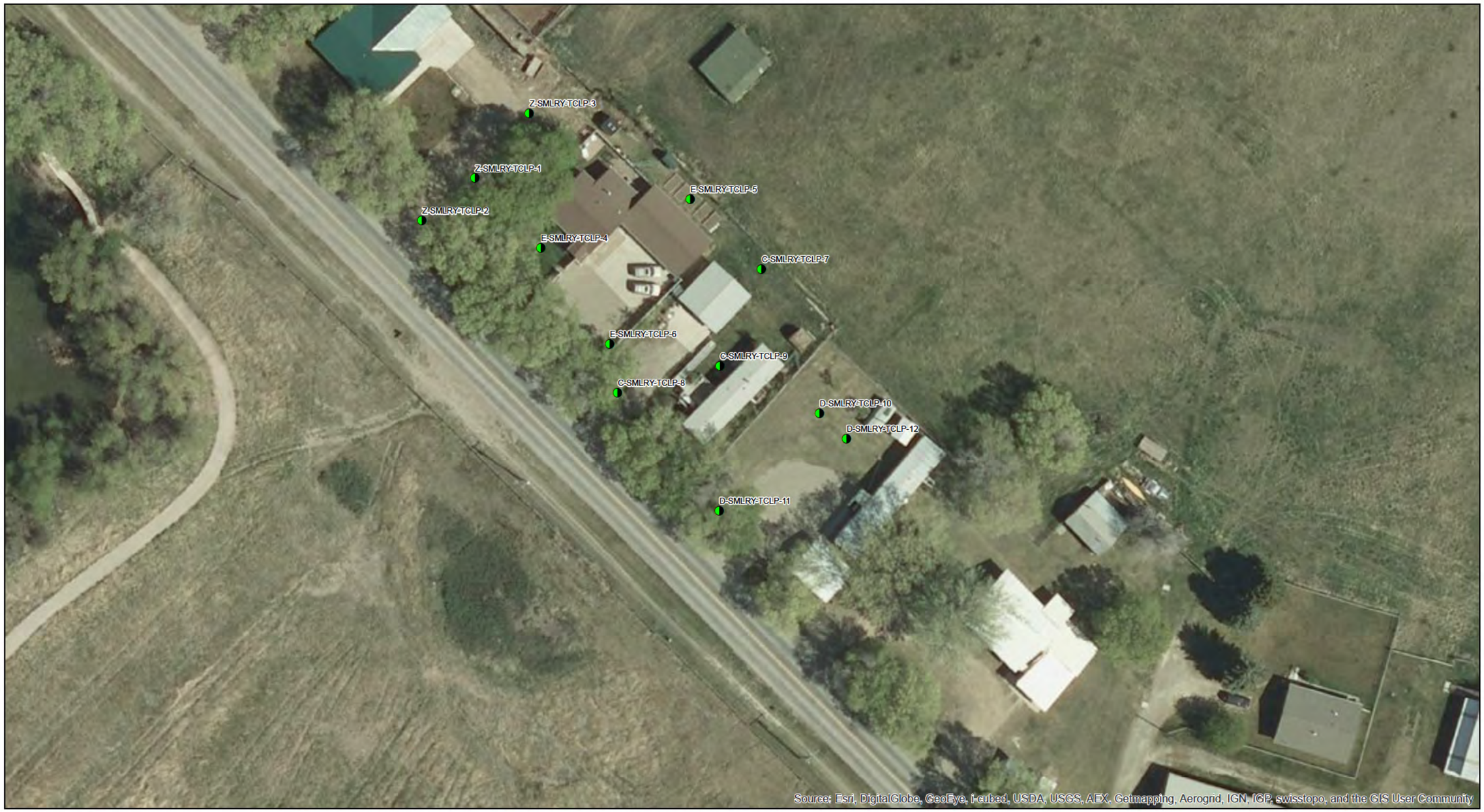
Trihydro CORPORATION
1252 Commerce Drive
Laramie, WY 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 2-2

ACTUAL SAMPLE LOCATIONS

SPRING MEADOW LAKE RESIDENTIAL AREAS
DESIGN PHASE
HELENA, MONTANA

Drawn By: PH	Checked By: JG	Scale: 1" = 50'	Date: 6/27/13	File: MDEQ_SoilSamples_Figure2-2.mxd



EXPLANATION

- TCLP SAMPLE LOCATION

N

0 50'

Trihydro CORPORATION
1252 Commerce Drive
Laramie, WY 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 2-3

TCLP SAMPLE LOCATIONS

SPRING MEADOW LAKE RESIDENTIAL AREAS
DESIGN PHASE
HELENA, MONTANA

Drawn By: PH	Checked By: JG	Scale: 1" = 50'	Date: 6/28/13	File: MDEQ_SoilSamples_Figure2-3.mxd

EXPLANATION

DEPTH OF IMPACT

- NO IMPACT
- 1 FOOT
- 2 FOOT
- 3 FOOT
- 4 FOOT
- 5 FOOT AND GREATER

N

0 50'

Trihydro CORPORATION
1252 Commerce Drive
Laramie, WY 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 4-1

DEPTH OF IMPACT

SPRING MEADOW LAKE RESIDENTIAL AREAS
DESIGN PHASE
HELENA, MONTANA

Drawn By: PH	Checked By: JG	Scale: 1" = 50'	Date: 6/28/13	File: MDEQ_SoilImpactsCont_Figure4-1.mxd

APPENDIX A

UTILITY LOCATE RECORDS

From: IRTH.Net@qwest.com
To: Jamie Mongoven
Subject: Message from CenturyLink
Date: Tuesday, May 21, 2013 1:08:58 PM

==========

To: TRIHYDRO CORPORATION Attn: JAMIE MONGOVEN
Voice: 4065584848 Fax:
Re: Message from CenturyLink

Message from CenturyLink

==========

Ticket: 13034655
County: LEWIS AND CLARK Place: HELENA
Address: 2466 COUNTRY CLUB AVE

QLNMT06:
The described dig area of your locate request has been marked. CenturyLink Local Network facilities are present in the dig area. If you have any questions, please call CenturyLink at 800-283-4237 for former Qwest areas and 855-742-6062 for CenturyLink.

==========

Message from CenturyLink

==========

This message was generated by an automated system. Please do not reply to this email.

From: IRTH.Net@qwest.com
To: Jamie Mongoven
Subject: Message from CenturyLink
Date: Tuesday, May 21, 2013 1:08:58 PM

==========

To: TRIHYDRO CORPORATION Attn: JAMIE MONGOVEN
Voice: 4065584848 Fax:
Re: Message from CenturyLink

Message from CenturyLink

==========

Ticket: 13034653
County: LEWIS AND CLARK Place: HELENA
Address: 2460 COUNTRY CLUB AVE

QLNMT06:
The described dig area of your locate request has been marked. CenturyLink Local Network facilities are present in the dig area. If you have any questions, please call CenturyLink at 800-283-4237 for former Qwest areas and 855-742-6062 for CenturyLink.

==========

Message from CenturyLink

==========

This message was generated by an automated system. Please do not reply to this email.

From: IRTH.Net@qwest.com
To: Jamie Mongoven
Subject: Message from CenturyLink
Date: Tuesday, May 21, 2013 1:08:25 PM

==========

To: TRIHYDRO CORPORATION Attn: JAMIE MONGOVEN
Voice: 4065584848 Fax:
Re: Message from CenturyLink

Message from CenturyLink

==========

Ticket: 13034660
County: LEWIS AND CLARK Place: HELENA
Address: 2510 COUNTRY CLUB AVE

QLNMT06:
The described dig area of your locate request has been marked. CenturyLink Local Network facilities are present in the dig area. If you have any questions, please call CenturyLink at 800-283-4237 for former Qwest areas and 855-742-6062 for CenturyLink.

==========

Message from CenturyLink

==========

This message was generated by an automated system. Please do not reply to this email.

From: IRTH.Net@qwest.com
To: Jamie Mongoven
Subject: Message from CenturyLink
Date: Tuesday, May 21, 2013 1:09:16 PM

==========

To: TRIHYDRO CORPORATION Attn: JAMIE MONGOVEN
Voice: 4065584848 Fax:
Re: Message from CenturyLink

Message from CenturyLink

==========

Ticket: 13034657
County: LEWIS AND CLARK Place: HELENA
Address: 2470 COUNTRY CLUB AVE

QLNMT06:
The described dig area of your locate request has been marked. CenturyLink Local Network facilities are present in the dig area. If you have any questions, please call CenturyLink at 800-283-4237 for former Qwest areas and 855-742-6062 for CenturyLink.

==========

Message from CenturyLink

==========

This message was generated by an automated system. Please do not reply to this email.

From: onecall@p66.com
To: Jamie Mongoven
Subject: Ticket: 13034653 has been completed
Date: Tuesday, May 21, 2013 5:14:56 PM

Ticket: 13034653 has been completed

==========

Company: TRIHYDRO CORPORATION Email: JMONGOVEN@TRIHYDRO.COM
==========

Ticket Number: 13034653
Work to Begin Date/Time: 05/28/2013 08:00:00 am
County: LEWIS AND CLARK
City: HELENA
Address: 2460 COUNTRY CLUB AVE
Contact: JAMIE MONGOVEN
Phone: (406)558-4848

Member Code Facility Last Completion Date/Time

CONOCO02 GAS4 05/21/2013 05:07:35 pm
** Excavation Site Clear, ON SITE INSPECTION **
Remarks: ypl is clear, pipeline is 700 ft to the north west.

If you have problems with this report please contact:
Phillips 66 OneCall Center (918)977-7816
Notes:
PLEASE DO NOT REPLY TO THIS EMAIL/FAX. PLEASE CONTACT US IF YOU HAVE ANY QUESTIONS. CONOCOPHILLIPS PIPELINE IS NOW PHILLIPS 66 PIPELINE LLC. IF YOU HAVE ANY QUESTIONS REGARDING THIS CHANGE PLEASE CALL US AT 918-977-7816. THANK YOU

From: onecall@p66.com
To: Jamie Mongoven
Subject: Ticket: 13034655 has been completed
Date: Tuesday, May 21, 2013 5:13:45 PM

Ticket: 13034655 has been completed

==========

Company: TRIHYDRO CORPORATION Email: JMONGOVEN@TRIHYDRO.COM
==========

Ticket Number: 13034655
Work to Begin Date/Time: 05/28/2013 12:00:00 am
County: LEWIS AND CLARK
City: HELENA
Address: 2466 COUNTRY CLUB AVE
Contact: JAMIE MONGOVEN
Phone: (406)558-4848

Member Code Facility Last Completion Date/Time

CONOCO02 GAS4 05/21/2013 05:07:35 pm
** Excavation Site Clear, CLEARED BY MAP **
Remarks: ypl is clear, pipeline is 600 plus ft to the north west.

If you have problems with this report please contact:
Phillips 66 OneCall Center (918)977-7816
Notes:
PLEASE DO NOT REPLY TO THIS EMAIL/FAX. PLEASE CONTACT US IF YOU HAVE ANY QUESTIONS. CONOCOPHILLIPS PIPELINE IS NOW PHILLIPS 66 PIPELINE LLC. IF YOU HAVE ANY QUESTIONS REGARDING THIS CHANGE PLEASE CALL US AT 918-977-7816. THANK YOU

From: onecall@p66.com
To: Jamie Mongoven
Subject: Ticket: 13034657 has been completed
Date: Tuesday, May 21, 2013 5:12:38 PM

Ticket: 13034657 has been completed

==========

Company: TRIHYDRO CORPORATION Email: JMONGOVEN@TRIHYDRO.COM
==========

Ticket Number: 13034657
Work to Begin Date/Time: 05/23/2013 12:00:00 am
County: LEWIS AND CLARK
City: HELENA
Address: 2470 COUNTRY CLUB AVE
Contact: JAMIE MONGOVEN
Phone: (406)558-4848

Member Code Facility Last Completion Date/Time

CONOCO02 GAS4 05/21/2013 05:07:35 pm
** Excavation Site Clear, CLEARED BY MAP **
Remarks: ypl is clear, pipeline is 500 plus ft to the north.

If you have problems with this report please contact:
Phillips 66 OneCall Center (918)977-7816
Notes:
PLEASE DO NOT REPLY TO THIS EMAIL/FAX. PLEASE CONTACT US IF YOU HAVE ANY QUESTIONS. CONOCOPHILLIPS PIPELINE IS NOW PHILLIPS 66 PIPELINE LLC. IF YOU HAVE ANY QUESTIONS REGARDING THIS CHANGE PLEASE CALL US AT 918-977-7816. THANK YOU

From: onecall@p66.com
To: Jamie Mongoven
Subject: Ticket: 13034660 has been completed
Date: Friday, May 24, 2013 8:27:11 AM

Ticket: 13034660 has been completed

==========

Company: TRIHYDRO CORPORATION Email: JMONGOVEN@TRIHYDRO.COM
==========

Ticket Number: 13034660
Work to Begin Date/Time: 05/28/2013 12:00:00 am
County: LEWIS AND CLARK
City: HELENA
Address: 2510 COUNTRY CLUB AVE
Contact: JAMIE MONGOVEN
Phone: (406)558-4848

Member Code Facility Last Completion Date/Time

CONOCO02 GAS4 05/24/2013 08:17:11 am
** Excavation Site Clear, CALLED FOR CLARIFICATION **
Remarks: ypl is clear, pipeline is 400 ft to the north west from address. calle
Jamie M
ongoven for clarification at 406.558.4848.

If you have problems with this report please contact:
Phillips 66 OneCall Center (918)977-7816
Notes:
PLEASE DO NOT REPLY TO THIS EMAIL/FAX. PLEASE CONTACT US IF YOU HAVE ANY QUESTIONS. CONOCOPHILLIPS PIPELINE IS NOW PHILLIPS 66 PIPELINE LLC. IF YOU HAVE ANY QUESTIONS REGARDING THIS CHANGE PLEASE CALL US AT 918-977-7816. THANK YOU

APPENDIX B

SAMPLING LOG

SURFACE SOIL SAMPLING FIELD FORM 2 of 2

Trihydro

XRF SCREENING LOCATIONS

Sampling Criteria
- 10% of screened intervals below 280 ppm
- All intervals screened within 280 and 400 ppm
- 10% of screened intervals exceeding 400 ppm

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5-30-13	1100	~~ASC03-SS01~~ D-58	2'-3' 0.0 - 1.0'	ND<51 AS
			3'-4' 1.0 - 2.0'	ND<46 ND<45 ND<44
			~~2.0 - 3.0'~~	
TOTAL DEPTH 48"			~~3.0 - 4.0'~~	
5-30-13	1115	~~ASC03-SS02~~ D-43	4'-5' ~~0.0 - 1.0'~~	109 ND<76
			5'-6' ~~1.0 - 2.0'~~	
		REFUSAL	~~2.0 - 3.0'~~	
TOTAL DEPTH 50"			~~3.0 - 4.0'~~	
5-30-13	1130	~~ASC03-SS03~~ D-48	4'-5' ~~0.0 - 1.0'~~	ND<46 ND<44
			5'-6' ~~1.0 - 2.0'~~	ND<50 ND<45
			~~2.0 - 3.0'~~	
		REFUSAL	~~3.0 - 4.0'~~	
TOTAL DEPTH 72"				
5-30-13	1145	~~ASC03-SS04~~ D-45	~~0.0 - 1.0'~~	
			~~1.0 - 2.0'~~	
			2.0 - 3.0'	ND<44 ND<44
		REFUSAL	3.0 - 4.0'	ND<67 ND<67
TOTAL DEPTH 38"				
		ASC03-SS05	0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 - 4.0'	

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5-30-13	1300	TCLP-1	0.0 - 1.0'	
			1.0 - 2.0'	167
			2.0 - 3.0'	ND<95
TOTAL DEPTH 44"			3.0 - 4.0'	
5-30-13	1315	E-23	~~0.0 - 1.0'~~	
			~~1.0 - 2.0'~~	
			2.0 - 3.0'	ND<51
			3.0 - 4.0'	ND<61
TOTAL DEPTH 48			4-5' ~~0.0 - 1.0'~~	ND<66
5-30-13	1330	E-24	5-6' ~~1.0 - 2.0'~~	ND<51
			~~2.0 - 3.0'~~	
TOTAL DEPTH 72"		REFUSAL	~~3.0 - 4.0'~~	
			0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 - 4.0'	
			0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 - 4.0'	

80 ND<64 78 ND<43

Notes:

SURFACE SOIL SAMPLING FIELD FORM 2 of 2

Trihydro

XRF SCREENING LOCATIONS

Sampling Criteria
- 10% of screened intervals below 280 ppm
- All intervals screened within 280 and 400 ppm
- 10% of screened intervals exceeding 400 ppm

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5-29-13	1115	E-7	0.0 - 1.0'	269
			1.0 - 2.0'	
			2.0 - 3.0'	
REFUSAL @ 12"			3.0 - 4.0'	
5-29-13	1130	E-8	0.0 - 1.0'	126
			1.0 - 2.0'	ND<50
			2.0 - 3.0'	
REFUSAL @ 22"			3.0 - 4.0'	
5-29-13	1230	E-9	0.0 - 1.0'	826
			1.0 - 2.0'	ND<57
			2.0 - 3.0'	
REFUSAL @ 24"			3.0 - 4.0'	
5-29-13	1245	E-10	0.0 - 1.0'	2419
			1.0 - 2.0'	ND<46/57
			2.0 - 3.0'	171/381
REFUSAL @ 32"			3.0 - 4.0'	
5-29-13	1310	E-14	0.0 - 1.0'	1569/2426
			1.0 - 2.0'	80/ND<60
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5-29-13	1325	E-13	0.0 - 1.0'	ND<67/130
			1.0 - 2.0'	ND<60/251
			2.0 - 3.0'	ND<62/82
REFUSAL @ 36"			3.0 - 4.0'	
5-29-13	1350	E-17	0.0 - 1.0'	98/227
			1.0 - 2.0'	2199/4118
			2.0 - 3.0'	152/133
TOTAL DEPTH @ 48"			3.0 - 4.0'	ND<57/ND<53
5/29/13	1415	E-16	0.0 - 1.0'	82/306
			1.0 - 2.0'	ND<56/102
			2.0 - 3.0'	86/110
REFUSAL @ 42"			3.0 - 4.0'	115/ND<84
			0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 - 4.0'	
			0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 - 4.0'	

Notes:

400
49.6

SURFACE SOIL SAMPLING FIELD FORM 2 of 2

Trihydro

XRF SCREENING LOCATIONS

Sampling Criteria
- 10% of screened intervals below 280 ppm
- All intervals screened within 280 and 400 ppm
- 10% of screened intervals exceeding 400 ppm

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5/30/13	0830	C-29	0.0 - 1.0'	578 / 683
			1.0 - 2.0'	266 / 247
			2.0 - 3.0'	ND<53 / ND<55
TOTAL DEPTH 48"			3.0 - 4.0'	93 / ND<67
5/30/13	0840	C-34	0.0 - 1.0'	270 / 178
			1.0 - 2.0'	405 / 543
NO RECOVERY FROM 48-72" SOFT SILT-WET			2.0 - 3.0'	184 / 180
TOTAL DEPTH 72"			3.0 - 4.0'	77 / 72
5/30/13	0915	C-35	0.0 - 1.0'	806 / 934
			1.0 - 2.0'	478 / 576
			2.0 - 3.0'	ND<91 / ND<46
TOTAL DEPTH 48"			3.0 - 4.0'	ND<89 / ND<37
5/30/13	0920	C-30	0.0 - 1.0'	678 / 684
			1.0 - 2.0'	660 / 782
			2.0 - 3.0'	ND<46 / ND<46
TOTAL DEPTH 48"			3.0 - 4.0'	ND<47 / ND<44
5/30/13	0946	C-31	0.0 - 1.0'	1816 / 1604
			1.0 - 2.0'	1544 / 198
			2.0 - 3.0'	ND<95 / 63
TOTAL DEPTH 48" WET			3.0 - 4.0'	ND<53 / ND<49

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5/30/13	1005	C-32	0.0 - 1.0'	454 / 503
			1.0 - 2.0'	670 / 943
WET @ 30"			2.0 - 3.0'	ND<48 / 54
TOTAL DEPTH 52" REFUSAL			3.0 - 4.0'	ND<45 / 83
5/30/13	1045	C-33	0.0 - 1.0'	1155 / 457
			1.0 - 2.0'	ND<42 / ND<34
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	
			0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 4.0'	
			0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 - 4.0'	
			0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 - 4.0'	

48-60 100/157

Notes:

DEPTH FROM 18" - 24" ENCOUNTER COBBLES W/ LOW RECOVERY

- WET @ 24" SILTY SANDS

SURFACE SOIL SAMPLING FIELD FORM 2 of 2

Trihydro

XRF SCREENING LOCATIONS

Sampling Criteria
- 10% of screened intervals below 280 ppm
- All intervals screened within 280 and 400 ppm
- 10% of screened intervals exceeding 400 ppm

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5-28-13	1330	~~ASC03-SS01~~ D-45	0.0 - 1.0'	79
			1.0 - 2.0'	ND<53
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	
5-28-13	1345	~~ASC03-SS02~~ D-46	0.0 - 1.0'	287
			1.0 - 2.0'	ND<48
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	
5-28-13	1355	~~ASC03-SS03~~ D-47	0.0 - 1.0'	176
			1.0 - 2.0'	ND<49
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	
5-28-13	~~1355~~ 1400	~~ASC03-SS04~~ D-48	0.0 - 1.0'	1037
			1.0 - 2.0'	ND<46
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	
5-28-13	~~1430~~ 1445	ASC03-SS05 D-50	0.0 - 1.0'	174
			1.0 - 2.0'	ND<61
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5/28/13	1459	D-57	0.0 - 1.0'	ND(50)
			1.0 - 2.0'	ND(63)
			2.0 - 3.0'	
total depth 24"			3.0 - 4.0'	
5/28/13	~~1505~~ 1455	D-56	0.0 - 1.0'	149
			1.0 - 2.0'	~~149~~ ND<60
			2.0 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	
5/28/13	1505	D-55	0.0 - 1.0'	ND<60
			1.0 - 2.0'	ND<51
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	
5/28/13	1520	D-54	0.0 - 1.0'	71
			1.0 - 2.0'	ND<57
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	
			0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 - 4.0'	

Notes:

SURFACE SOIL SAMPLING FIELD FORM 2 of 2

Trihydro

XRF SCREENING LOCATIONS

Sampling Criteria
- 10% of screened intervals below 280 ppm
- All intervals screened within 280 and 400 ppm
- 10% of screened intervals exceeding 400 ppm

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5/28/13	9:40	~~ASC03-SS01~~	0.0 - 1.0'	113
		Z-5	1.0 - 2.0'	ND(47)
		Z-5	2.0 - 3.0'	ND(54)
	refusal @	37"	3.0 - 4.0'	
5/28/13	9:07	~~ASC03-SS02~~	0.0 - 1.0'	ND(58)
		Z-4	1.0 - 2.0'	ND(54)
	refusal @	24"	2.0 - 3.0'	
			3.0 - 4.0'	
5/28/13	9:35	~~ASC03-SS03~~	0.0 - 1.0'	295
		Z-3	1.0 - 2.0'	ND(64)
	refusal @	24"	2.0 - 3.0'	
			3.0 - 4.0'	
5/28/13	9:55	~~ASC03-SS04~~	0.0 - 1.0'	143
drove to 48",		Z-2	1.0 - 2.0'	195
soil recovered		Z-2	2.0 - 3.0'	ND(73)
to 36"			3.0 - 4.0'	
5/28/13	10:20	~~ASC03-SS05~~	0.0 - 1.0'	174
refusal twice		Z-1	1.0 - 2.0'	ND(61)
@ 12", side-			2.0 - 3.0'	
stepped.			3.0 - 4.0'	

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5/28/13	1110	D-39	0.0 - 1.0'	398
		D-39	1.0 - 2.0'	ND(47)
			2.0 - 3.0'	
	TOTAL DEPTH	24"	3.0 - 4.0'	
5/28/13	1225	D-40	0.0 - 1.0'	163
			1.0 - 2.0'	312
			2.0 - 3.0'	ND<51
	TOTAL DEPTH	48"	3.0 - 4.0'	ND<414
5/28/13	1245	D-41	0.0 - 1.0'	1041
			1.0 - 2.0'	ND<52
			2.0 - 3.0'	
	TOTAL DEPTH	24"	3.0 - 4.0'	
5/28/13	1255	D-42	0.0 - 1.0'	206
			1.0 - 2.0'	86
			2.0 - 3.0'	ND<54
			3.0 - 4.0'	ND<50
5/28/13	1305	D-43	0.0 - 1.0'	271
			1.0 - 2.0'	284
			2.0 - 3.0'	ND<57
			3.0 - 4.0'	ND<56

Notes:

generally silty sand ~ 0 - 12". Gravel / cobbles 7 12"

SURFACE SOIL SAMPLING FIELD FORM 2 of 2

Trihydro

XRF SCREENING LOCATIONS

Sampling Criteria
- 10% of screened intervals below 280 ppm
- All intervals screened within 280 and 400 ppm
- 10% of screened intervals exceeding 400 ppm

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5-29-13	0835	E-19	0.0 - 1.0'	ND<66
			1.0 - 2.0'	795
			2.0 - 3.0'	ND<51
TOTAL DEPTH		36 48"	3.0 - 4.0'	
5-29-13	0850	E-20	0.0 - 1.0'	ND<66
			1.0 - 2.0'	1446
			2.0 - 3.0'	ND<53
TOTAL DEPTH		48"	3.0 - 4.0'	ND<43
5-28-13	0905	E-25	0.0 - 1.0'	83
			1.0 - 2.0'	1432
			2.0 - 3.0'	75
TOTAL DEPTH		48"	3.0 - 4.0'	ND<57
5-29-13	0935	E-24	0.0 - 1.0'	ND<65
			1.0 - 2.0'	308
			2.0 - 3.0'	ND<53
TOTAL DEPTH		48"	3.0 - 4.0'	ND<50
5-29-13	0950	E-23	0.0 - 1.0'	2442
			1.0 - 2.0'	ND<55
			2.0 - 3.0'	
TOTAL DEPTH		24"	3.0 - 4.0'	

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5-29-13	1000	E-22	0.0 - 1.0'	269
			1.0 - 2.0'	74
			2.0 - 3.0'	
TOTAL DEPTH		24".	3.0 - 4.0'	
5-29-13	1005	E-21	0.0 - 1.0'	120
			1.0 - 2.0'	228
			2.0 - 3.0'	164
TOTAL DEPTH		48"	3.0 - 4.0'	110
5-29-13	1040	E-18	0.0 - 1.0'	131
			1.0 - 2.0'	95
			2.0 - 3.0'	108
TOTAL DEPTH/REFUSAL		48"	3.0 - 4.0'	236
5-29-13	1100	E-15	0.0 - 1.0'	95
			1.0 - 2.0'	274
			2.0 - 3.0'	
REFUSAL @		20"	3.0 - 4.0'	
5-29-13	1110	E-14	0.0 - 1.0'	130
			1.0 - 2.0'	
			2.0 - 3.0'	
REFUSAL @		12"	3.0 - 4.0'	

Notes:

SURFACE SOIL SAMPLING FIELD FORM 2 of 2

Trihydro

XRF SCREENING LOCATIONS

Sampling Criteria
- 10% of screened intervals below 280 ppm
- All intervals screened within 280 and 400 ppm
- 10% of screened intervals exceeding 400 ppm

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)	SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5-29-13	1510	C-28	0.0 - 1.0'	193/173				0.0 - 1.0'	
			1.0 - 2.0'	87/116				1.0 - 2.0'	
			2.0 - 3.0'	ND<98/98				2.0 - 3.0'	
TOTAL DEPTH 48"			3.0 - 4.0'	ND<57/ND<55				3.0 - 4.0'	
5-29-13	1530	C-27	0.0 - 1.0'	989/1148				0.0 - 1.0'	
			1.0 - 2.0'	ND<51/ND<42				1.0 - 2.0'	
			2.0 - 3.0'					2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'					3.0 - 4.0'	
5-29-13	1546	C-26	0.0 - 1.0'	108/343				0.0 - 1.0'	
			1.0 - 2.0'	350/659				1.0 - 2.0'	
			2.0 - 3.0'	1316/1756				2.0 - 3.0'	
REFUSAL @ 48"			3.0 - 4.0'	255/269				3.0 - 4.0'	
			0.0 - 1.0'					0.0 - 1.0'	
			1.0 - 2.0'					1.0 - 2.0'	
			2.0 - 3.0'					2.0 - 3.0'	
			3.0 - 4.0'					3.0 - 4.0'	
			0.0 - 1.0'					0.0 - 1.0'	
			1.0 - 2.0'					1.0 - 2.0'	
			2.0 - 3.0'					2.0 - 3.0'	
			3.0 - 4.0'					3.0 - 4.0'	

Notes:

5/31/2013

ORIGINAL	TCLP NAME	XRF Pb	XRF As
Z-5 →	TCLP-2-0-36	187	131
Z-2 →	TCLP-3-0-36	104	ND < 80
E-13	TCLP-4-0-36	203	525
E-18	TCLP-5-0-48	305	461
E-24	TCLP-6-0-72	277	392
C-26	TCLP-7-0-48	367	435
C-28	TCLP-8-0-48	533	773
C-31	TCLP-9-0-48	728	742
D-40	TCLP-10-0-72	108	168
D-43	TCLP-11-0-60	219	ND < 106
D-45	TCLP-12-0-48	84	ND < 69

Daily XRF Calibration Blank Check

Spring Meadow Lake
Helena, Montana
776-020-001

Trihydro CORPORATION

XRF Model: XL 3t 600 XRF SN: 4 2498

	Standard Concentration	Date / Time 0730 / 5-28-2013 XRF Reading 1	Calibrator	Date / Time 0740 / 5-29-13 XRF Reading 2	Calibrator	Date / Time 5/30/13 / 0717 XRF Reading 3	Calibrator	Date / Time / XRF Reading 4	Calibrator	Date / Time / XRF Reading 5	Calibrator
	(ppm)	(ppm)	Initials	(ppm)	Initials	(ppm)	Initials	(ppm)	Initials	(ppm)	Initials
Lead	500	476	JM	460	Jm	473	Jm				
Barium	NA	575		670		788					
Cadmium	500	489		514		512					
Chromium	500	530		456		458					
Mercury	NA	ND < 42		ND < 46		ND < 42					
Selenium	500	491		531		538					
Silver	500	511		554		568					
Arsenic	500	485		495		442					

	Blank Concentration	Date / Time 0738 / 5-28-2013 XRF Blank Reading 1	Calibrator	Date / Time 5-29-13 / 0746 XRF Blank Reading 2	Calibrator	Date / Time 5/30/13 / 0714 XRF Blank Reading 3	Calibrator	Date / Time / XRF Blank Reading 4	Calibrator	Date / Time / XRF Blank Reading 5	Calibrator
	(ppm)	(ppm)	Initials	(ppm)	Initials	(ppm)	Initials	(ppm)	Initials	(ppm)	Initials
Lead	NA	ND < 26	JM	ND < 31	Jm	ND < 31	Jm				
Barium	NA	ND < 223		ND < 246		ND < 237					
Cadmium	NA	ND < 43		ND < 47		ND < 44					
Chromium	NA	ND < 70		ND < 79		ND < 77					
Mercury	NA	ND < 37		ND < 33		ND < 33					
Selenium	NA	ND < 18		ND < 15		ND < 17					
Silver	NA	ND < 31		ND < 35		ND < 32					
Arsenic	NA	ND < 23		ND < 21		ND < 23					

Reference standards and blank will be checked once each hour or every twenty samples whichever occurs first and also at the end of the period of operation.

Location SML HELENA, MT Date 5-28-2013

Project / Client SML / MDEQ

CLOUDY, SPRINKLING, 55°F-

0800 GP & JM ON PROP. Z
STAKED POINT 1-4 BS
POINTS 6-10 ARE NOT STAKED DUE TO PROXIMITY OF SEWER MAIN & TREES & FENCE

0840 SAMPLED Z-SMLRY-5
TOP 16" SANDY SILT,
16-38" GRAVEL, 38" REFUSAL

0905 Z-SMLRY-04 REFUSAL @ ~~48"~~ 24"

0935 Z-SMLRY-03 REFUSAL @ 24"

0955 Z-SMLRY-02 STOPPED @ 48" GRAVEL @ 18"

1020 Z-SMLRY-01 STOPPED @ 24" GRAVEL @ 12"

OFF PROPERTY Z @ 1050

1055 ON PROPERTY - D

— STARTED RAINING

1110 D-SMLRY-39 STOPPED @ 24"

1225 D-SMLRY-40 " @ 48"

1245 D-SMLRY-41 " @ 24"

1255 D-SMLRY-42 " @ ~~48"~~ 24"

1305 D-SMLRY-43 " @ 48"

1330 D-SMLRY-45 " @ 24"

1345 D-SMLRY-46 " @ 24"

1355 D-SMLRY-47 " @ 24"

1400 D-SMLRY-48 " @ 24"

Location Date

Project / Client

Pg 2

1445 D-SMLRY-58 STOPPED @ 24"

1450 D-SMLRY-57 " @ 24"

~~1500~~ 1455 D-SMLRY-56 " @ 24"

1505 D-SMLRY-55 " @ 24"

1520 D-SMLRY-54 " @ 24"

1545 Leaving D-10T, headed to office.

JM

Location HELENA MT Date 5/29/13

Project / Client SML / MDEQ

CLOUDY - CALM 53°F - 63°F

0810	OUTSIDE PROPERTY	E		
0835	E-SMLRY-19	STOPPED	@ 48"	
0850	E-SMLRY-20	"	@ 48"	
0905	E-SMLRY-25	"	@ 48"	
0935	E-SMLRY-24	"	@ 48"	
0950	E-SMLRY-23	"	@ 24"	
1000	E-SMLRY-22	"	@ 24"	REFUSAL
1005	E-SMLRY-21	"	@ 48"	REFUSAL
1046	E-SMLRY-18	"	@ 48"	REFUSAL
1100	E-SMLRY-15	"	@ 20"	REFUSAL
1110	E-SMLRY-11	"	@ 12"	REFUSAL
1115	E-SMLRY-7	"	@ 12"	REFUSAL
1130	E-SMLRY-8	"	@ 24"	REFUSAL
1230	E-SMLRY-9	"	@ 24"	REFUSAL
1245	E-SMLRY-10	"	@ 32"	REFUSAL
1310	E-SMLRY-14	"	@ 24"	
1325	E-SMLRY-13	"	@ 36"	REFUSAL
1350	E-SMLRY-17	"	@ 48"	
1415	E-SMLRY-16	"	@ 42"	REFUSAL
	OFF PROPERTY EC	1420	@ JM	
ON PROPERTY	C	@ 1442	@	

Location Date

Project / Client

PG 2

1510	C-SMLRY-28	TOTAL DEPTH 48"
1530	C-SMLRY-27	" " 24"
1540	C-SMLRY-26	" " 48" REFUSAL
1405	OFF SITE	

SAMPLE POINTS 36, 37, 38 WERE NOT SAMPLED DUE TO PROXIMITY OF UTILITIES.

SAMPLE POINT 6 WAS NOT SAMPLED DUE TO PROXIMITY OF SEWER MAIN, AND BURIED TANK.

SAMPLE POINT 12 WAS NOT SAMPLED DUE TO CONFLICT W/ HOUSE COVERING MAJORITY OF SAMPLE GRID.

SAMPLE POINTS 44, 49, 50, 51, 52, 53 WAS NOT SAMPLE DUE TO PROXIMITY OF UTILITIES BURIED GAS, TEL & POWER.

JM

SURFACE SOIL SAMPLING FIELD FORM 2 of 2

Trihydro

XRF SCREENING LOCATIONS

Sampling Criteria
- 10% of screened intervals below 280 ppm
- All intervals screened within 280 and 400 ppm
- 10% of screened intervals exceeding 400 ppm

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5-30-13	1100	~~ASC03-SS01~~ D-58	2'-3' 0.0 - 1.0'	ND<51 AS
			3'-4' 1.0 - 2.0'	ND<46 ND<45 ND<44
			~~2.0 - 3.0'~~	
TOTAL DEPTH 48"			~~3.0 - 4.0'~~	
5-30-13	1115	~~ASC03-SS02~~ D-43	4'-5' ~~0.0 - 1.0'~~	109 ND<76
			5'-6' ~~1.0 - 2.0'~~	
		REFUSAL	~~2.0 - 3.0'~~	
TOTAL DEPTH 50"			~~3.0 - 4.0'~~	
5-30-13	1130	~~ASC03-SS03~~ D-48	4'-5' ~~0.0 - 1.0'~~	ND<46 ND<44
			5'-6' ~~1.0 - 2.0'~~	ND<50 ND<45
			~~2.0 - 3.0'~~	
		REFUSAL	~~3.0 - 4.0'~~	
TOTAL DEPTH 72"				
5-30-13	1145	~~ASC03-SS04~~ D-45	~~0.0 - 1.0'~~	
			~~1.0 - 2.0'~~	
			2.0 - 3.0'	ND<44 ND<44
		REFUSAL	3.0 - 4.0'	ND<67 ND<67
TOTAL DEPTH 38"				
		ASC03-SS05	0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 - 4.0'	

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5-30-13	1300	TCLP-1	0.0 - 1.0'	
			1.0 - 2.0'	167
			2.0 - 3.0'	ND<95
TOTAL DEPTH 44"			3.0 - 4.0'	
5-30-13	1315	E-23	~~0.0 - 1.0'~~	
			~~1.0 - 2.0'~~	
			2.0 - 3.0'	ND<51
			3.0 - 4.0'	ND<61
TOTAL DEPTH 48			4-5' ~~0.0 - 1.0'~~	ND<66
5-30-13	1330	E-24	5-6' ~~1.0 - 2.0'~~	ND<51
			~~2.0 - 3.0'~~	
TOTAL DEPTH 72"		REFUSAL	~~3.0 - 4.0'~~	
			0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 - 4.0'	
			0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 - 4.0'	

80 ND<64 78 ND<43

Notes:

SURFACE SOIL SAMPLING FIELD FORM 2 of 2

Trihydro

XRF SCREENING LOCATIONS

Sampling Criteria
- 10% of screened intervals below 280 ppm
- All intervals screened within 280 and 400 ppm
- 10% of screened intervals exceeding 400 ppm

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5-29-13	1115	E-7	0.0 - 1.0'	269
			1.0 - 2.0'	
			2.0 - 3.0'	
REFUSAL @ 12"			3.0 - 4.0'	
5-29-13	1130	E-8	0.0 - 1.0'	126
			1.0 - 2.0'	ND<50
			2.0 - 3.0'	
REFUSAL @ 22"			3.0 - 4.0'	
5-29-13	1230	E-9	0.0 - 1.0'	826
			1.0 - 2.0'	ND<57
			2.0 - 3.0'	
REFUSAL @ 24"			3.0 - 4.0'	
5-29-13	1245	E-10	0.0 - 1.0'	2419
			1.0 - 2.0'	ND<46/57
			2.0 - 3.0'	171/381
REFUSAL @ 32"			3.0 - 4.0'	
5-29-13	1310	E-14	0.0 - 1.0'	1569/2426
			1.0 - 2.0'	80/ND<60
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5-29-13	1325	E-13	0.0 - 1.0'	ND<67/130
			1.0 - 2.0'	ND<60/251
			2.0 - 3.0'	ND<62/82
REFUSAL @ 36"			3.0 - 4.0'	
5-29-13	1350	E-17	0.0 - 1.0'	98/227
			1.0 - 2.0'	2199/4118
			2.0 - 3.0'	152/133
TOTAL DEPTH @ 48"			3.0 - 4.0'	ND<57/ND<53
5/29/13	1415	E-16	0.0 - 1.0'	82/306
			1.0 - 2.0'	ND<56/102
			2.0 - 3.0'	86/110
REFUSAL @ 42"			3.0 - 4.0'	115/ND<84
			0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 - 4.0'	
			0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 - 4.0'	

Notes:

400
49.6

SURFACE SOIL SAMPLING FIELD FORM 2 of 2

Trihydro

XRF SCREENING LOCATIONS

Sampling Criteria
- 10% of screened intervals below 280 ppm
- All intervals screened within 280 and 400 ppm
- 10% of screened intervals exceeding 400 ppm

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5/30/13	0830	C-29	0.0 - 1.0'	578 / 683
			1.0 - 2.0'	266 / 247
			2.0 - 3.0'	ND<53 / ND<55
TOTAL DEPTH 48"			3.0 - 4.0'	93 / ND<67
5/30/13	0840	C-34	0.0 - 1.0'	270 / 178
			1.0 - 2.0'	405 / 543
NO RECOVERY FROM 48-72" SOFT SILT-WET			2.0 - 3.0'	184 / 180
TOTAL DEPTH 72"			3.0 - 4.0'	77 / 72
5/30/13	0915	C-35	0.0 - 1.0'	806 / 934
			1.0 - 2.0'	478 / 576
			2.0 - 3.0'	ND<91 / ND<46
TOTAL DEPTH 48"			3.0 - 4.0'	ND<89 / ND<37
5/30/13	0920	C-30	0.0 - 1.0'	678 / 684
			1.0 - 2.0'	660 / 782
			2.0 - 3.0'	ND<46 / ND<46
TOTAL DEPTH 48"			3.0 - 4.0'	ND<47 / ND<44
5/30/13	0946	C-31	0.0 - 1.0'	1816 / 1604
			1.0 - 2.0'	1544 / 198
			2.0 - 3.0'	ND<95 / 63
TOTAL DEPTH 48" WET			3.0 - 4.0'	ND<53 / ND<49

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5/30/13	1005	C-32	0.0 - 1.0'	454 / 503
			1.0 - 2.0'	670 / 943
WET @ 30"			2.0 - 3.0'	ND<48 / 54
TOTAL DEPTH 52" REFUSAL			3.0 - 4.0'	ND<45 / 83
5/30/13	1045	C-33	0.0 - 1.0'	1155 / 457
			1.0 - 2.0'	ND<42 / ND<34
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	
			0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 4.0'	
			0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 - 4.0'	
			0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 - 4.0'	

48-60 100/157

Notes:

DEPTH FROM 18" - 24" ENCOUNTER COBBLES W/ LOW RECOVERY

- WET @ 24" SILTY SANDS

SURFACE SOIL SAMPLING FIELD FORM 2 of 2

Trihydro

XRF SCREENING LOCATIONS

Sampling Criteria
- 10% of screened intervals below 280 ppm
- All intervals screened within 280 and 400 ppm
- 10% of screened intervals exceeding 400 ppm

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5-28-13	1330	~~ASC03-SS01~~ D-45	0.0 - 1.0'	79
			1.0 - 2.0'	ND<53
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	
5-28-13	1345	~~ASC03-SS02~~ D-46	0.0 - 1.0'	287
			1.0 - 2.0'	ND<48
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	
5-28-13	1355	~~ASC03-SS03~~ D-47	0.0 - 1.0'	176
			1.0 - 2.0'	ND<49
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	
5-28-13	~~1355~~ 1400	~~ASC03-SS04~~ D-48	0.0 - 1.0'	1037
			1.0 - 2.0'	ND<46
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	
5-28-13	~~1430~~ 1445	ASC03-SS05 D-50	0.0 - 1.0'	174
			1.0 - 2.0'	ND<61
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5/28/13	1459	D-57	0.0 - 1.0'	ND(50)
			1.0 - 2.0'	ND(63)
			2.0 - 3.0'	
total depth 24"			3.0 - 4.0'	
5/28/13	~~1505~~ 1455	D-56	0.0 - 1.0'	149
			1.0 - 2.0'	~~149~~ ND<60
			2.0 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	
5/28/13	1505	D-55	0.0 - 1.0'	ND<60
			1.0 - 2.0'	ND<51
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	
5/28/13	1520	D-54	0.0 - 1.0'	71
			1.0 - 2.0'	ND<57
			2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'	
			0.0 - 1.0'	
			1.0 - 2.0'	
			2.0 - 3.0'	
			3.0 - 4.0'	

Notes:

SURFACE SOIL SAMPLING FIELD FORM 2 of 2

Trihydro

XRF SCREENING LOCATIONS

Sampling Criteria
- 10% of screened intervals below 280 ppm
- All intervals screened within 280 and 400 ppm
- 10% of screened intervals exceeding 400 ppm

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5/28/13	9:40	~~ASC03-SS01~~	0.0 - 1.0'	113
		Z-5	1.0 - 2.0'	ND(47)
		Z-5	2.0 - 3.0'	ND(54)
	refusal @	37"	3.0 - 4.0'	
5/28/13	9:07	~~ASC03-SS02~~	0.0 - 1.0'	ND(58)
		Z-4	1.0 - 2.0'	ND(54)
	refusal @	24"	2.0 - 3.0'	
			3.0 - 4.0'	
5/28/13	9:35	~~ASC03-SS03~~	0.0 - 1.0'	295
		Z-3	1.0 - 2.0'	ND(64)
	refusal @	24"	2.0 - 3.0'	
			3.0 - 4.0'	
5/28/13	9:55	~~ASC03-SS04~~	0.0 - 1.0'	143
drove to 48",		Z-2	1.0 - 2.0'	195
soil recovered		Z-2	2.0 - 3.0'	ND(73)
to 36"			3.0 - 4.0'	
5/28/13	10:20	~~ASC03-SS05~~	0.0 - 1.0'	174
refusal twice		Z-1	1.0 - 2.0'	ND(61)
@ 12", side-			2.0 - 3.0'	
stepped.			3.0 - 4.0'	

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5/28/13	1110	D-39	0.0 - 1.0'	398
		D-39	1.0 - 2.0'	ND(47)
			2.0 - 3.0'	
	TOTAL DEPTH	24"	3.0 - 4.0'	
5/28/13	1225	D-40	0.0 - 1.0'	163
			1.0 - 2.0'	312
			2.0 - 3.0'	ND<51
	TOTAL DEPTH	48"	3.0 - 4.0'	ND<414
5/28/13	1245	D-41	0.0 - 1.0'	1041
			1.0 - 2.0'	ND<52
			2.0 - 3.0'	
	TOTAL DEPTH	24"	3.0 - 4.0'	
5/28/13	1255	D-42	0.0 - 1.0'	206
			1.0 - 2.0'	86
			2.0 - 3.0'	ND<54
			3.0 - 4.0'	ND<50
5/28/13	1305	D-43	0.0 - 1.0'	271
			1.0 - 2.0'	284
			2.0 - 3.0'	ND<57
			3.0 - 4.0'	ND<56

Notes:

generally silty sand ~ 0 - 12". Gravel / cobbles 7 12"

SURFACE SOIL SAMPLING FIELD FORM 2 of 2

Trihydro

XRF SCREENING LOCATIONS

Sampling Criteria
- 10% of screened intervals below 280 ppm
- All intervals screened within 280 and 400 ppm
- 10% of screened intervals exceeding 400 ppm

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5-29-13	0835	E-19	0.0 - 1.0'	ND<66
			1.0 - 2.0'	795
			2.0 - 3.0'	ND<51
TOTAL DEPTH		36 48"	3.0 - 4.0'	
5-29-13	0850	E-20	0.0 - 1.0'	ND<66
			1.0 - 2.0'	1446
			2.0 - 3.0'	ND<53
TOTAL DEPTH		48"	3.0 - 4.0'	ND<43
5-28-13	0905	E-25	0.0 - 1.0'	83
			1.0 - 2.0'	1432
			2.0 - 3.0'	75
TOTAL DEPTH		48"	3.0 - 4.0'	ND<57
5-29-13	0935	E-24	0.0 - 1.0'	ND<65
			1.0 - 2.0'	308
			2.0 - 3.0'	ND<53
TOTAL DEPTH		48"	3.0 - 4.0'	ND<50
5-29-13	0950	E-23	0.0 - 1.0'	2442
			1.0 - 2.0'	ND<55
			2.0 - 3.0'	
TOTAL DEPTH		24"	3.0 - 4.0'	

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5-29-13	1000	E-22	0.0 - 1.0'	269
			1.0 - 2.0'	74
			2.0 - 3.0'	
TOTAL DEPTH		24".	3.0 - 4.0'	
5-29-13	1005	E-21	0.0 - 1.0'	120
			1.0 - 2.0'	228
			2.0 - 3.0'	164
TOTAL DEPTH		48"	3.0 - 4.0'	110
5-29-13	1040	E-18	0.0 - 1.0'	131
			1.0 - 2.0'	95
			2.0 - 3.0'	108
TOTAL DEPTH/REFUSAL		48"	3.0 - 4.0'	236
5-29-13	1100	E-15	0.0 - 1.0'	95
			1.0 - 2.0'	274
			2.0 - 3.0'	
REFUSAL @		20"	3.0 - 4.0'	
5-29-13	1110	E-14	0.0 - 1.0'	130
			1.0 - 2.0'	
			2.0 - 3.0'	
REFUSAL @		12"	3.0 - 4.0'	

Notes:

SURFACE SOIL SAMPLING FIELD FORM 2 of 2

Trihydro

XRF SCREENING LOCATIONS

Sampling Criteria
- 10% of screened intervals below 280 ppm
- All intervals screened within 280 and 400 ppm
- 10% of screened intervals exceeding 400 ppm

SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)	SCREEN DATE	SCREEN TIME	LOCATION ID	SAMPLE INTERVAL	XRF - Pb (ppm)
5-29-13	1510	C-28	0.0 - 1.0'	193/173				0.0 - 1.0'	
			1.0 - 2.0'	87/116				1.0 - 2.0'	
			2.0 - 3.0'	ND<98/98				2.0 - 3.0'	
TOTAL DEPTH 48"			3.0 - 4.0'	ND<57/ND<55				3.0 - 4.0'	
5-29-13	1530	C-27	0.0 - 1.0'	989/1148				0.0 - 1.0'	
			1.0 - 2.0'	ND<51/ND<42				1.0 - 2.0'	
			2.0 - 3.0'					2.0 - 3.0'	
TOTAL DEPTH 24"			3.0 - 4.0'					3.0 - 4.0'	
5-29-13	1546	C-26	0.0 - 1.0'	108/343				0.0 - 1.0'	
			1.0 - 2.0'	350/659				1.0 - 2.0'	
			2.0 - 3.0'	1316/1756				2.0 - 3.0'	
REFUSAL @ 48"			3.0 - 4.0'	255/269				3.0 - 4.0'	
			0.0 - 1.0'					0.0 - 1.0'	
			1.0 - 2.0'					1.0 - 2.0'	
			2.0 - 3.0'					2.0 - 3.0'	
			3.0 - 4.0'					3.0 - 4.0'	
			0.0 - 1.0'					0.0 - 1.0'	
			1.0 - 2.0'					1.0 - 2.0'	
			2.0 - 3.0'					2.0 - 3.0'	
			3.0 - 4.0'					3.0 - 4.0'	

Notes:

5/31/2013

ORIGINAL	TCLP NAME	XRF Pb	XRF As
Z-5 →	TCLP-2-0-36	187	131
Z-2 →	TCLP-3-0-36	104	ND < 80
E-13	TCLP-4-0-36	203	525
E-18	TCLP-5-0-48	305	461
E-24	TCLP-6-0-72	277	392
C-26	TCLP-7-0-48	367	435
C-28	TCLP-8-0-48	533	773
C-31	TCLP-9-0-48	728	742
D-40	TCLP-10-0-72	108	168
D-43	TCLP-11-0-60	219	ND < 106
D-45	TCLP-12-0-48	84	ND < 69

Daily XRF Calibration Blank Check

Spring Meadow Lake
Helena, Montana
776-020-001

Trihydro CORPORATION

XRF Model: XL 3t 600 XRF SN: 4 2498

	Standard Concentration	Date / Time 0730 / 5-28-2013 XRF Reading 1	Calibrator	Date / Time 0740 / 5-29-13 XRF Reading 2	Calibrator	Date / Time 5/30/13 / 0717 XRF Reading 3	Calibrator	Date / Time / XRF Reading 4	Calibrator	Date / Time / XRF Reading 5	Calibrator
	(ppm)	(ppm)	Initials	(ppm)	Initials	(ppm)	Initials	(ppm)	Initials	(ppm)	Initials
Lead	500	476	JM	460	Jm	473	Jm				
Barium	NA	575		670		788					
Cadmium	500	489		514		512					
Chromium	500	530		456		458					
Mercury	NA	ND < 42		ND < 46		ND < 42					
Selenium	500	491		531		538					
Silver	500	511		554		568					
Arsenic	500	485		495		442					

	Blank Concentration	Date / Time 0738 / 5-28-2013 XRF Blank Reading 1	Calibrator	Date / Time 5-29-13 / 0746 XRF Blank Reading 2	Calibrator	Date / Time 5/30/13 / 0714 XRF Blank Reading 3	Calibrator	Date / Time / XRF Blank Reading 4	Calibrator	Date / Time / XRF Blank Reading 5	Calibrator
	(ppm)	(ppm)	Initials	(ppm)	Initials	(ppm)	Initials	(ppm)	Initials	(ppm)	Initials
Lead	NA	ND < 26	JM	ND < 31	Jm	ND < 31	Jm				
Barium	NA	ND < 223		ND < 246		ND < 237					
Cadmium	NA	ND < 43		ND < 47		ND < 44					
Chromium	NA	ND < 70		ND < 79		ND < 77					
Mercury	NA	ND < 37		ND < 33		ND < 33					
Selenium	NA	ND < 18		ND < 15		ND < 17					
Silver	NA	ND < 31		ND < 35		ND < 32					
Arsenic	NA	ND < 23		ND < 21		ND < 23					

Reference standards and blank will be checked once each hour or every twenty samples whichever occurs first and also at the end of the period of operation.

APPENDIX C

LABORATORY DATA PACKAGES

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 5

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	MDEQ	Report To:	Pebbles Opp	Attention:	Pebbles Opp
Address:	1100 Last Chance Gulch	Copy To:	James Gleason	Company Name:	MDEQ
	Helena MT, 59601			Address:	
Email To:	popp@mt.gov	Purchase Order No.:		Pace Quote Reference:	
Phone: 406-841-5028	Fax:	Project Name:	Spring Meadow Lake	Pace Project Manager:	Smantha Rupe
Requested Due Date/TAT:	5 Day RUSH	Project Number:	776-020-002	Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☑ RCRA ☐ OTHER _____

Site Location
STATE: _____

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	TCLP RCRA Metals	6010 As and Pb	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Z-SMLRY-TCLP-1-0-20		C	5/30/13	13:00				1	X								X				
2	Z-SMLRY-TCLP-2-0-36		C	5/28/13	8:40				1	X								X				
3	Z-SMLRY-TCLP-3-0-36		C	5/28/13	9:55				1	X								X				
4	E-SMLRY-TCLP-4-0-36		C	5/29/13	13:25				1	X								X				
5	E-SMLRY-TCLP-5-0-48		C	5/29/13	10:40				1	X								X				
6	E-SMLRY-TCLP-6-0-72		C	5/29/13	9:35				1	X								X				
7	C-SMLRY-TCLP-7-0-48		C	5/29/13	15:40				1	X								X				
8	C-SMLRY-TCLP-8-0-48		C	5/29/13	15:10				1	X								X				
9	C-SMLRY-TCLP-9-0-48		C	5/30/13	9:45				1	X								X				
10	D-SMLRY-TCLP-10-0-72		C	5/28/13	12:25				1	X								X				
11	D-SMLRY-TCLP-11-0-60		C	5/28/13	13:00				1	X								X				
12	D-SMLRY-TCLP-12-0-48		C	5/28/13	13:30				1	X								X				

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: GRANT PRICE

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	MDEQ	Report To:	Pebbles Opp	Attention:	Pebbles Opp
Address:	1100 Last Chance Gulch	Copy To:	James Gleason	Company Name:	MDEQ
	Helena MT, 59601			Address:	
Email To:	popp@mt.gov	Purchase Order No.:		Pace Quote Reference:	
Phone: 406-841-5028	Fax:	Project Name:	Spring Meadow Lake	Pace Project Manager:	Smantha Rupe
Requested Due Date/TAT:	5 Day Rush	Project Number:	776-020-002	Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☑ RCRA ☐ OTHER _____

Site Location
STATE: _____

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	TCLP RCRA Metals	6010 As and Pb	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	C-SMLRY-27-0-12		C	5/29/13	15:30				1	X										X		
2	C-SMLRY-29-12-24		C	5/30/13	8:30				1	X										X		
3	C-SMLRY-30-12-24		C	5/30/13	9:20				1	X										X		
4	C-SMLRY-32-12-24		C	5/30/13	10:05				1	X										X		
5	C-SMLRY-34-0-12		C	5/30/13	8:40				1	X										X		
6	C-SMLRY-35-0-12		C	5/30/13	9:15				1	X										X		
7	C-SMLRY-135-0-12		C	5/30/13	—				1	X										X		
8	Z-SMLRY-3-0-12		C	5/28/13	9:35				1	X										X		
9	SMLRY-EB-1		G	5/30/13	7:20				1			X								X		
10	SMLRY-EB-2		G	5/30/13	12:30				1			X								X		
11	SMLRY-EB-3		G	5/30/13	14:35				1			X								X		
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: GRANT PRICE

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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Address:	1100 Last Chance Gulch	Copy To:	James Gleason	Company Name:	MDEQ
	Helena MT, 59601			Address:	
Email To:	popp@mt.gov	Purchase Order No.:		Pace Quote Reference:	
Phone:	406-841-5028 Fax:	Project Name:	Spring Meadow Lake	Pace Project Manager:	Smantha Rupe
Requested Due Date/TAT:	5 Day Rush	Project Number:	776-020-002	Pace Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST X RCRA OTHER _____

Site Location STATE: _____

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test ↓ Y/N	TCLP RCRA Metals	6010 As and Pb	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	D-SMLRY-39-0-12		C	5/28/13	11:10				1	X									X			
2	D-SMLRY-41-0-12		C	5/28/13	12:45				1	X									X			
3	D-SMLRY-46-0-12		C	5/28/13	13:45				1	X									X			
4	D-SMLRY-47-0-12		C	5/28/13	13:55				1	X									X			
5	D-SMLRY-48-0-12		C	5/28/13	14:00				1	X									X			
6	D-SMLRY-56-0-12		C	5/28/13	14:55				1	X									X			
7	D-SMLRY-58-0-12		C	5/28/13	14:45				1	X									X			
8	D-SMLRY-158-0-12		C	5/28/13	____				1	X									X			
9																						
10																						
11																						
12																						

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: GRANT PRICE

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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Section A Required Client Information:

Company:	MDEQ
Address:	1100 Last Chance Gulch
	Helena MT, 59601
Email To:	popp@mt.gov
Phone: 406-841-5028	Fax:
Requested Due Date/TAT:	5 Day Rush

Section B Required Project Information:

Report To:	Pebbles Opp
Copy To:	James Gleason
Purchase Order No.:	
Project Name:	Spring Meadow Lake
Project Number:	776-020-002

Section C Invoice Information:

Attention:	Pebbles Opp
Company Name:	MDEQ
Address:	
Pace Quote Reference:	
Pace Project Manager:	Smantha Rupe
Pace Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER
UST X RCRA OTHER _____

Site Location STATE: _____

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	TCLP RCRA Metals	6010 As and Pb	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	E-SMLRY-10-0-12		C	5/29/13	12:45				1	X										X		
2	E-SMLRY-11-0-12		C	5/29/13	11:10				1	X										X		
3	E-SMLRY-121-0-12		C	5/29/13	____				1	X										X		
4	E-SMLRY-125-12-24		C	5/29/13	____				1	X										X		
5	E-SMLRY-14-0-12		C	5/29/13	13:10				1	X										X		
6	E-SMLRY-15-12-24		C	5/29/13	11:00				1	X										X		
7	E-SMLRY-16-24-36		G	5/30/13	14:15				1	X										X		
8	E-SMLRY-17-0-12		C	5/29/13	13:50				1	X										X		
9	E-SMLRY-17-24-36		C	5/29/13	13:50				1	X										X		
10	E-SMLRY-19-12-24		C	5/29/13	8:35				1	X										X		
11	E-SMLRY-20-24-36		C	5/29/13	8:50				1	X										X		
12	E-SMLRY-21-0-12		C	5/29/13	10:05				1	X										X		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: GRANT PRICE

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	MDEQ	Report To:	Pebbles Opp	Attention:	Pebbles Opp
Address:	1100 Last Chance Gulch	Copy To:	James Gleason	Company Name:	MDEQ
	Helena MT, 59601			Address:	
Email To:	popp@mt.gov	Purchase Order No.:		Pace Quote Reference:	
Phone:	406-841-5028 Fax:	Project Name:	Spring Meadow Lake	Pace Project Manager:	Smantha Rupe
Requested Due Date/TAT:	5 Day Rush	Project Number:	776-020-002	Pace Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST X RCRA OTHER _____

Site Location STATE: _____

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	Sample ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	TCLP RCRA Metals	6010 As and Pb	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	E-SMLRY-21-12-24		C	5/29/13	10:05				1	X										X		
2	E-SMLRY-23-0-12		C	5/29/13	9:50				1	X										X		
3	E-SMLRY-25-12-24		C	5/29/13	9:05				1	X										X		
4	E-SMLRY-25-24-36		C	5/29/13	9:05				1	X										X		
5	E-SMLRY-7-0-12		C	5/29/13	11:15				1	X										X		
6	E-SMLRY-9-0-12		C	5/29/13	12:30				1	X										X		
7									1	X										X		
8									1	X										X		
9									1	X										X		
10									1	X										X		
11									1	X										X		
12									1	X										X		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: GRANT PRICE

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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(406)254-7226

June 10, 2013

Pebbles Opp
Montana Dept. of Environmental
1100 N. Last Chance Gulch
Helena, MT 59620

RE: Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Dear Pebbles Opp:
Enclosed are the analytical results for sample(s) received by the laboratory on June 01, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Samantha Rupe

Samantha Rupe

samantha.rupe@pacelabs.com
Project Manager

Enclosures

cc: Jim Gleason, Montana Dept. of Environmental
Jamie Mongoven, Trihydro
Accounts Payable, Montana Dept. of Environmental
Accounts Payable, Montana Dept. of Environmental
Quality

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CERTIFICATIONS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Minnesota Certification IDs
1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10230552001	Z-SMLRY-TCLP-1-0-20	Solid	05/30/13 13:00	06/01/13 09:53
10230552002	Z-SMLRY-TCLP-2-0-36	Solid	05/28/13 08:40	06/01/13 09:53
10230552003	Z-SMLRY-TCLP-3-0-36	Solid	05/28/13 09:55	06/01/13 09:53
10230552004	E-SMLRY-TCLP-4-0-36	Solid	05/29/13 13:25	06/01/13 09:53
10230552005	E-SMLRY-TCLP-5-0-48	Solid	05/29/13 10:40	06/01/13 09:53
10230552006	E-SMLRY-TCLP-6-0-72	Solid	05/29/13 09:35	06/01/13 09:53
10230552007	C-SMLRY-TCLP-7-0-48	Solid	05/29/13 15:40	06/01/13 09:53
10230552008	C-SMLRY-TCLP-8-0-48	Solid	05/29/13 15:10	06/01/13 09:53
10230552009	C-SMLRY-TCLP-9-0-48	Solid	05/30/13 09:45	06/01/13 09:53
10230552010	D-SMLRY-TCLP-10-0-72	Solid	05/28/13 12:25	06/01/13 09:53
10230552011	D-SMLRY-TCLP-11-0-60	Solid	05/28/13 13:00	06/01/13 09:53
10230552012	D-SMLRY-TCLP-12-0-48	Solid	05/28/13 13:30	06/01/13 09:53
10230552013	C-SMLRY-27-0-12	Solid	05/29/13 15:30	06/01/13 09:53
10230552014	C-SMLRY-29-12-24	Solid	05/30/13 08:30	06/01/13 09:53
10230552015	C-SMLRY-30-12-24	Solid	05/30/13 09:20	06/01/13 09:53
10230552016	C-SMLRY-32-12-24	Solid	05/30/13 10:05	06/01/13 09:53
10230552017	C-SMLRY-34-0-12	Solid	05/30/13 08:40	06/01/13 09:53
10230552018	C-SMLRY-35-0-12	Solid	05/30/13 09:15	06/01/13 09:53
10230552019	C-SMLRY-135-0-12	Solid	05/30/13 00:00	06/01/13 09:53
10230552020	Z-SMLRY-3-0-12	Solid	05/28/13 09:35	06/01/13 09:53
10230552021	SMLRY-EB-1	Water	05/30/13 07:20	06/01/13 09:53
10230552022	SMLRY-EB-2	Water	05/30/13 12:30	06/01/13 09:53
10230552023	SMLRY-EB-3	Water	05/30/13 14:35	06/01/13 09:53
10230552024	D-SMLRY-39-0-12	Solid	05/28/13 11:10	06/01/13 09:53
10230552025	D-SMLRY-41-0-12	Solid	05/28/13 12:45	06/01/13 09:53
10230552026	D-SMLRY-46-0-12	Solid	05/28/13 13:45	06/01/13 09:53
10230552027	D-SMLRY-47-0-12	Solid	05/28/13 13:55	06/01/13 09:53
10230552028	D-SMLRY-48-0-12	Solid	05/28/13 14:00	06/01/13 09:53
10230552029	D-SMLRY-56-0-12	Solid	05/28/13 14:55	06/01/13 09:53
10230552030	D-SMLRY-58-0-12	Solid	05/28/13 14:45	06/01/13 09:53
10230552031	D-SMLRY-158-0-12	Solid	05/28/13 00:00	06/01/13 09:53
10230552032	E-SMLRY-10-0-12	Solid	05/29/13 12:45	06/01/13 09:53
10230552033	E-SMLRY-11-0-12	Solid	05/29/13 11:10	06/01/13 09:53
10230552034	E-SMLRY-121-0-12	Solid	05/29/13 00:00	06/01/13 09:53
10230552035	E-SMLRY-125-12-24	Solid	05/29/13 00:00	06/01/13 09:53
10230552036	E-SMLRY-14-0-12	Solid	05/29/13 13:10	06/01/13 09:53
10230552037	E-SMLRY-15-12-24	Solid	05/29/13 11:00	06/01/13 09:53

REPORT OF LABORATORY ANALYSIS

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(406)254-7226

SAMPLE SUMMARY

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10230552038	**E-SMLRY-16-24-36**	Solid	05/30/13 14:15	06/01/13 09:53
10230552039	**E-SMLRY-17-0-12**	Solid	05/29/13 13:50	06/01/13 09:53
10230552040	**E-SMLRY-17-24-36**	Solid	05/29/13 13:50	06/01/13 09:53
10230552041	**E-SMLRY-19-12-24**	Solid	05/29/13 08:35	06/01/13 09:53
10230552042	**E-SMLRY-20-24-36**	Solid	05/29/13 08:50	06/01/13 09:53
10230552043	**E-SMLRY-21-0-12**	Solid	05/29/13 10:05	06/01/13 09:53
10230552044	**E-SMLRY-21-12-24**	Solid	05/29/13 10:05	06/01/13 09:53
10230552045	**E-SMLRY-23-0-12**	Solid	05/29/13 09:50	06/01/13 09:53
10230552046	**E-SMLRY-25-12-24**	Solid	05/29/13 09:05	06/01/13 09:53
10230552047	**E-SMLRY-25-24-36**	Solid	05/29/13 09:05	06/01/13 09:53
10230552048	**E-SMLRY-7-0-12**	Solid	05/29/13 11:15	06/01/13 09:53
10230552049	**E-SMLRY-9-0-12**	Solid	05/29/13 12:30	06/01/13 09:53

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SAMPLE ANALYTE COUNT

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10230552001	**Z-SMLRY-TCLP-1-0-20**	EPA 6010	IP	7
		EPA 7470	WBS	1
		ASTM D2974	JDL	1
10230552002	**Z-SMLRY-TCLP-2-0-36**	EPA 6010	IP	7
		EPA 7470	WBS	1
		ASTM D2974	JDL	1
10230552003	**Z-SMLRY-TCLP-3-0-36**	EPA 6010	IP	7
		EPA 7470	WBS	1
		ASTM D2974	JDL	1
10230552004	**E-SMLRY-TCLP-4-0-36**	EPA 6010	IP	7
		EPA 7470	WBS	1
		ASTM D2974	JDL	1
10230552005	**E-SMLRY-TCLP-5-0-48**	EPA 6010	IP	7
		EPA 7470	WBS	1
		ASTM D2974	JDL	1
10230552006	**E-SMLRY-TCLP-6-0-72**	EPA 6010	IP	7
		EPA 7470	WBS	1
		ASTM D2974	JDL	1
10230552007	**C-SMLRY-TCLP-7-0-48**	EPA 6010	IP	7
		EPA 7470	WBS	1
		ASTM D2974	JDL	1
10230552008	**C-SMLRY-TCLP-8-0-48**	EPA 6010	IP	7
		EPA 7470	WBS	1
		ASTM D2974	JDL	1
10230552009	**C-SMLRY-TCLP-9-0-48**	EPA 6010	IP	7
		EPA 7470	WBS	1
		ASTM D2974	JDL	1
10230552010	**D-SMLRY-TCLP-10-0-72**	EPA 6010	IP	7
		EPA 7470	WBS	1
		ASTM D2974	JDL	1
10230552011	**D-SMLRY-TCLP-11-0-60**	EPA 6010	IP	7
		EPA 7470	WBS	1
		ASTM D2974	JDL	1
10230552012	**D-SMLRY-TCLP-12-0-48**	EPA 6010	IP	7
		EPA 7470	WBS	1
		ASTM D2974	JDL	1
10230552013	**C-SMLRY-27-0-12**	EPA 6010	IP	2

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SAMPLE ANALYTE COUNT

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Lab ID	Sample ID	Method	Analysts	Analytes Reported
		ASTM D2974	JDL	1
10230552014	C-SMLRY-29-12-24	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552015	C-SMLRY-30-12-24	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552016	C-SMLRY-32-12-24	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552017	C-SMLRY-34-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552018	C-SMLRY-35-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552019	C-SMLRY-135-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552020	Z-SMLRY-3-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552021	SMLRY-EB-1	EPA 6010	IP	2
10230552022	SMLRY-EB-2	EPA 6010	IP	2
10230552023	SMLRY-EB-3	EPA 6010	IP	2
10230552024	D-SMLRY-39-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552025	D-SMLRY-41-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552026	D-SMLRY-46-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552027	D-SMLRY-47-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552028	D-SMLRY-48-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552029	D-SMLRY-56-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552030	D-SMLRY-58-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552031	D-SMLRY-158-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552032	E-SMLRY-10-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552033	E-SMLRY-11-0-12	EPA 6010	IP	2

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Lab ID	Sample ID	Method	Analysts	Analytes Reported
		ASTM D2974	JDL	1
10230552034	E-SMLRY-121-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552035	E-SMLRY-125-12-24	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552036	E-SMLRY-14-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552037	E-SMLRY-15-12-24	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552038	E-SMLRY-16-24-36	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552039	E-SMLRY-17-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552040	E-SMLRY-17-24-36	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552041	E-SMLRY-19-12-24	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552042	E-SMLRY-20-24-36	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552043	E-SMLRY-21-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552044	E-SMLRY-21-12-24	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552045	E-SMLRY-23-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552046	E-SMLRY-25-12-24	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552047	E-SMLRY-25-24-36	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552048	E-SMLRY-7-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1
10230552049	E-SMLRY-9-0-12	EPA 6010	IP	2
		ASTM D2974	JDL	1

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: Z-SMLRY-TCLP-1-0-20 **Lab ID: 10230552001** Collected: 05/30/13 13:00 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Arsenic	ND	mg/L	0.50	5	06/06/13 14:49	06/07/13 15:39	7440-38-2	
Barium	**0.17**	mg/L	0.050	5	06/06/13 14:49	06/07/13 15:39	7440-39-3	
Cadmium	ND	mg/L	0.015	5	06/06/13 14:49	06/07/13 15:39	7440-43-9	
Chromium	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 15:39	7440-47-3	
Lead	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 15:39	7439-92-1	
Selenium	ND	mg/L	0.10	5	06/06/13 14:49	06/07/13 15:39	7782-49-2	
Silver	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 15:39	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Mercury	ND	ug/L	0.60	1	06/06/13 15:40	06/07/13 11:00	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**11.4**	%	0.10	1		06/03/13 00:00		

REPORT OF LABORATORY ANALYSIS

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Billings, MT 591014549
(406)254-7226

ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: Z-SMLRY-TCLP-2-0-36 **Lab ID: 10230552002** Collected: 05/28/13 08:40 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Arsenic	ND	mg/L	0.50	5	06/06/13 14:49	06/07/13 16:08	7440-38-2	
Barium	**0.57**	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:08	7440-39-3	
Cadmium	ND	mg/L	0.015	5	06/06/13 14:49	06/07/13 16:08	7440-43-9	
Chromium	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:08	7440-47-3	
Lead	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:08	7439-92-1	
Selenium	**0.13**	mg/L	0.10	5	06/06/13 14:49	06/07/13 16:08	7782-49-2	
Silver	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:08	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Mercury	ND	ug/L	0.60	1	06/06/13 15:40	06/07/13 11:02	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**10**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: Z-SMLRY-TCLP-3-0-36 **Lab ID: 10230552003** Collected: 05/28/13 09:55 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Arsenic	ND	mg/L	0.50	5	06/06/13 14:49	06/07/13 16:15	7440-38-2	
Barium	**0.30**	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:15	7440-39-3	
Cadmium	ND	mg/L	0.015	5	06/06/13 14:49	06/07/13 16:15	7440-43-9	
Chromium	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:15	7440-47-3	
Lead	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:15	7439-92-1	
Selenium	**0.18**	mg/L	0.10	5	06/06/13 14:49	06/07/13 16:15	7782-49-2	
Silver	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:15	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Mercury	ND	ug/L	0.60	1	06/06/13 15:40	06/07/13 11:05	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**10.0**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-TCLP-4-0-36 **Lab ID: 10230552004** Collected: 05/29/13 13:25 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Arsenic	**3.5**	mg/L	0.50	5	06/06/13 14:49	06/07/13 16:22	7440-38-2	
Barium	**0.23**	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:22	7440-39-3	
Cadmium	**0.029**	mg/L	0.015	5	06/06/13 14:49	06/07/13 16:22	7440-43-9	
Chromium	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:22	7440-47-3	
Lead	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:22	7439-92-1	
Selenium	**0.20**	mg/L	0.10	5	06/06/13 14:49	06/07/13 16:22	7782-49-2	
Silver	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:22	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Mercury	ND	ug/L	0.60	1	06/06/13 15:40	06/07/13 11:07	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**15.0**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-TCLP-5-0-48 **Lab ID: 10230552005** Collected: 05/29/13 10:40 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Arsenic	**1.8**	mg/L	0.50	5	06/06/13 14:49	06/07/13 16:29	7440-38-2	
Barium	**0.25**	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:29	7440-39-3	
Cadmium	**0.016**	mg/L	0.015	5	06/06/13 14:49	06/07/13 16:29	7440-43-9	
Chromium	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:29	7440-47-3	
Lead	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:29	7439-92-1	
Selenium	**0.20**	mg/L	0.10	5	06/06/13 14:49	06/07/13 16:29	7782-49-2	
Silver	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:29	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Mercury	ND	ug/L	0.60	1	06/06/13 15:40	06/07/13 11:09	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**13.1**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-TCLP-6-0-72 **Lab ID: 10230552006** Collected: 05/29/13 09:35 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Arsenic	**3.4**	mg/L	0.50	5	06/06/13 14:49	06/07/13 16:36	7440-38-2	
Barium	**0.47**	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:36	7440-39-3	
Cadmium	**0.029**	mg/L	0.015	5	06/06/13 14:49	06/07/13 16:36	7440-43-9	
Chromium	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:36	7440-47-3	
Lead	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:36	7439-92-1	
Selenium	**0.24**	mg/L	0.10	5	06/06/13 14:49	06/07/13 16:36	7782-49-2	
Silver	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:36	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Mercury	ND	ug/L	0.60	1	06/06/13 15:40	06/07/13 11:11	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**17.1**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: C-SMLRY-TCLP-7-0-48 **Lab ID: 10230552007** Collected: 05/29/13 15:40 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Arsenic	**2.9**	mg/L	0.50	5	06/06/13 14:49	06/07/13 16:41	7440-38-2	
Barium	**0.35**	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:41	7440-39-3	
Cadmium	**0.056**	mg/L	0.015	5	06/06/13 14:49	06/07/13 16:41	7440-43-9	
Chromium	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:41	7440-47-3	
Lead	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:41	7439-92-1	
Selenium	**0.23**	mg/L	0.10	5	06/06/13 14:49	06/07/13 16:41	7782-49-2	
Silver	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:41	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Mercury	ND	ug/L	0.60	1	06/06/13 15:40	06/07/13 11:17	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**14.3**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: C-SMLRY-TCLP-8-0-48 **Lab ID: 10230552008** Collected: 05/29/13 15:10 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Arsenic	**2.5**	mg/L	0.50	5	06/06/13 14:49	06/07/13 16:45	7440-38-2	
Barium	**0.15**	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:45	7440-39-3	
Cadmium	**0.031**	mg/L	0.015	5	06/06/13 14:49	06/07/13 16:45	7440-43-9	
Chromium	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:45	7440-47-3	
Lead	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:45	7439-92-1	
Selenium	**0.24**	mg/L	0.10	5	06/06/13 14:49	06/07/13 16:45	7782-49-2	
Silver	ND	mg/L	0.050	5	06/06/13 14:49	06/07/13 16:45	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Mercury	ND	ug/L	0.60	1	06/06/13 15:40	06/07/13 11:19	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**12.5**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: C-SMLRY-TCLP-9-0-48 **Lab ID: 10230552009** Collected: 05/30/13 09:45 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Arsenic	**1.3**	mg/L	0.50	5	06/06/13 14:49	06/09/13 12:44	7440-38-2	
Barium	**0.12**	mg/L	0.050	5	06/06/13 14:49	06/09/13 12:44	7440-39-3	
Cadmium	ND	mg/L	0.015	5	06/06/13 14:49	06/09/13 12:44	7440-43-9	
Chromium	ND	mg/L	0.050	5	06/06/13 14:49	06/09/13 12:44	7440-47-3	
Lead	ND	mg/L	0.050	5	06/06/13 14:49	06/09/13 12:44	7439-92-1	
Selenium	**0.25**	mg/L	0.10	5	06/06/13 14:49	06/09/13 12:44	7782-49-2	
Silver	ND	mg/L	0.050	5	06/06/13 14:49	06/09/13 12:44	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Mercury	ND	ug/L	0.60	1	06/06/13 15:40	06/07/13 11:21	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**21.8**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: D-SMLRY-TCLP-10-0-72 **Lab ID: 10230552010** Collected: 05/28/13 12:25 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Arsenic	**0.82**	mg/L	0.50	5	06/06/13 14:49	06/09/13 12:49	7440-38-2	
Barium	**0.93**	mg/L	0.050	5	06/06/13 14:49	06/09/13 12:49	7440-39-3	
Cadmium	ND	mg/L	0.015	5	06/06/13 14:49	06/09/13 12:49	7440-43-9	
Chromium	ND	mg/L	0.050	5	06/06/13 14:49	06/09/13 12:49	7440-47-3	
Lead	ND	mg/L	0.050	5	06/06/13 14:49	06/09/13 12:49	7439-92-1	
Selenium	**0.27**	mg/L	0.10	5	06/06/13 14:49	06/09/13 12:49	7782-49-2	
Silver	ND	mg/L	0.050	5	06/06/13 14:49	06/09/13 12:49	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Mercury	ND	ug/L	0.60	1	06/06/13 15:41	06/07/13 11:23	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**21.7**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: D-SMLRY-TCLP-11-0-60 **Lab ID: 10230552011** Collected: 05/28/13 13:00 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Arsenic	ND	mg/L	0.50	5	06/06/13 14:49	06/09/13 12:54	7440-38-2	
Barium	**0.15**	mg/L	0.050	5	06/06/13 14:49	06/09/13 12:54	7440-39-3	
Cadmium	ND	mg/L	0.015	5	06/06/13 14:49	06/09/13 12:54	7440-43-9	
Chromium	ND	mg/L	0.050	5	06/06/13 14:49	06/09/13 12:54	7440-47-3	
Lead	ND	mg/L	0.050	5	06/06/13 14:49	06/09/13 12:54	7439-92-1	
Selenium	**0.25**	mg/L	0.10	5	06/06/13 14:49	06/09/13 12:54	7782-49-2	
Silver	ND	mg/L	0.050	5	06/06/13 14:49	06/09/13 12:54	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Mercury	ND	ug/L	0.60	1	06/06/13 15:41	06/07/13 11:25	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**17.6**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: D-SMLRY-TCLP-12-0-48 **Lab ID: 10230552012** Collected: 05/28/13 13:30 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Arsenic	**0.90**	mg/L	0.50	5	06/06/13 14:49	06/09/13 12:58	7440-38-2	
Barium	**1.1**	mg/L	0.050	5	06/06/13 14:49	06/09/13 12:58	7440-39-3	
Cadmium	ND	mg/L	0.015	5	06/06/13 14:49	06/09/13 12:58	7440-43-9	
Chromium	ND	mg/L	0.050	5	06/06/13 14:49	06/09/13 12:58	7440-47-3	
Lead	ND	mg/L	0.050	5	06/06/13 14:49	06/09/13 12:58	7439-92-1	
Selenium	**0.28**	mg/L	0.10	5	06/06/13 14:49	06/09/13 12:58	7782-49-2	
Silver	ND	mg/L	0.050	5	06/06/13 14:49	06/09/13 12:58	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Leachate Method/Date: EPA 1311; 06/06/13 13:09							
Mercury	ND	ug/L	0.60	1	06/06/13 15:41	06/07/13 11:27	7439-97-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**17.8**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: C-SMLRY-27-0-12 **Lab ID: 10230552013** Collected: 05/29/13 15:30 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**1120**	mg/kg	10.4	5	06/05/13 11:58	06/07/13 14:44	7440-38-2	M1
Lead	**1030**	mg/kg	5.2	5	06/05/13 11:58	06/07/13 14:44	7439-92-1	M1
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**15.8**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: C-SMLRY-29-12-24 **Lab ID: 10230552014** Collected: 05/30/13 08:30 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**171**	mg/kg	2.0	1	06/05/13 11:58	06/07/13 15:03	7440-38-2	
Lead	**134**	mg/kg	0.98	1	06/05/13 11:58	06/07/13 15:03	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**16.3**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: C-SMLRY-30-12-24 **Lab ID: 10230552015** Collected: 05/30/13 09:20 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**455**	mg/kg	9.1	5	06/05/13 11:58	06/07/13 15:50	7440-38-2	
Lead	**776**	mg/kg	4.6	5	06/05/13 11:58	06/07/13 15:50	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**20.5**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: C-SMLRY-32-12-24 **Lab ID: 10230552016** Collected: 05/30/13 10:05 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**528**	mg/kg	2.0	1	06/05/13 11:58	06/07/13 15:28	7440-38-2	
Lead	**429**	mg/kg	0.98	1	06/05/13 11:58	06/07/13 15:28	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**15.6**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: C-SMLRY-34-0-12 **Lab ID: 10230552017** Collected: 05/30/13 08:40 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**161**	mg/kg	1.7	1	06/05/13 11:58	06/07/13 15:34	7440-38-2	
Lead	**159**	mg/kg	0.83	1	06/05/13 11:58	06/07/13 15:34	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**12.0**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: C-SMLRY-35-0-12 **Lab ID: 10230552018** Collected: 05/30/13 09:15 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**780**	mg/kg	12.6	5	06/05/13 11:58	06/07/13 15:57	7440-38-2	
Lead	**887**	mg/kg	6.3	5	06/05/13 11:58	06/07/13 15:57	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**20.7**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: C-SMLRY-135-0-12 **Lab ID: 10230552019** Collected: 05/30/13 00:00 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**1080**	mg/kg	11.6	5	06/05/13 11:58	06/07/13 16:03	7440-38-2	
Lead	**1020**	mg/kg	5.8	5	06/05/13 11:58	06/07/13 16:03	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**20.7**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: Z-SMLRY-3-0-12 **Lab ID: 10230552020** Collected: 05/28/13 09:35 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**105**	mg/kg	11.5	5	06/05/13 11:58	06/07/13 16:10	7440-38-2	
Lead	**273**	mg/kg	5.7	5	06/05/13 11:58	06/07/13 16:10	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**18.7**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: SMLRY-EB-1 **Lab ID: 10230552021** Collected: 05/30/13 07:20 Received: 06/01/13 09:53 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Arsenic	ND	mg/L	0.010	1	06/05/13 09:53	06/06/13 22:27	7440-38-2	
Lead	ND	mg/L	0.010	1	06/05/13 09:53	06/06/13 22:27	7439-92-1	

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: SMLRY-EB-2 **Lab ID: 10230552022** Collected: 05/30/13 12:30 Received: 06/01/13 09:53 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Arsenic	ND	mg/L	0.010	1	06/05/13 09:53	06/06/13 22:31	7440-38-2	
Lead	ND	mg/L	0.010	1	06/05/13 09:53	06/06/13 22:31	7439-92-1	

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: SMLRY-EB-3 **Lab ID: 10230552023** Collected: 05/30/13 14:35 Received: 06/01/13 09:53 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Arsenic	ND	mg/L	0.010	1	06/05/13 09:53	06/06/13 22:36	7440-38-2	
Lead	ND	mg/L	0.010	1	06/05/13 09:53	06/06/13 22:36	7439-92-1	

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: D-SMLRY-39-0-12 **Lab ID: 10230552024** Collected: 05/28/13 11:10 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**1290**	mg/kg	12.5	5	06/05/13 11:58	06/07/13 16:17	7440-38-2	
Lead	**1070**	mg/kg	6.2	5	06/05/13 11:58	06/07/13 16:17	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**21.5**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: D-SMLRY-41-0-12 **Lab ID: 10230552025** Collected: 05/28/13 12:45 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**957**	mg/kg	12.6	5	06/05/13 11:58	06/07/13 16:23	7440-38-2	
Lead	**1040**	mg/kg	6.3	5	06/05/13 11:58	06/07/13 16:23	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**22.0**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: D-SMLRY-46-0-12 **Lab ID: 10230552026** Collected: 05/28/13 13:45 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**87.3**	mg/kg	9.6	5	06/05/13 11:58	06/07/13 16:30	7440-38-2	
Lead	**110**	mg/kg	4.8	5	06/05/13 11:58	06/07/13 16:30	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**14.7**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: D-SMLRY-47-0-12 **Lab ID: 10230552027** Collected: 05/28/13 13:55 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**75.4**	mg/kg	9.3	5	06/05/13 11:58	06/07/13 16:37	7440-38-2	
Lead	**105**	mg/kg	4.7	5	06/05/13 11:58	06/07/13 16:37	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**10.8**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: D-SMLRY-48-0-12 **Lab ID: 10230552028** Collected: 05/28/13 14:00 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**212**	mg/kg	10.6	5	06/05/13 11:58	06/07/13 16:44	7440-38-2	
Lead	**512**	mg/kg	5.3	5	06/05/13 11:58	06/07/13 16:44	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**15.9**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: D-SMLRY-56-0-12 **Lab ID: 10230552029** Collected: 05/28/13 14:55 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**142**	mg/kg	11.5	5	06/05/13 11:58	06/07/13 16:58	7440-38-2	
Lead	**156**	mg/kg	5.8	5	06/05/13 11:58	06/07/13 16:58	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**16.4**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: D-SMLRY-58-0-12 **Lab ID: 10230552030** Collected: 05/28/13 14:45 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**161**	mg/kg	10.4	5	06/05/13 11:58	06/07/13 17:05	7440-38-2	
Lead	**188**	mg/kg	5.2	5	06/05/13 11:58	06/07/13 17:05	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**14.4**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: D-SMLRY-158-0-12 **Lab ID: 10230552031** Collected: 05/28/13 00:00 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**165**	mg/kg	10.9	5	06/05/13 11:58	06/07/13 17:12	7440-38-2	
Lead	**188**	mg/kg	5.5	5	06/05/13 11:58	06/07/13 17:12	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**14.4**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-10-0-12 **Lab ID: 10230552032** Collected: 05/29/13 12:45 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**5030**	mg/kg	10.5	5	06/05/13 11:58	06/07/13 17:18	7440-38-2	
Lead	**3250**	mg/kg	5.3	5	06/05/13 11:58	06/07/13 17:18	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**20.2**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-11-0-12 **Lab ID: 10230552033** Collected: 05/29/13 11:10 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**237**	mg/kg	9.1	5	06/05/13 11:58	06/07/13 17:24	7440-38-2	
Lead	**218**	mg/kg	4.6	5	06/05/13 11:58	06/07/13 17:24	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**10.2**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-121-0-12 **Lab ID: 10230552034** Collected: 05/29/13 00:00 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**253**	mg/kg	10.4	5	06/05/13 11:58	06/07/13 17:31	7440-38-2	
Lead	**196**	mg/kg	5.2	5	06/05/13 11:58	06/07/13 17:31	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**10.6**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-125-12-24 **Lab ID: 10230552035** Collected: 05/29/13 00:00 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**1270**	mg/kg	11.9	5	06/05/13 11:58	06/07/13 17:37	7440-38-2	
Lead	**2420**	mg/kg	5.9	5	06/05/13 11:58	06/07/13 17:37	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**24.8**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-14-0-12 **Lab ID: 10230552036** Collected: 05/29/13 13:10 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**3070**	mg/kg	11.0	5	06/05/13 14:03	06/07/13 18:06	7440-38-2	M1
Lead	**2320**	mg/kg	5.5	5	06/05/13 14:03	06/07/13 18:06	7439-92-1	M1
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**16.4**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-15-12-24 **Lab ID: 10230552037** Collected: 05/29/13 11:00 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**230**	mg/kg	10.4	5	06/05/13 14:03	06/07/13 18:24	7440-38-2	
Lead	**235**	mg/kg	5.2	5	06/05/13 14:03	06/07/13 18:24	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**5.4**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-16-24-36 **Lab ID: 10230552038** Collected: 05/30/13 14:15 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**75.7**	mg/kg	10.9	5	06/05/13 14:03	06/07/13 18:31	7440-38-2	
Lead	**40.9**	mg/kg	5.4	5	06/05/13 14:03	06/07/13 18:31	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**14.7**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-17-0-12 **Lab ID: 10230552039** Collected: 05/29/13 13:50 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**2690**	mg/kg	12.5	5	06/05/13 14:03	06/07/13 18:38	7440-38-2	
Lead	**2290**	mg/kg	6.3	5	06/05/13 14:03	06/07/13 18:38	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**23.8**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-17-24-36 **Lab ID: 10230552040** Collected: 05/29/13 13:50 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**965**	mg/kg	9.5	5	06/05/13 14:03	06/07/13 18:43	7440-38-2	
Lead	**736**	mg/kg	4.8	5	06/05/13 14:03	06/07/13 18:43	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**16.2**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-19-12-24 **Lab ID: 10230552041** Collected: 05/29/13 08:35 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**1200**	mg/kg	9.1	5	06/05/13 14:03	06/07/13 18:50	7440-38-2	
Lead	**875**	mg/kg	4.6	5	06/05/13 14:03	06/07/13 18:50	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**14.4**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-20-24-36 **Lab ID: 10230552042** Collected: 05/29/13 08:50 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**33.6**	mg/kg	9.8	5	06/05/13 14:03	06/07/13 19:05	7440-38-2	
Lead	**29.6**	mg/kg	4.9	5	06/05/13 14:03	06/07/13 19:05	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**17.3**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-21-0-12 **Lab ID: 10230552043** Collected: 05/29/13 10:05 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**252**	mg/kg	8.2	5	06/05/13 14:03	06/07/13 19:11	7440-38-2	
Lead	**181**	mg/kg	4.1	5	06/05/13 14:03	06/07/13 19:11	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**12.4**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-21-12-24 **Lab ID: 10230552044** Collected: 05/29/13 10:05 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**440**	mg/kg	7.9	5	06/05/13 14:03	06/07/13 19:18	7440-38-2	
Lead	**246**	mg/kg	4.0	5	06/05/13 14:03	06/07/13 19:18	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**8.7**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-23-0-12 **Lab ID: 10230552045** Collected: 05/29/13 09:50 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**2240**	mg/kg	10.6	5	06/05/13 14:03	06/07/13 19:25	7440-38-2	
Lead	**1450**	mg/kg	5.3	5	06/05/13 14:03	06/07/13 19:25	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**18.7**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-25-12-24 **Lab ID: 10230552046** Collected: 05/29/13 09:05 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**1060**	mg/kg	11.5	5	06/05/13 14:03	06/07/13 19:32	7440-38-2	
Lead	**1620**	mg/kg	5.8	5	06/05/13 14:03	06/07/13 19:32	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**25.7**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-25-24-36 **Lab ID: 10230552047** Collected: 05/29/13 09:05 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**111**	mg/kg	11.4	5	06/05/13 14:03	06/07/13 19:37	7440-38-2	
Lead	**122**	mg/kg	5.7	5	06/05/13 14:03	06/07/13 19:37	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**18.1**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-7-0-12 **Lab ID: 10230552048** Collected: 05/29/13 11:15 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**246**	mg/kg	10.5	5	06/05/13 14:03	06/07/13 19:44	7440-38-2	
Lead	**446**	mg/kg	5.2	5	06/05/13 14:03	06/07/13 19:44	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**16.1**	%	0.10	1		06/03/13 00:00		

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ANALYTICAL RESULTS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Sample: E-SMLRY-9-0-12 **Lab ID: 10230552049** Collected: 05/29/13 12:30 Received: 06/01/13 09:53 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**772**	mg/kg	1.8	1	06/05/13 14:03	06/07/13 19:51	7440-38-2	
Lead	**573**	mg/kg	0.91	1	06/05/13 14:03	06/07/13 19:51	7439-92-1	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**13.8**	%	0.10	1		06/03/13 00:00		

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QUALITY CONTROL DATA

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

QC Batch: MERP/8608 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury TCLP
Associated Lab Samples: 10230552001, 10230552002, 10230552003, 10230552004, 10230552005, 10230552006, 10230552007, 10230552008, 10230552009, 10230552010, 10230552011, 10230552012

METHOD BLANK: 1449509 Matrix: Water
Associated Lab Samples: 10230552001, 10230552002, 10230552003, 10230552004, 10230552005, 10230552006, 10230552007, 10230552008, 10230552009, 10230552010, 10230552011, 10230552012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.60	06/07/13 10:39	

LABORATORY CONTROL SAMPLE: 1449510

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	15	14.7	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1449511 1449512

Parameter	Units	10229796001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	15	15	13.7	13.9	91	92	80-120	1	20	

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QUALITY CONTROL DATA

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

QC Batch: MPRP/39605 Analysis Method: EPA 6010
QC Batch Method: EPA 3050 Analysis Description: 6010 MET
Associated Lab Samples: 10230552013, 10230552014, 10230552015, 10230552016, 10230552017, 10230552018, 10230552019, 10230552020, 10230552024, 10230552025, 10230552026, 10230552027, 10230552028, 10230552029, 10230552030, 10230552031, 10230552032, 10230552033, 10230552034, 10230552035

METHOD BLANK: 1446452 Matrix: Solid
Associated Lab Samples: 10230552013, 10230552014, 10230552015, 10230552016, 10230552017, 10230552018, 10230552019, 10230552020, 10230552024, 10230552025, 10230552026, 10230552027, 10230552028, 10230552029, 10230552030, 10230552031, 10230552032, 10230552033, 10230552034, 10230552035

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	2.0	06/07/13 14:28	
Lead	mg/kg	ND	1.0	06/07/13 14:28	

LABORATORY CONTROL SAMPLE: 1446453

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	46.3	41.4	89	80-120	
Lead	mg/kg	46.3	43.8	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1446454 1446455

Parameter	Units	10230552013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	1120	53	49.5	1210	1160	165	74	75-125	4	30	M1
Lead	mg/kg	1030	53	49.5	1090	1040	114	9	75-125	5	30	M1

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QUALITY CONTROL DATA

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

QC Batch: MPRP/39606 Analysis Method: EPA 6010
QC Batch Method: EPA 3050 Analysis Description: 6010 MET
Associated Lab Samples: 10230552036, 10230552037, 10230552038, 10230552039, 10230552040, 10230552041, 10230552042, 10230552043, 10230552044, 10230552045, 10230552046, 10230552047, 10230552048, 10230552049

METHOD BLANK: 1446456 Matrix: Solid
Associated Lab Samples: 10230552036, 10230552037, 10230552038, 10230552039, 10230552040, 10230552041, 10230552042, 10230552043, 10230552044, 10230552045, 10230552046, 10230552047, 10230552048, 10230552049

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	1.9	06/07/13 17:58	
Lead	mg/kg	ND	0.96	06/07/13 17:58	

LABORATORY CONTROL SAMPLE: 1446457

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	49	42.3	86	80-120	
Lead	mg/kg	49	44.3	90	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1446458 1446459

Parameter	Units	10230552036 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	3070	44.6	46.8	3600	3180	1190	229	75-125	13	30	M1
Lead	mg/kg	2320	44.6	46.8	2610	2320	648	-13	75-125	12	30	M1

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QUALITY CONTROL DATA

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

QC Batch: MPRP/39677 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET TCLP
Associated Lab Samples: 10230552001, 10230552002, 10230552003, 10230552004, 10230552005, 10230552006, 10230552007, 10230552008, 10230552009, 10230552010, 10230552011, 10230552012

METHOD BLANK: 1449517 Matrix: Water
Associated Lab Samples: 10230552001, 10230552002, 10230552003, 10230552004, 10230552005, 10230552006, 10230552007, 10230552008, 10230552009, 10230552010, 10230552011, 10230552012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.50	06/09/13 11:54	
Barium	mg/L	ND	0.050	06/09/13 11:54	
Cadmium	mg/L	ND	0.015	06/09/13 11:54	
Chromium	mg/L	ND	0.050	06/09/13 11:54	
Lead	mg/L	ND	0.050	06/09/13 11:54	
Selenium	mg/L	ND	0.10	06/09/13 11:54	
Silver	mg/L	ND	0.050	06/09/13 11:54	

LABORATORY CONTROL SAMPLE: 1449518

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	1	1.0	105	80-120	
Barium	mg/L	1	1.0	104	80-120	
Cadmium	mg/L	1	1.0	104	80-120	
Chromium	mg/L	1	1.0	101	80-120	
Lead	mg/L	1	1.0	101	80-120	
Selenium	mg/L	1	1.0	104	80-120	
Silver	mg/L	.5	0.51	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1449519 1449520

Parameter	Units	10230552001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	ND	1	1	1.1	1.1	98	99	75-125	.5	30	
Barium	mg/L	0.17	1	1	1.1	1.1	96	95	75-125	.5	30	
Cadmium	mg/L	ND	1	1	0.99	0.99	99	98	75-125	.6	30	
Chromium	mg/L	ND	1	1	0.97	0.96	96	96	75-125	.6	30	
Lead	mg/L	ND	1	1	0.92	0.93	92	93	75-125	1	30	
Selenium	mg/L	ND	1	1	1.1	1.1	98	100	75-125	2	30	
Silver	mg/L	ND	.5	.5	0.49	0.49	98	97	75-125	.7	30	

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QUALITY CONTROL DATA

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

QC Batch: MPRP/39612 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 10230552021, 10230552022, 10230552023

METHOD BLANK: 1446760 Matrix: Water
Associated Lab Samples: 10230552021, 10230552022, 10230552023

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.010	06/06/13 22:02	
Lead	mg/L	ND	0.010	06/06/13 22:02	

LABORATORY CONTROL SAMPLE: 1446761

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	1	0.98	98	80-120	
Lead	mg/L	1	1.0	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1446762 1446763

Parameter	Units	10230133001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	ND	1	1	1.0	0.99	100	99	75-125	.6	20	
Lead	mg/L	ND	1	1	1.0	1.0	100	99	75-125	.3	20	

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QUALITY CONTROL DATA

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

QC Batch: MPRP/39602 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10230552001, 10230552002, 10230552003, 10230552004, 10230552005, 10230552006, 10230552007, 10230552008, 10230552009, 10230552010, 10230552011, 10230552012, 10230552013, 10230552014, 10230552015, 10230552016, 10230552017, 10230552018, 10230552019, 10230552020

SAMPLE DUPLICATE: 1446220

Parameter	Units	10230552001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	11.4	11.5	.9	30	

SAMPLE DUPLICATE: 1446221

Parameter	Units	10230552020 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.7	15.8	17	30	

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QUALITY CONTROL DATA

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

QC Batch: MPRP/39603 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10230552024, 10230552025, 10230552026, 10230552027, 10230552028, 10230552029, 10230552030, 10230552031, 10230552032, 10230552033, 10230552034, 10230552035, 10230552036, 10230552037, 10230552038, 10230552039, 10230552040, 10230552041

SAMPLE DUPLICATE: 1446223

Parameter	Units	10230552041 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	14.4	14.7	3	30	

SAMPLE DUPLICATE: 1446311

Parameter	Units	10230552024 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	21.5	22.1	3	30	

REPORT OF LABORATORY ANALYSIS

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602 S 25th Street
Billings, MT 591014549
(406)254-7226

QUALITY CONTROL DATA

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

QC Batch: MPRP/39604 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10230552042, 10230552043, 10230552044, 10230552045, 10230552046, 10230552047, 10230552048, 10230552049

SAMPLE DUPLICATE: 1446225

Parameter	Units	10230552042 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	17.3	15.9	8	30	

SAMPLE DUPLICATE: 1446226

Parameter	Units	10230491002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	6.9	6.9	.8	30	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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(406)254-7226

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10230552013	**C-SMLRY-27-0-12**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552014	**C-SMLRY-29-12-24**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552015	**C-SMLRY-30-12-24**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552016	**C-SMLRY-32-12-24**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552017	**C-SMLRY-34-0-12**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552018	**C-SMLRY-35-0-12**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552019	**C-SMLRY-135-0-12**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552020	**Z-SMLRY-3-0-12**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552024	**D-SMLRY-39-0-12**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552025	**D-SMLRY-41-0-12**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552026	**D-SMLRY-46-0-12**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552027	**D-SMLRY-47-0-12**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552028	**D-SMLRY-48-0-12**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552029	**D-SMLRY-56-0-12**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552030	**D-SMLRY-58-0-12**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552031	**D-SMLRY-158-0-12**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552032	**E-SMLRY-10-0-12**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552033	**E-SMLRY-11-0-12**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552034	**E-SMLRY-121-0-12**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552035	**E-SMLRY-125-12-24**	EPA 3050	MPRP/39605	EPA 6010	ICP/16605
10230552036	**E-SMLRY-14-0-12**	EPA 3050	MPRP/39606	EPA 6010	ICP/16606
10230552037	**E-SMLRY-15-12-24**	EPA 3050	MPRP/39606	EPA 6010	ICP/16606
10230552038	**E-SMLRY-16-24-36**	EPA 3050	MPRP/39606	EPA 6010	ICP/16606
10230552039	**E-SMLRY-17-0-12**	EPA 3050	MPRP/39606	EPA 6010	ICP/16606
10230552040	**E-SMLRY-17-24-36**	EPA 3050	MPRP/39606	EPA 6010	ICP/16606
10230552041	**E-SMLRY-19-12-24**	EPA 3050	MPRP/39606	EPA 6010	ICP/16606
10230552042	**E-SMLRY-20-24-36**	EPA 3050	MPRP/39606	EPA 6010	ICP/16606
10230552043	**E-SMLRY-21-0-12**	EPA 3050	MPRP/39606	EPA 6010	ICP/16606
10230552044	**E-SMLRY-21-12-24**	EPA 3050	MPRP/39606	EPA 6010	ICP/16606
10230552045	**E-SMLRY-23-0-12**	EPA 3050	MPRP/39606	EPA 6010	ICP/16606
10230552046	**E-SMLRY-25-12-24**	EPA 3050	MPRP/39606	EPA 6010	ICP/16606
10230552047	**E-SMLRY-25-24-36**	EPA 3050	MPRP/39606	EPA 6010	ICP/16606
10230552048	**E-SMLRY-7-0-12**	EPA 3050	MPRP/39606	EPA 6010	ICP/16606
10230552049	**E-SMLRY-9-0-12**	EPA 3050	MPRP/39606	EPA 6010	ICP/16606
10230552001	**Z-SMLRY-TCLP-1-0-20**	EPA 3010	MPRP/39677	EPA 6010	ICP/16622
10230552002	**Z-SMLRY-TCLP-2-0-36**	EPA 3010	MPRP/39677	EPA 6010	ICP/16622
10230552003	**Z-SMLRY-TCLP-3-0-36**	EPA 3010	MPRP/39677	EPA 6010	ICP/16622
10230552004	**E-SMLRY-TCLP-4-0-36**	EPA 3010	MPRP/39677	EPA 6010	ICP/16622
10230552005	**E-SMLRY-TCLP-5-0-48**	EPA 3010	MPRP/39677	EPA 6010	ICP/16622
10230552006	**E-SMLRY-TCLP-6-0-72**	EPA 3010	MPRP/39677	EPA 6010	ICP/16622
10230552007	**C-SMLRY-TCLP-7-0-48**	EPA 3010	MPRP/39677	EPA 6010	ICP/16622
10230552008	**C-SMLRY-TCLP-8-0-48**	EPA 3010	MPRP/39677	EPA 6010	ICP/16622
10230552009	**C-SMLRY-TCLP-9-0-48**	EPA 3010	MPRP/39677	EPA 6010	ICP/16622
10230552010	**D-SMLRY-TCLP-10-0-72**	EPA 3010	MPRP/39677	EPA 6010	ICP/16622
10230552011	**D-SMLRY-TCLP-11-0-60**	EPA 3010	MPRP/39677	EPA 6010	ICP/16622
10230552012	**D-SMLRY-TCLP-12-0-48**	EPA 3010	MPRP/39677	EPA 6010	ICP/16622
10230552021	**SMLRY-EB-1**	EPA 3010	MPRP/39612	EPA 6010	ICP/16597

REPORT OF LABORATORY ANALYSIS

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(406)254-7226

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10230552022	**SMLRY-EB-2**	EPA 3010	MPRP/39612	EPA 6010	ICP/16597
10230552023	**SMLRY-EB-3**	EPA 3010	MPRP/39612	EPA 6010	ICP/16597
10230552001	**Z-SMLRY-TCLP-1-0-20**	EPA 7470	MERP/8608	EPA 7470	MERC/9745
10230552002	**Z-SMLRY-TCLP-2-0-36**	EPA 7470	MERP/8608	EPA 7470	MERC/9745
10230552003	**Z-SMLRY-TCLP-3-0-36**	EPA 7470	MERP/8608	EPA 7470	MERC/9745
10230552004	**E-SMLRY-TCLP-4-0-36**	EPA 7470	MERP/8608	EPA 7470	MERC/9745
10230552005	**E-SMLRY-TCLP-5-0-48**	EPA 7470	MERP/8608	EPA 7470	MERC/9745
10230552006	**E-SMLRY-TCLP-6-0-72**	EPA 7470	MERP/8608	EPA 7470	MERC/9745
10230552007	**C-SMLRY-TCLP-7-0-48**	EPA 7470	MERP/8608	EPA 7470	MERC/9745
10230552008	**C-SMLRY-TCLP-8-0-48**	EPA 7470	MERP/8608	EPA 7470	MERC/9745
10230552009	**C-SMLRY-TCLP-9-0-48**	EPA 7470	MERP/8608	EPA 7470	MERC/9745
10230552010	**D-SMLRY-TCLP-10-0-72**	EPA 7470	MERP/8608	EPA 7470	MERC/9745
10230552011	**D-SMLRY-TCLP-11-0-60**	EPA 7470	MERP/8608	EPA 7470	MERC/9745
10230552012	**D-SMLRY-TCLP-12-0-48**	EPA 7470	MERP/8608	EPA 7470	MERC/9745
10230552001	**Z-SMLRY-TCLP-1-0-20**	ASTM D2974	MPRP/39602		
10230552002	**Z-SMLRY-TCLP-2-0-36**	ASTM D2974	MPRP/39602		
10230552003	**Z-SMLRY-TCLP-3-0-36**	ASTM D2974	MPRP/39602		
10230552004	**E-SMLRY-TCLP-4-0-36**	ASTM D2974	MPRP/39602		
10230552005	**E-SMLRY-TCLP-5-0-48**	ASTM D2974	MPRP/39602		
10230552006	**E-SMLRY-TCLP-6-0-72**	ASTM D2974	MPRP/39602		
10230552007	**C-SMLRY-TCLP-7-0-48**	ASTM D2974	MPRP/39602		
10230552008	**C-SMLRY-TCLP-8-0-48**	ASTM D2974	MPRP/39602		
10230552009	**C-SMLRY-TCLP-9-0-48**	ASTM D2974	MPRP/39602		
10230552010	**D-SMLRY-TCLP-10-0-72**	ASTM D2974	MPRP/39602		
10230552011	**D-SMLRY-TCLP-11-0-60**	ASTM D2974	MPRP/39602		
10230552012	**D-SMLRY-TCLP-12-0-48**	ASTM D2974	MPRP/39602		
10230552013	**C-SMLRY-27-0-12**	ASTM D2974	MPRP/39602		
10230552014	**C-SMLRY-29-12-24**	ASTM D2974	MPRP/39602		
10230552015	**C-SMLRY-30-12-24**	ASTM D2974	MPRP/39602		
10230552016	**C-SMLRY-32-12-24**	ASTM D2974	MPRP/39602		
10230552017	**C-SMLRY-34-0-12**	ASTM D2974	MPRP/39602		
10230552018	**C-SMLRY-35-0-12**	ASTM D2974	MPRP/39602		
10230552019	**C-SMLRY-135-0-12**	ASTM D2974	MPRP/39602		
10230552020	**Z-SMLRY-3-0-12**	ASTM D2974	MPRP/39602		
10230552024	**D-SMLRY-39-0-12**	ASTM D2974	MPRP/39603		
10230552025	**D-SMLRY-41-0-12**	ASTM D2974	MPRP/39603		
10230552026	**D-SMLRY-46-0-12**	ASTM D2974	MPRP/39603		
10230552027	**D-SMLRY-47-0-12**	ASTM D2974	MPRP/39603		
10230552028	**D-SMLRY-48-0-12**	ASTM D2974	MPRP/39603		
10230552029	**D-SMLRY-56-0-12**	ASTM D2974	MPRP/39603		
10230552030	**D-SMLRY-58-0-12**	ASTM D2974	MPRP/39603		
10230552031	**D-SMLRY-158-0-12**	ASTM D2974	MPRP/39603		
10230552032	**E-SMLRY-10-0-12**	ASTM D2974	MPRP/39603		
10230552033	**E-SMLRY-11-0-12**	ASTM D2974	MPRP/39603		
10230552034	**E-SMLRY-121-0-12**	ASTM D2974	MPRP/39603		
10230552035	**E-SMLRY-125-12-24**	ASTM D2974	MPRP/39603		
10230552036	**E-SMLRY-14-0-12**	ASTM D2974	MPRP/39603		

REPORT OF LABORATORY ANALYSIS

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602 S 25th Street
Billings, MT 591014549
(406)254-7226

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 776-020-002 SPRING MEADOW LAKE
Pace Project No.: 10230552

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10230552037	**E-SMLRY-15-12-24**	ASTM D2974	MPRP/39603		
10230552038	**E-SMLRY-16-24-36**	ASTM D2974	MPRP/39603		
10230552039	**E-SMLRY-17-0-12**	ASTM D2974	MPRP/39603		
10230552040	**E-SMLRY-17-24-36**	ASTM D2974	MPRP/39603		
10230552041	**E-SMLRY-19-12-24**	ASTM D2974	MPRP/39603		
10230552042	**E-SMLRY-20-24-36**	ASTM D2974	MPRP/39604		
10230552043	**E-SMLRY-21-0-12**	ASTM D2974	MPRP/39604		
10230552044	**E-SMLRY-21-12-24**	ASTM D2974	MPRP/39604		
10230552045	**E-SMLRY-23-0-12**	ASTM D2974	MPRP/39604		
10230552046	**E-SMLRY-25-12-24**	ASTM D2974	MPRP/39604		
10230552047	**E-SMLRY-25-24-36**	ASTM D2974	MPRP/39604		
10230552048	**E-SMLRY-7-0-12**	ASTM D2974	MPRP/39604		
10230552049	**E-SMLRY-9-0-12**	ASTM D2974	MPRP/39604		

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RUSH

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

1128 JWW 6/1/13

10730552

Page: 1 of 5

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	MDEQ	Report To:	Pebbles Opp	Attention:	Pebbles Opp
Address:	1100 Last Chance Gulch	Copy To:	James Gleason	Company Name:	MDEQ
	Helena MT, 59601			Address:	
Email To:	popp@mt.gov	Purchase Order No.:		Pace Quote Reference:	
Phone: 406-841-5028	Fax:	Project Name:	Spring Meadow Lake	Pace Project Manager:	Smantha Rupe
Requested Due Date/TAT:	5 Day RUSH	Project Number:	776-020-002	Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☑ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analysis Test: TCLP RCRA Metals	6010 As and Pb	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Z-SMLRY-TCLP-1-0-20		C	5/30/13	13:00				1	X								X			001
2	Z-SMLRY-TCLP-2-0-36		C	5/28/13	8:40				1	X								X			002
3	Z-SMLRY-TCLP-3-0-36		C	5/28/13	9:55				1	X								X			003
4	E-SMLRY-TCLP-4-0-36		C	5/29/13	13:25				1	X								X			004
5	E-SMLRY-TCLP-5-0-48		C	5/29/13	10:40				1	X								X			005
6	E-SMLRY-TCLP-6-0-72		C	5/29/13	9:35				1	X								X			006
7	C-SMLRY-TCLP-7-0-48		C	5/29/13	15:40				1	X								X			007
8	C-SMLRY-TCLP-8-0-48		C	5/29/13	15:10				1	X								X			008
9	C-SMLRY-TCLP-9-0-48		C	5/30/13	9:45				1	X								X			009
10	D-SMLRY-TCLP-10-0-72		C	5/28/13	12:25				1	X								X			010
11	D-SMLRY-TCLP-11-0-60		C	5/28/13	13:00				1	X								X			011
12	D-SMLRY-TCLP-12-0-48		C	5/28/13	13:30				1	X								X			012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
				JWW PACE	6/1	0953	.9	4	4	4

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: GRANT PRICE

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 5/31/13

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10230552

Page: 2 of 5

Section A Required Client Information:

Company:	MDEQ
Address:	1100 Last Chance Gulch
	Helena MT, 59601
Email To:	popp@mt.gov
Phone: 406-841-5028	Fax:
Requested Due Date/TAT:	5 Day Rush

Section B Required Project Information:

Report To:	Pebbles Opp
Copy To:	James Gleason
Purchase Order No.:	
Project Name:	Spring Meadow Lake
Project Number:	776-020-002

Section C Invoice Information:

Attention:	Pebbles Opp
Company Name:	MDEQ
Address:	
Pace Quote Reference:	
Pace Project Manager:	Smantha Rupe
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☑ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: TCLP RCRA Metals	6010 As and Pb	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	C-SMLRY-27-0-12		C	5/29/13	15:30				1	X									X		013
2	C-SMLRY-29-12-24		C	5/30/13	8:30				1	X									X		014
3	C-SMLRY-30-12-24		C	5/30/13	9:20				1	X									X		015
4	C-SMLRY-32-12-24		C	5/30/13	10:05				1	X									X		016
5	C-SMLRY-34-0-12		C	5/30/13	8:40				1	X									X		017
6	C-SMLRY-35-0-12		C	5/30/13	9:15				1	X									X		018
7	C-SMLRY-135-0-12		C	5/30/13	----				1	X									X		019
8	Z-SMLRY-3-0-12		C	5/28/13	9:35				1	X									X		020
9	SMLRY-EB-1		G	5/30/13	7:20				1			X							X		021
10	SMLRY-EB-2		G	5/30/13	12:30				1			X							X		022
11	SMLRY-EB-3		G	5/30/13	14:35				1			X							X		023
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
				PACE	6/1	0953	.9	4	4	4

SAMPLER NAME AND SIGNATURE				
PRINT Name of SAMPLER: GRANT PRICE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
SIGNATURE of SAMPLER:	DATE Signed (MM/DD/YY): 5/31/13				

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10230552

Page: 3 of 5

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: MDEQ	Report To: Pebbles Opp	Attention: Pebbles Opp
Address: 1100 Last Chance Gulch	Copy To: James Gleason	Company Name: MDEQ
Helena MT, 59601		Address:
Email To: popp@mt.gov	Purchase Order No.:	Pace Quote Reference:
Phone: 406-841-5028 Fax:	Project Name: Spring Meadow Lake	Pace Project Manager: Smantha Rupe
Requested Due Date/TAT: 5 Day Rush	Project Number: 776-020-002	Pace Profile #:

REGULATORY AGENCY: NPDES GROUND WATER DRINKING WATER; UST X RCRA OTHEI ____

Site Location STATE: ____

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	TCLP RCRA Metals	6010 As and Pb	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	D-SMLRY-39-0-12		C	5/28/13	11:10				1	X										X		024
2	D-SMLRY-41-0-12		C	5/28/13	12:45				1	X										X		025
3	D-SMLRY-46-0-12		C	5/28/13	13:45				1	X										X		026
4	D-SMLRY-47-0-12		C	5/28/13	13:55				1	X										X		027
5	D-SMLRY-48-0-12		C	5/28/13	14:00				1	X										X		028
6	D-SMLRY-56-0-12		C	5/28/13	14:55				1	X										X		029
7	D-SMLRY-58-0-12		C	5/28/13	14:45				1	X										X		030
8	D-SMLRY-158-0-12		C	5/28/13	____				1	X										X		031
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
				PACE	6/1	0953	.9	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: GRANT PRICE

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 5/31/13

RUSH!

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12/2nd 6/1/13

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	MDEQ	Report To:	Pebbles Opp	Attention:	Pebbles Opp
Address:	1100 Last Chance Gulch	Copy To:	James Gleason	Company Name:	MDEQ
	Helena MT, 59601			Address:	
Email To:	popp@mt.gov	Purchase Order No.:		Pace Quote Reference:	
Phone:	406-841-5028 Fax:	Project Name:	Spring Meadow Lake	Pace Project Manager:	Smantha Rupe
Requested Due Date/TAT:	5 Day Rush	Project Number:	776-020-002	Pace Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST X RCRA OTHER _____

Site Location STATE: _____

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: TCLP RCRA Metals	6010 Ag and Pb	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	E-SMLRY-10-0-12		C	5/29/13	12:45				1	X										X		032
2	E-SMLRY-11-0-12		C	5/29/13	11:10				1	X										X		033
3	E-SMLRY-121-0-12		C	5/29/13	------				1	X										X		034
4	E-SMLRY-125-12-24		C	5/29/13	------				1	X										X		035
5	E-SMLRY-14-0-12		C	5/29/13	13:10				1	X										X		036
6	E-SMLRY-15-12-24		C	5/29/13	11:00				1	X										X		037
7	E-SMLRY-16-24-36		G	5/30/13	14:15				1	X										X		038
8	E-SMLRY-17-0-12		C	5/29/13	13:50				1	X										X		039
9	E-SMLRY-17-24-36		C	5/29/13	13:50				1	X										X		040
10	E-SMLRY-19-12-24		C	5/29/13	8:35				1	X										X		041
11	E-SMLRY-20-24-36		C	5/29/13	8:50				1	X										X		042
12	E-SMLRY-21-0-12		C	5/29/13	10:05				1	X										X		043

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
				PACE	6/1	0953	9	4	4	4
							6/1			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: GRANT PRICE

SIGNATURE of SAMPLER: _____ DATE Signed (MM/DD/YY): 5/31/13

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

RUSH!

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CHAIN-OF-CUSTODY / Analytical Request Document

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1120 DMW 6/1/13

10230552

Page: 5 of 5

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: MDEQ	Report To: Pebbles Opp	Attention: Pebbles Opp
Address: 1100 Last Chance Gulch	Copy To: James Gleason	Company Name: MDEQ
Helena MT, 59601		Address:
Email To: poppp@mt.gov	Purchase Order No.:	Pace Quote Reference:
Phone: 406-841-5028 Fax:	Project Name: Spring Meadow Lake	Pace Project Manager: Smantha Rupe
Requested Due Date/TAT: 5 Day Rush	Project Number: 776-020-002	Pace Profile #:

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST X RCRA OTHER

Site Location STATE:

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: TCLP RCRA Metals	6010 As and Pb	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	E-SMLRY-21-12-24		C	5/29/13	10:05				1	X								X			044
2	E-SMLRY-23-0-12		C	5/29/13	9:50				1	X								X			045
3	E-SMLRY-25-12-24		C	5/29/13	9:05				1	X								X			046
4	E-SMLRY-25-24-36		C	5/29/13	9:05				1	X								X			047
5	E-SMLRY-7-0-12		C	5/29/13	11:15				1	X								X			048
6	E-SMLRY-9-0-12		C	5/29/13	12:30				1	X								X			049
7									1	X								X			
8									1	X								X			
9									1	X								X			
10									1	X								X			
11									1	X								X			
12									1	X								X			

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
				DMW PACE	6/1	0953	9	4	4	4

SAMPLER NAME AND SIGNATURE				
PRINT Name of SAMPLER: GRANT PRICE				
SIGNATURE of SAMPLER:	DATE Signed (MM/DD/YY): 5/31/13	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
---	---	---	---	---	---

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Document Revised: 28Jan2013 Page 1 of 1
	Document No.: F-MN-L-213-rev.06	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: TRIMEDRO MDEQ

Project #: WO#: 10230552

10230552

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other:

Tracking Number: 5855 4796 5975

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No **Optional:** Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☒ Yes ☐ No

Thermom. Used: ☒ B88A912167504 ☐ 80512447 ☐ 72337080 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on Ice, cooling process has begun

Cooler Temp Read (°C): 1.0 **Cooler Temp Corrected (°C):** .9 **Biological Tissue Frozen?** ☐ Yes ☐ No

Temp should be above freezing to 6°C **Correction Factor:** -.1 **Date and Initials of Person Examining Contents:** 6/4/13

Comments:

Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☐ Yes	☒ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☒ Yes	☐ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☒ No	☐ N/A	11.
Sample Labels Match COC?	☒ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: WT SL				
All containers needing acid/base preservation have been checked? Noncompliances are noted in 13.	☒ Yes	☐ No	☐ N/A	13. ☒ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH>12)	☒ Yes	☐ No	☐ N/A	Sample # EB-1 3/3 EB-2 3/3 EB-3
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water)	☐ Yes	☒ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (If purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 6-7-13

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

APPENDIX D

DATA VALIDATION

Tier II Data Validation Report Summary

Client: Montana Department of Environmental Quality (MDEQ)	Laboratory: Pace Analytical Services, Inc.
Project Name: Spring Meadow Lake Design Phase	Sample Matrix: Soil and Water
Project Number: 776-020-002	Sample Start Date: 05/28/2013
Date Validated: 06/11/2013	Sample End Date: 05/30/2013
Parameters Included: Total and Toxicity Characteristic Leaching Procedure (TCLP) Metals by Environmental Protection Agency (EPA) Method 6010B; TCLP Mercury by EPA Method 7471A; and Percent Moisture by American Society for Testing and Materials (ASTM) Method D2974	
Laboratory Project ID: 10230552	
Data Validator: Kyle Power, Environmental Chemist	

DATA EVALUATION CRITERIA SUMMARY

A Tier II Data Validation was performed by Trihydro Corporation's Chemical Data Evaluation Services Group on the analytical data report package generated by Pace Analytical Services, Inc., evaluating samples from the MDEQ site, located in Helena, Montana.

Precision, accuracy, method compliance, and completeness of this data package were assessed during this data review. Precision was determined by evaluating the calculated relative percent difference (RPD) values of samples from field duplicate pairs; laboratory duplicate pairs; and matrix spike (MS) and matrix spike duplicate (MSD) pairs. Laboratory accuracy was established by reviewing the demonstrated percent recoveries of MS/MSD samples and laboratory control samples (LCS), and percent recoveries (%Rs) of organic system monitoring compounds (surrogates) to verify that data are not biased. Field accuracy was established by collecting equipment blank samples to monitor for possible ambient or cross contamination during sampling and transportation. Method compliance was established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, and the LCS percent recoveries against method-specific requirements. Completeness was evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain-of-custody (CoC), laboratory analytical methods, and other laboratory and field documents associated with this analytical data set.

Chemical data validation was conducted in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for inorganic analyses, or by the appropriate method if not covered in the National Functional Guidelines. Data for inorganic analyses were evaluated according to validation criteria set forth in the USEPA CLP National Functional Guidelines for Inorganic Superfund Data Review, document number EPA 540R-10-011, January 2010. Review of field duplicates is conducted according to the USEPA Region 1 Laboratory Data Validation Functional Guidelines for Evaluation of Organic Analysis, December 1996.

Tier II Data Validation Report Summary

SAMPLE NUMBERS TABLE

Client Sample ID	Laboratory Sample Number
Z-SMLRY-TCLP-1-0-20	10230552001
Z-SMLRY-TCLP-2-0-36	10230552002
Z-SMLRY-TCLP-3-0-36	10230552003
E-SMLRY-TCLP-4-0-36	10230552004
E-SMLRY-TCLP-5-0-48	10230552005
E-SMLRY-TCLP-6-0-72	10230552006
C-SMLRY-TCLP-7-0-48	10230552007
C-SMLRY-TCLP-8-0-48	10230552008
C-SMLRY-TCLP-9-0-48	10230552009
D-SMLRY-TCLP-10-0-72	10230552010
D-SMLRY-TCLP-11-0-60	10230552011
D-SMLRY-TCLP-12-0-48	10230552012
C-SMLRY-27-0-12	10230552013
C-SMLRY-29-12-24	10230552014
C-SMLRY-30-12-24	10230552015
C-SMLRY-32-12-24	10230552016
C-SMLRY-34-0-12	10230552017
C-SMLRY-35-0-12	10230552018
C-SMLRY-135-0-12	10230552019
Z-SMLRY-3-0-12	10230552020
SMLRY-EB-1	10230552021
SMLRY-EB-2	10230552022
SMLRY-EB-3	10230552023
D-SMLRY-39-0-12	10230552024
D-SMLRY-41-0-12	10230552025
D-SMLRY-46-0-12	10230552026
D-SMLRY-47-0-12	10230552027
D-SMLRY-48-0-12	10230552028
D-SMLRY-56-0-12	10230552029
D-SMLRY-58-0-12	10230552030
D-SMLRY-158-0-12	10230552031
E-SMLRY-10-0-12	10230552032
E-SMLRY-11-0-12	10230552033

Tier II Data Validation Report Summary

Client Sample ID	Laboratory Sample Number
E-SMLRY-121-0-12	10230552034
E-SMLRY-125-12-24	10230552035
E-SMLRY-14-0-12	10230552036
E-SMLRY-15-12-24	10230552037
E-SMLRY-16-24-36	10230552038
E-SMLRY-17-0-12	10230552039
E-SMLRY-17-24-36	10230552040
E-SMLRY-19-12-24	10230552041
E-SMLRY-20-24-36	10230552042
E-SMLRY-21-0-12	10230552043
E-SMLRY-21-12-24	10230552044
E-SMLRY-23-0-12	10230552045
E-SMLRY-25-12-24	10230552046
E-SMLRY-25-24-36	10230552047
E-SMLRY-7-0-12	10230552048
E-SMLRY-9-0-12	10230552049

Tier II Data Validation Report Summary

The laboratory data were reviewed to evaluate compliance with the methods and the quality of the reported data. Assessment of CoC completeness is included in Item 3 of the Data Validation Checklist. A check mark (✓) indicates that the referenced validation criteria were deemed acceptable, whereas a crossed circle (⊗) indicates validation criteria for which the data have been qualified by the data validator. A null symbol (∅) indicates that the specified criterion does not apply to the reviewed data. Details are noted in the tables below.

Validation Criteria

- ✓ Data Completeness
- ⊗ CoC Documentation
- ✓ Holding Times and Preservation
- ✓ Laboratory Blanks
- ∅ System Monitoring Compounds (i.e., Surrogates)
- ✓ LCS
- ✓ MS/MSD
- ∅ Initial and Continuing Calibrations
- ✓ Field Duplicates
- ✓ Laboratory Duplicates
- ✓ Equipment Blanks

OVERALL DATA PACKAGE ASSESSMENT

Based on a data validation review, the data are acceptable as delivered. Data qualified by the laboratory are discussed in Item 2 of the Data Validation Checklist.

The purpose of validating data and assigning qualifiers is to assist in proper data interpretation. Data that are not qualified meet the site data quality objectives. There were no data that were qualified during this data validation review.

Data Completeness

The analyses were performed as requested on the CoC records. The associated samples were received by the laboratory and analyzed properly. The complete data package consisted of 210 data points excluding the equipment blank samples. No data points were rejected. The data completeness measure for this data package is calculated to be 100% and is acceptable.

VALIDATION CRITERIA CHECKLIST	
1. Was the report free of non-conformances identified by the laboratory?	Yes
Comments: The laboratory did not note non-conformances regarding the analytical data.	
2. Were the data free of data qualification flags and/or notes used by the laboratory? If no, define.	No
Comments: The laboratory used the following data qualification flags with this data set. M1 – Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.	
3. Were sample CoC forms complete?	No
Comments: The CoC records from field to laboratory were complete and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt, with the following exception. **The 'Relinquished By' box was not signed on the CoC. The project team was contacted and confirmed via CoC confirmation that Grant Price relinquished the CoC on 05/31/2013 at 16:00 to Pace Analytical Services, Inc. The CoC confirmation is included as Attachment A at the end of the report.**	
4. Were detection limits in accordance with the quality assurance project plan (QAPP), permit, or method, or indicated as acceptable?	Yes
Comments: The detection limits appear to be acceptable. The following dilutions were applied. Method 6010B: Dilutions of 5 times were applied for the TCLP metal analyses.	
5. Were the reported analytical methods and constituents in compliance with the QAPP, permit, or CoC? Were any analytes reported by more than one method?	Yes
Comments: The reported analytical methods were in compliance with the CoC and the laboratory reported the requested constituents in accordance with the CoC. Method 7470A is used for water matrix samples, whereas Method 7471A is used for soil matrix samples. The laboratory correctly used Method 7471A to analyze the samples, but labeled it incorrectly in the laboratory report. No further action was necessary.	
6. Were samples received in good condition within method-specified requirements?	No
Comments: Samples were received on ice, in good condition, with the cooler temperature outside the recommended temperature range of 4°C +/- 2°C at 0.9°C as noted on the Sample Condition Upon Receipt Form. The cooler temperature that was below 2°C was judged as acceptable since the samples were not reported to be frozen upon receipt at the laboratory and the sample containers were reported to be intact. The laboratory noted that the shipping containers were sealed and custody seals were present.	
7. Were samples extracted and/or analyzed within method-specified or technical holding times?	Yes
Comments: The samples were extracted and analyzed within method-specific holding times.	
8. Were reported units appropriate for the sample matrix/matrices and analytical method(s)?	Yes
Comments: The results were reported in concentration units of milligrams per kilogram (mg/kg), milligrams per liter (mg/L), micrograms per liter (µg/L), and percentage (%), which were acceptable for the sample matrix and the analyses requested.	
9. Was there indication from the laboratory that the initial or continuing calibration verification results were within acceptable limits?	N/A
Comments: Initial and continuing calibration data were not included as part of this data set; however, these data were assumed to be acceptable as the laboratory did not note that any calibration verification results were outside acceptable limits.	

VALIDATION CRITERIA CHECKLIST

10. Was the total number of laboratory blank samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of laboratory blank samples prepared was equal to at least 5% of the total number of samples. Laboratory blank samples were not required for the percent moisture analyses by Method D2974.

11. Were laboratory blank samples reported to be free of target analyte contamination? Yes

Comments: Laboratory blank samples were reported to be free of target analyte contamination.

12. Was the total number of MS samples prepared equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of matrix spike samples prepared was equal to at least 5% of the total number of samples. The matrix spike sample source for each analytical batch in this sample set has been indicated below.

Method	Analytes	Batch	MS Sample Source
7471A	TCLP Mercury	MERP/8608	Not Associated
6010B	Total Metals	MPRP/39605	C-SMLRY-27-0-12
6010B	Total Metals	MPRP/39606	E-SMLRY-14-0-12
6010B	TCLP Metals	MPRP/39677	Z-SMLRY-TCLP-1-0-20
6010B	Total Metals	MPRP/39612	Not Associated

Not Associated – The MS sample source was not associated with this project.

Matrix spike samples were not required for the percent moisture analyses by Method D2974.

13. Were MS/MSD percent recoveries and MS/MSD RPDs within data validation quality control (QC) limits? No

Comments: The MS/MSD percent recoveries and RPDs were within data validation QC limits or were not applicable since the parent sample concentration was greater than 4 times the spike added.

Recoveries and RPDs for MS/MSDs prepared from non-project samples were considered but data were not qualified based on these results since matrix similarity to project samples could not be guaranteed.

14. Was the total number of LCSs analyzed equal to at least 5% of the total number of samples or analyzed as required by the method? Yes

Comments: The total number of LCS samples analyzed was equal to at least 5% of the total number of samples. Laboratory control samples were not required for the percent moisture analyses by Method D2974.

15. Were LCS percent recoveries within data validation or laboratory QC limits? Yes

Comments: The LCS percent recoveries were within data validation or laboratory QC limits.

16. Were surrogate recoveries within laboratory QC limits? N/A

Comments: Surrogates were not required for the analyses by Methods 6010B, 7471A, and D2974.

17. Were the number of trip blank, field blank, and/or equipment blank samples collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? No

Comments: The number of trip, field, and equipment blanks collected was not equal to at least 10% of the number of samples. Three equipment blank samples, SMLRY-EB-1, SMLRY-EB-2 and SMLRY-EB-3, were collected as part of this sample set.

18. Were the trip blank, field blank, and/or equipment blank samples reported to be free of target analyte contamination? Yes

Comments: The equipment blank samples were reported to be free of target analyte contamination.

VALIDATION CRITERIA CHECKLIST

19. Was the number of field duplicates collected equal to at least 10% of the total number of samples or as required by the project guidelines, QAPP, SAP, or permit? No

Comments: The number of field duplicates collected was not equal to at least 10% of the number of samples. Sample C-SMLRY-135-0-12 was collected as a field duplicate of sample C-SMLRY-35-0-12, sample D-SMLRY-158-0-12 was collected as a field duplicate of sample D-SMLRY-58-0-12, sample E-SMLRY-121-0-12 was collected as a field duplicate of sample E-SMLRY-21-0-12, and sample E-SMLRY-125-12-24 was collected as a field duplicate of sample E-SMLRY-25-12-24.

20. Were field duplicate RPD values within data validation QC limits (soil 0-50%, water 0-30%, or air 0-25%)? Yes

Comments: As indicated in the Field Duplicate Summary Table at the end of this report, field duplicate RPD values were within data validation QC limits of 0-50% for soil samples.

21. Were laboratory duplicate RPD values within laboratory QC limits? Yes

Comments: Laboratory duplicates prepared for these analyses and laboratory duplicate sample sources are summarized in the following table.

Method	Analytes	Batch	Laboratory Duplicate Sample Source
D2974	Percent moisture	MPRP/39602	Z-SMLRY-TCLP-1-0-20 and Z-SMLRY-3-0-12
D2974	Percent moisture	MPRP/39603	E-SMLRY-19-12-24 and D-SMLRY-39-0-12
D2974	Percent moisture	MPRP/39604	E-SMLRY-20-24-36 and Not Associated

Not Associated – The laboratory duplicate sample source was not associated with this project.

Laboratory duplicate RPDs were within data validation or laboratory QC limits.

The RPD values for laboratory duplicate samples prepared from non-project samples were considered but data were not qualified based on these results since matrix similarity to project samples could not be guaranteed.

FIELD DUPLICATE SUMMARY

Client Sample ID: C-SMLRY-35-0-12 Field Duplicate Sample ID: C-SMLRY-135-0-12				
Analyte	**Method**	**Laboratory Result**	**Duplicate Result**	**Relative Percent Difference (RPD)**
Arsenic	6010B	780 mg/kg	1080 mg/kg	32.3%
Lead	6010B	887 mg/kg	1020 mg/kg	13.9%
Percent Moisture	D2974	20.7%	20.7%	0.0%
Field duplicate RPD control limits are not to exceed 50% for soil as established by USEPA Region 1 Laboratory Data Validation Function Guidelines for Evaluation of Organic Analysis, December 1996.				

Client Sample ID: D-SMLRY-58-0-12 Field Duplicate Sample ID: D-SMLRY-158-0-12				
Analyte	**Method**	**Laboratory Result**	**Duplicate Result**	**Relative Percent Difference (RPD)**
Arsenic	6010B	161 mg/kg	165 mg/kg	2.5%
Lead	6010B	188 mg/kg	188 mg/kg	0.0%
Percent Moisture	D2974	14.4%	14.4%	0.0%
Field duplicate RPD control limits are not to exceed 50% for soil as established by USEPA Region 1 Laboratory Data Validation Function Guidelines for Evaluation of Organic Analysis, December 1996.				

Client Sample ID: E-SMLRY-21-0-12 Field Duplicate Sample ID: E-SMLRY-121-0-12				
Analyte	**Method**	**Laboratory Result**	**Duplicate Result**	**Relative Percent Difference (RPD)**
Arsenic	6010B	252 mg/kg	253 mg/kg	0.4%
Lead	6010B	181 mg/kg	196 mg/kg	8.0%
Percent Moisture	D2974	12.4%	10.6%	15.7%
Field duplicate RPD control limits are not to exceed 50% for soil as established by USEPA Region 1 Laboratory Data Validation Function Guidelines for Evaluation of Organic Analysis, December 1996.				

Client Sample ID: E-SMLRY-25-12-24 Field Duplicate Sample ID: E-SMLRY-125-12-24				
Analyte	**Method**	**Laboratory Result**	**Duplicate Result**	**Relative Percent Difference (RPD)**
Arsenic	6010B	1060 mg/kg	1270 mg/kg	18.0%
Lead	6010B	1620 mg/kg	2420 mg/kg	39.6%
Percent Moisture	D2974	25.7%	24.8%	3.6%
Field duplicate RPD control limits are not to exceed 50% for soil as established by USEPA Region 1 Laboratory Data Validation Function Guidelines for Evaluation of Organic Analysis, December 1996.				

ATTACHMENT A
COC CONFIRMATION LETTER

06/11/2013

Grant Price
Trihydro Corporation
2707 Broadwater Avenue
Helena, Montana 59601

Chain of Custody Confirmation

I, Grant Price, representing the Montana Department of Environmental Quality of Helena, MT, Spring Meadow Lake Design Phase, do confirm the following information provided with data set 10230552. In addition, I do confirm that the soil and water samples were provided to the laboratory in the proper, method-referenced, containers and were properly preserved (chemically and physically). Finally, samples were relinquished from my custody to Pace Analytical Services, Inc. on 05/31/2013 at 16:00.

To the best of my knowledge, the above information is correct.

GRANT PRICE DATE 6/11/13

This CoC confirmation is an amendment to the chain-of-custody accompanying the Spring Meadow Lake Design Plan, Pace Analytical Services, Inc. data set 10230552.

APPENDIX E

XRF LABORATORY CORRELATION

APP-E-1. LINEAR REGRESSION - XRF VS LABORATORY
TOTAL ARSENIC (ppm)

The REG Procedure
Model: MODEL1
Dependent Variable: LAB_As

Number of Observations Read	31
Number of Observations Used	30
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	30318839	30318839	120.15	<.0001
Error	28	7065460	252338		
Corrected Total	29	37384299			

Root MSE	502.33240	R-Square	0.8110
Dependent Mean	839.90000	Adj R-Sq	0.8043
Coeff Var	59.80860		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	218.65024	107.81215	2.03	0.0522
XRF_As	1	0.65491	0.05975	10.96	<.0001

APP-E-1. LINEAR REGRESSION - XRF VS LABORATORY
TOTAL ARSENIC (ppm)

The REG Procedure
Model: MODEL1
Dependent Variable: LAB_As

Output Statistics

Obs	Dependent Variable	Predicted Value	Std Error Mean Predict	Residual	Std Error Residual	Student Residual
1	1120	970.5655	92.4844	149.4345	493.7	0.303
2	171.0000	380.5309	100.8342	-209.5309	492.1	-0.426
3	455.0000	731.7394	92.2422	-276.7394	493.8	-0.560
4	528.0000	836.3744	91.7135	-308.3744	493.9	-0.624
5	161.0000	335.4272	102.6126	-174.4272	491.7	-0.355
6	780.0000	830.1200	91.7173	-50.1200	493.9	-0.101
7	1290	527.5582	96.0376	762.4418	493.1	1.546
8	957.0000	672.2409	92.9796	284.7591	493.7	0.577
9	87.3000	375.3440	101.0318	-288.0440	492.1	-0.585
10	75.4000	284.8682	104.7625	-209.4682	491.3	-0.426
11	212.0000	560.1334	95.1981	-348.1334	493.2	-0.706
12	142.0000	302.9502	103.9752	-160.9502	491.5	-0.327
13	161.0000	305.8515	103.8508	-144.8515	491.5	-0.295
14	5030	4472	343.8385	557.7031	366.2	1.523
15	237.0000	328.3673	102.9031	-91.3673	491.7	-0.186
16	.	303.4742	103.9527	.	.	.
17	3370	1808	127.2996	1562	485.9	3.215
18	230.0000	430.1600	99.0381	-200.1600	492.5	-0.406
19	75.7000	290.6052	104.5106	-214.9052	491.3	-0.437
20	2690	2916	210.4005	-225.5432	456.1	-0.494
21	965.0000	305.5568	103.8634	659.4432	491.5	1.342
22	1200	477.9946	97.4748	722.0054	492.8	1.465
23	33.6000	251.3957	106.2721	-217.7957	491.0	-0.444
24	252.0000	360.4382	101.6097	-108.4382	491.9	-0.220
25	440.0000	394.0089	100.3294	45.9911	492.2	0.0934
26	2240	3530	261.9757	-1290	428.6	-3.009
27	1060	670.8918	93.0000	389.1082	493.6	0.788
28	111.0000	280.0284	104.9766	-169.0284	491.2	-0.344
29	246.0000	303.8999	103.9345	-57.8999	491.5	-0.118
30	772.0000	956.5700	92.3285	-184.5700	493.8	-0.374

31	105.0000	308.1371	103.7531	-203.1371	491.5	-0.413

Output Statistics

Obs	-2-1 0 1 2	Cook's D
1	| | |	0.002
2	| | |	0.004
3	*| |	0.005
4	*| |	0.007
5	| |	0.003
6	| |	0.000
7	| *** |	0.045
8	| * |	0.006
9	*| |	0.007
10	| |	0.004
11	*| |	0.009

APP-E-1. LINEAR REGRESSION - XRF VS LABORATORY
TOTAL ARSENIC (ppm)

The REG Procedure
Model: MODEL1
Dependent Variable: LAB_As

Output Statistics

Obs	-2-1 0 1 2	Cook's D
12		0.002
13		0.002
14	***	1.022
15		0.001
16		.
17	******	0.355
18		0.003
19		0.004
20		0.026
21	**	0.040
22	**	0.042
23		0.005
24		0.001
25		0.000
26	******	1.692
27	*	0.011
28		0.003
29		0.000
30		0.002
31		0.004

Sum of Residuals	0
Sum of Squared Residuals	7065460
Predicted Residual SS (PRESS)	9912549

APP-E-1. LINEAR REGRESSION - XRF VS LABORATORY TOTAL ARSENIC (ppm)

Obs	sample_id	st_depth	end_depth	XRF_As
1	C-SMLRY-34-0-12	0	12	178.31
2	D-SMLRY-47-0-12	0	12	101.11
3	D-SMLRY-56-0-12	0	12	128.72
4	D-SMLRY-58-0-12	0	12	133.15
5	E-SMLRY-13-0-12	0	12	129.52
6	E-SMLRY-16-24-36	24	36	109.87
7	E-SMLRY-20-24-36	24	36	50
8	E-SMLRY-25-24-36	24	36	93.72
9	Z-SMLRY-3-0-12	0	12	136.64

Obs	XRF_ As_DET	LAB_As	LAB_ As_DET
1	Y	161	Y
2	Y	75.4	Y
3	Y	142	Y
4	Y	161	Y
5	Y	.	
6	Y	75.7	Y
7	N	33.6	Y
8	Y	111	Y
9	Y	105	Y

APP-E-3. LINEAR REGRESSION - XRF VS LABORATORY
TOTAL ARSENIC WITH EXTREME VALUES REMOVED (ppm)

The REG Procedure
Model: MODEL1
Dependent Variable: LAB_As

Number of Observations Read	9
Number of Observations Used	8
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	10348	10348	15.20	0.0080
Error	6	4085.19883	680.86647		
Corrected Total	7	14433			

Root MSE	26.09342	R-Square	0.7170
Dependent Mean	108.08750	Adj R-Sq	0.6698
Coeff Var	24.14101		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-11.11179	31.93694	-0.35	0.7398
XRF_As	1	1.02370	0.26259	3.90	0.0080

APP-E-3. LINEAR REGRESSION - XRF VS LABORATORY
TOTAL ARSENIC WITH EXTREME VALUES REMOVED (ppm)

The REG Procedure
Model: MODEL1
Dependent Variable: LAB_As

Output Statistics

Obs	Dependent Variable	Predicted Value	Std Error Mean Predict	Residual	Std Error Residual	Student Residual
1	161.0000	171.4236	18.6828	-10.4236	18.216	-0.572
2	75.4000	92.3942	10.0654	-16.9942	24.074	-0.706
3	142.0000	120.6585	9.7727	21.3415	24.194	0.882
4	161.0000	125.1935	10.2157	35.8065	24.011	1.491
5	.	121.4775	9.8440	.	.	.
6	75.7000	101.3618	9.3853	-25.6618	24.347	-1.054
7	33.6000	40.0731	19.7352	-6.4731	17.070	-0.379
8	111.0000	84.8291	10.9864	26.1709	23.668	1.106
9	105.0000	128.7662	10.6416	-23.7662	23.825	-0.998

Output Statistics

Obs	-2-1 0 1 2	Cook's D
1	*| |	0.172
2	*| |	0.044
3	|* |	0.063
4	|** |	0.201
5		.
6	**| |	0.083
7	| |	0.096
8	|** |	0.132
9	*| |	0.099

Sum of Residuals	0
Sum of Squared Residuals	4085.19883
Predicted Residual SS (PRESS)	6182.68973

APP-E-2. LINEAR REGRESSION - XRF VS LABORATORY
TOTAL LEAD (ppm)

The REG Procedure
Model: MODEL1
Dependent Variable: LAB_Pb

Number of Observations Read	31
Number of Observations Used	30
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	14287931	14287931	111.48	<.0001
Error	28	3588611	128165		
Corrected Total	29	17876543			

Root MSE	358.00096	R-Square	0.7993
Dependent Mean	716.71667	Adj R-Sq	0.7921
Coeff Var	49.95014		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	42.20645	91.39609	0.46	0.6478
XRF_Pb	1	0.99995	0.09471	10.56	<.0001

APP-E-2. LINEAR REGRESSION - XRF VS LABORATORY
TOTAL LEAD (ppm)

The REG Procedure
Model: MODEL1
Dependent Variable: LAB_Pb

Output Statistics

Obs	Dependent Variable	Predicted Value	Std Error Mean Predict	Residual	Std Error Residual	Student Residual
1	1030	1031	71.8248	-1.1113	350.7	-0.0032
2	134.0000	308.0143	75.9638	-174.0143	349.8	-0.497
3	776.0000	702.5663	65.3755	73.4337	352.0	0.209
4	429.0000	712.2359	65.3631	-283.2359	352.0	-0.805
5	159.0000	312.3341	75.7562	-153.3341	349.9	-0.438
6	887.0000	842.2199	66.4338	44.7801	351.8	0.127
7	1070	440.5783	70.3999	629.4217	351.0	1.793
8	1040	1083	73.9934	-42.9090	350.3	-0.123
9	110.0000	328.7634	74.9815	-218.7634	350.1	-0.625
10	105.0000	218.0884	80.6375	-113.0884	348.8	-0.324
11	512.0000	1080	73.8443	-567.5391	350.3	-1.620
12	156.0000	190.9497	82.1692	-34.9497	348.4	-0.100
13	188.0000	221.4583	80.4510	-33.4583	348.8	-0.0959
14	3250	2461	177.6958	788.6240	310.8	2.538
15	218.0000	171.9205	83.2738	46.0795	348.2	0.132
16	.	102.2037	87.5187	.	.	.
17	2320	1611	107.0214	708.5252	341.6	2.074
18	235.0000	316.6039	75.5525	-81.6039	349.9	-0.233
19	40.9000	130.5324	85.7578	-89.6324	347.6	-0.258
20	2290	2241	158.4978	48.7139	321.0	0.152
21	736.0000	193.7195	82.0105	542.2805	348.5	1.556
22	875.0000	837.1002	66.3487	37.8998	351.8	0.108
23	29.6000	102.2037	87.5187	-72.6037	347.1	-0.209
24	181.0000	162.6810	83.8188	18.3190	348.1	0.0526
25	246.0000	270.4860	77.8351	-24.4860	349.4	-0.0701
26	1450	2484	179.6754	-1034	309.6	-3.339
27	1620	1474	97.0218	146.2289	344.6	0.424
28	122.0000	117.1430	86.5842	4.8570	347.4	0.0140
29	446.0000	251.3269	78.8351	194.6731	349.2	0.557
30	573.0000	867.9688	66.9131	-294.9688	351.7	-0.839

31	273.0000	337.3030	74.5885	-64.3030	350.1	-0.184

Output Statistics

Obs	-2-1 0 1 2	Cook's D
1		0.000
2		0.006
3		0.001
4	*	0.011
5		0.005
6		0.000
7	***	0.065
8		0.000
9	*	0.009
10		0.003
11	***	0.058

APP-E-2. LINEAR REGRESSION - XRF VS LABORATORY
TOTAL LEAD (ppm)

The REG Procedure
Model: MODEL1
Dependent Variable: LAB_Pb

Output Statistics

Obs	-2-1 0 1 2	Cook's D
12		0.000
13		0.000
14	*****	1.052
15		0.001
16		.
17	****	0.211
18		0.001
19		0.002
20		0.003
21	***	0.067
22		0.000
23		0.001
24		0.000
25		0.000
26	******	1.877
27		0.007
28		0.000
29	*	0.008
30	*	0.013
31		0.001

Sum of Residuals	0
Sum of Squared Residuals	3588611
Predicted Residual SS (PRESS)	5137258

APP-E-4. LINEAR REGRESSION - XRF VS LABORATORY
TOTAL LEAD WITH EXTREME VALUES REMOVED (ppm)

The REG Procedure
Model: MODEL1
Dependent Variable: LAB_Pb

Number of Observations Read	17
Number of Observations Used	16
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	192408	192408	51.63	<.0001
Error	14	52170	3726.43537		
Corrected Total	15	244579			

Root MSE	61.04454	R-Square	0.7867
Dependent Mean	196.15625	Adj R-Sq	0.7715
Coeff Var	31.12036		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	74.45767	22.79787	3.27	0.0056
XRF_Pb	1	0.45229	0.06294	7.19	<.0001

APP-E-4. LINEAR REGRESSION - XRF VS LABORATORY
TOTAL LEAD WITH EXTREME VALUES REMOVED (ppm)

The REG Procedure
Model: MODEL1
Dependent Variable: LAB_Pb

Output Statistics

Obs	Dependent Variable	Predicted Value	Std Error Mean Predict	Residual	Std Error Residual	Student Residual
1	134.0000	194.6855	15.2625	-60.6855	59.106	-1.027
2	429.0000	377.5193	29.4948	51.4807	53.446	0.963
3	159.0000	196.6394	15.2613	-37.6394	59.106	-0.637
4	110.0000	204.0705	15.3008	-94.0705	59.096	-1.592
5	105.0000	154.0110	16.3494	-49.0110	58.814	-0.833
6	512.0000	543.6545	50.7110	-31.6545	33.983	-0.931
7	156.0000	141.7358	17.0370	14.2642	58.619	0.243
8	188.0000	155.5352	16.2745	32.4648	58.835	0.552
9	218.0000	133.1288	17.6022	84.8712	58.452	1.452
10	.	101.5951	20.1515	.	.	.
11	235.0000	198.5706	15.2648	36.4294	59.105	0.616
12	40.9000	114.4085	19.0349	-73.5085	58.001	-1.267
13	29.6000	101.5951	20.1515	-71.9951	57.623	-1.249
14	181.0000	128.9496	17.8991	52.0504	58.361	0.892
15	246.0000	177.7110	15.4755	68.2890	59.050	1.156
16	122.0000	108.3523	19.5503	13.6477	57.829	0.236
17	273.0000	207.9330	15.3489	65.0670	59.083	1.101

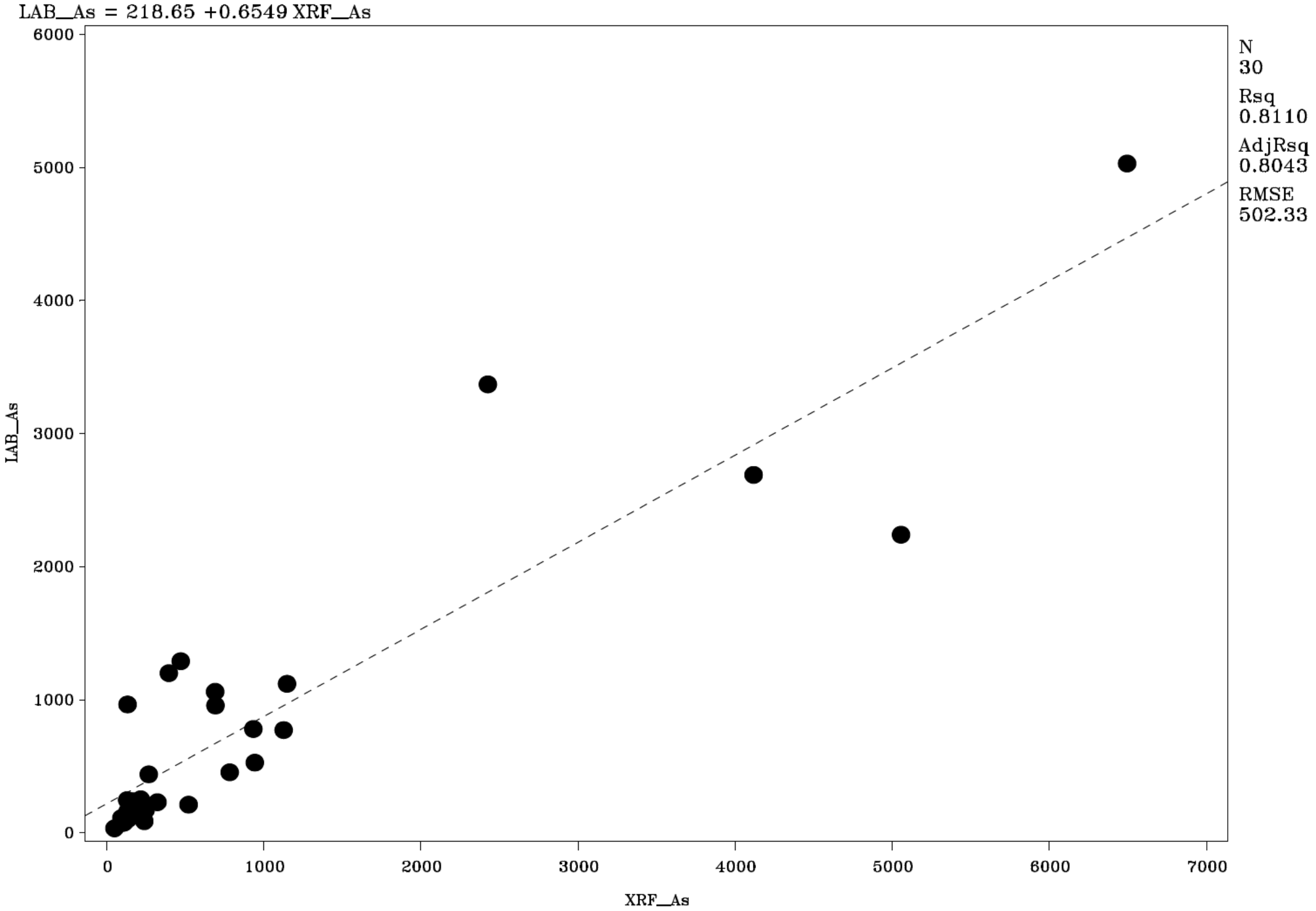
Output Statistics

Obs	-2-1 0 1 2	Cook's D
1	| **| |	0.035
2	| |* |	0.141
3	| *| |	0.014
4	| ***| |	0.085
5	| *| |	0.027
6	| *| |	0.966
7	| | |	0.003

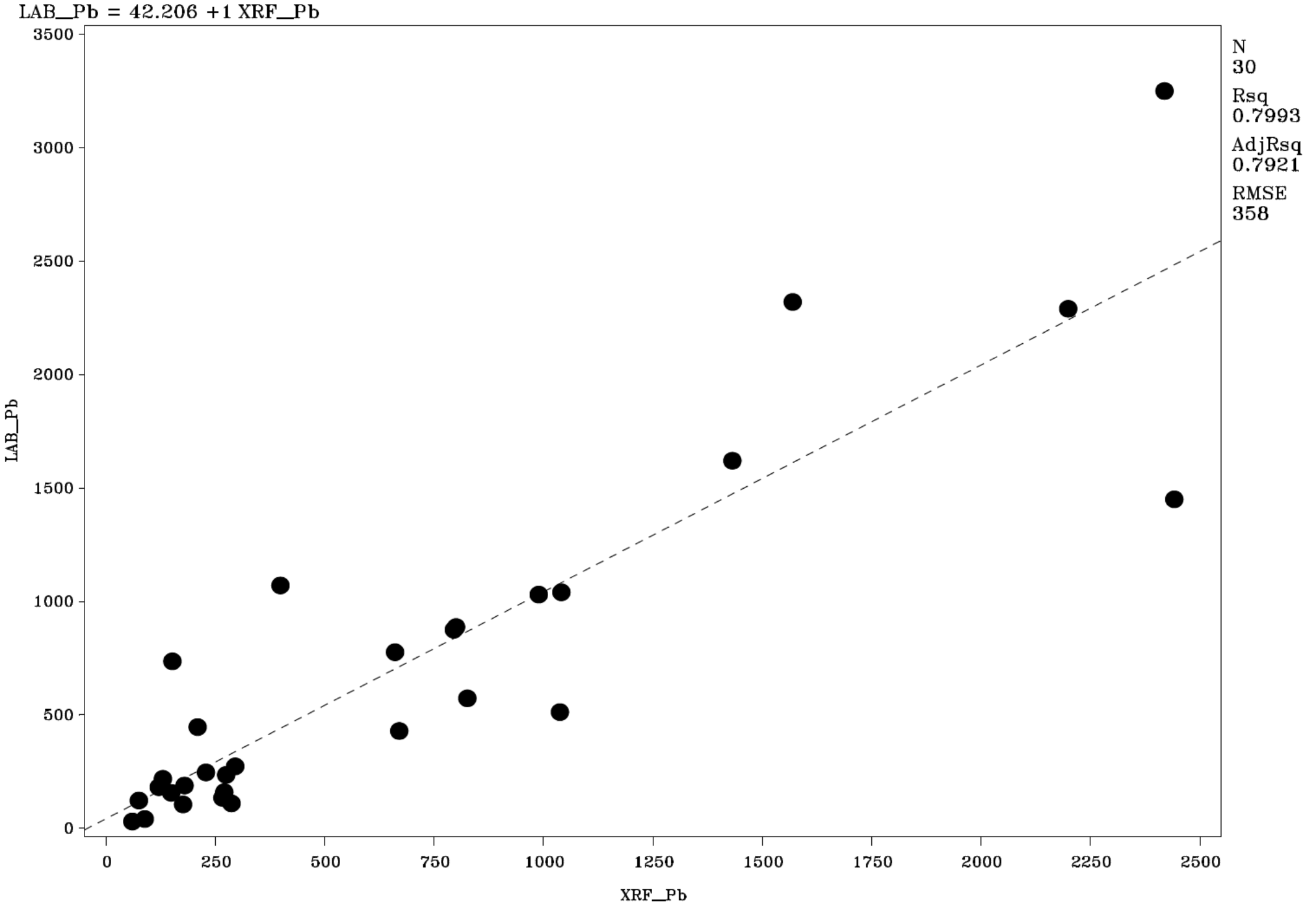
```
 8 |      |*     |       0.012
 9 |      |**    |       0.096
10                          .
11 |      |*     |       0.013
12 |    **|      |       0.086
13 |    **|      |       0.095
14 |      |*     |       0.037
15 |      |**    |       0.046
16 |      |      |       0.003
17 |      |**    |       0.041
```

Sum of Residuals	0
Sum of Squared Residuals	52170
Predicted Residual SS (PRESS)	71932

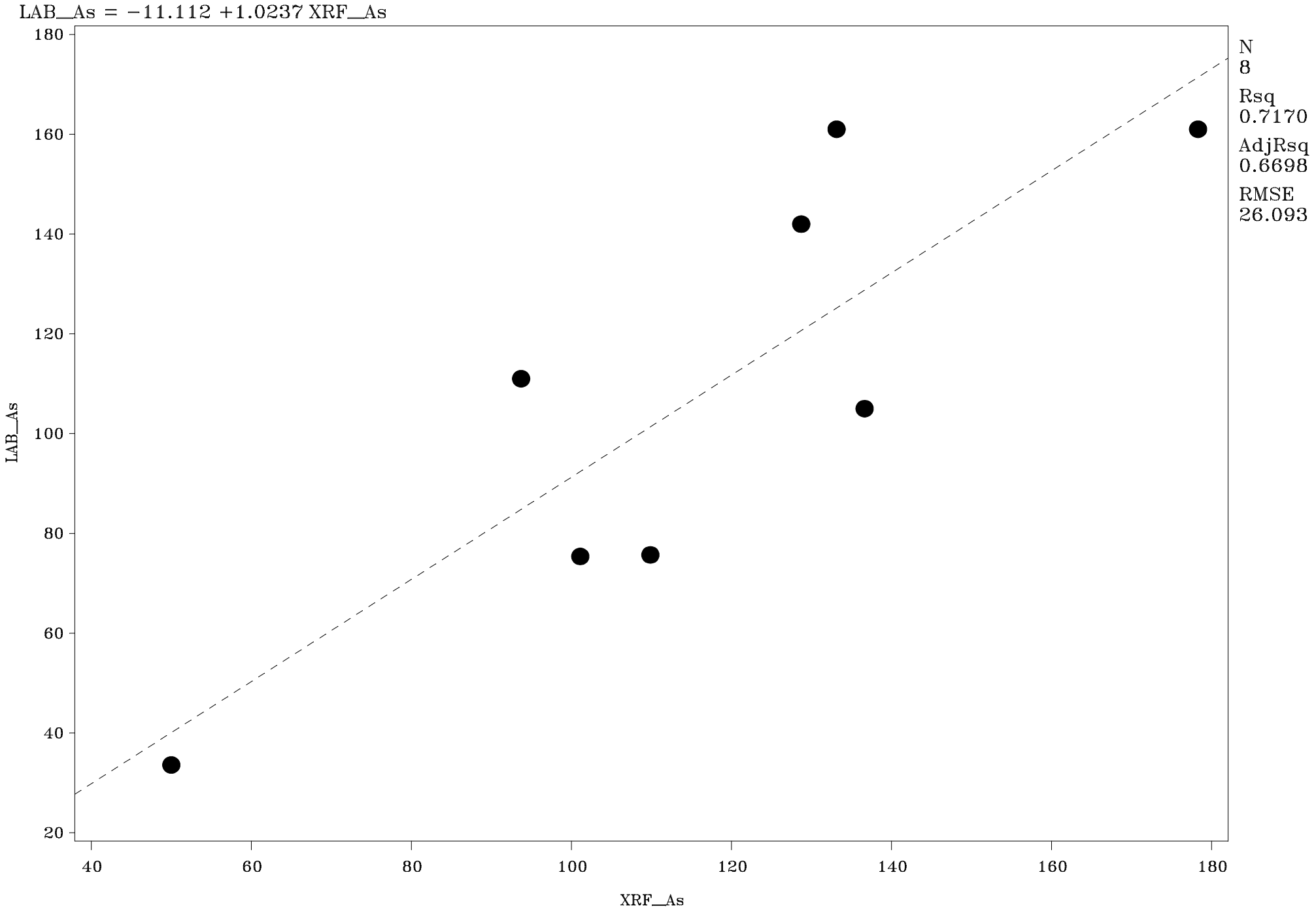
APP−E−1. LINEAR REGRESSION − XRF VS LABORATORY TOTAL ARSENIC (ppm)



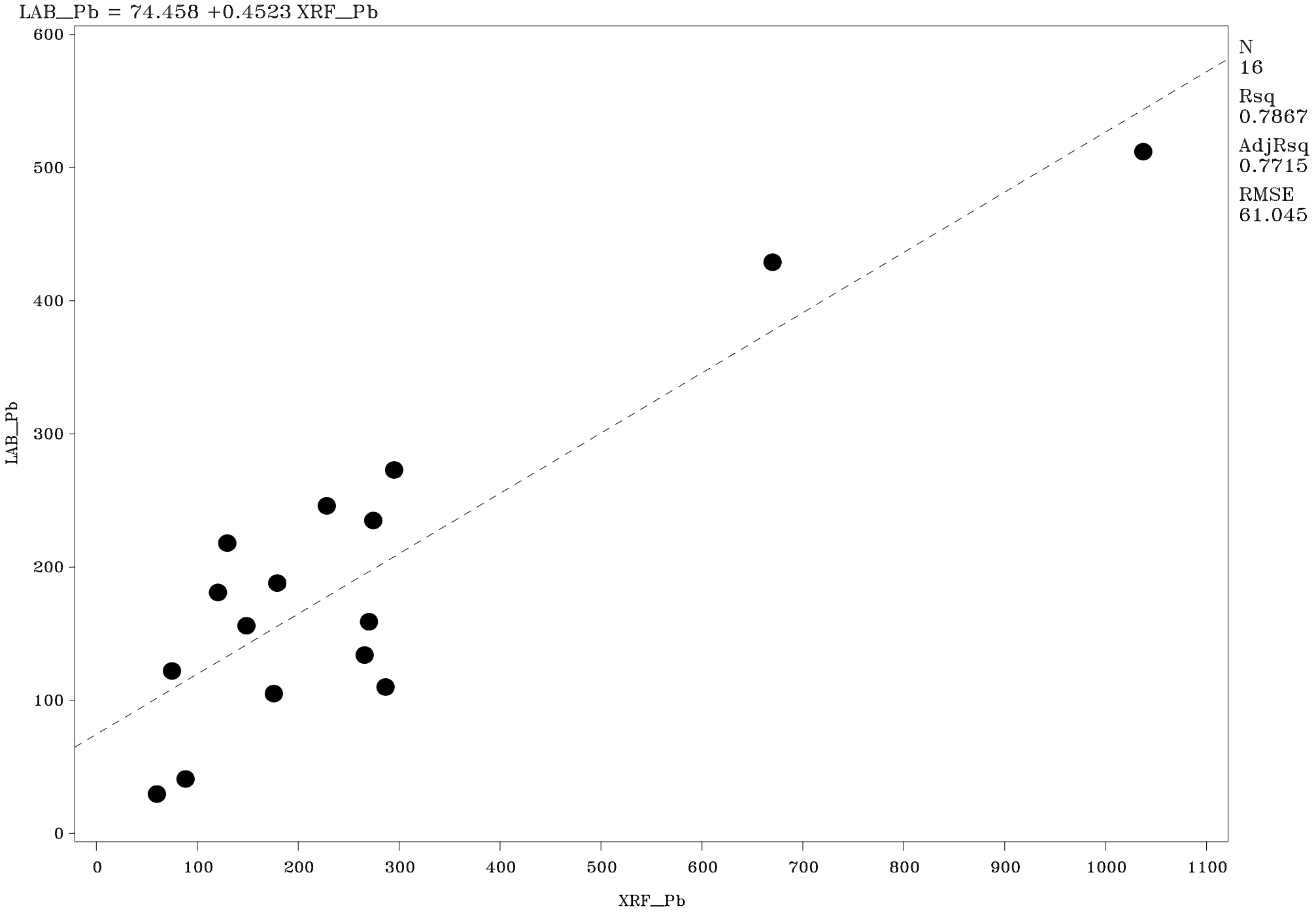
APP−E−2. LINEAR REGRESSION − XRF VS LABORATORY TOTAL LEAD (ppm)



APP−E−3. LINEAR REGRESSION − XRF VS LABORATORY TOTAL ARSENIC WITH EXTREME VALUES REMOVED (ppm)



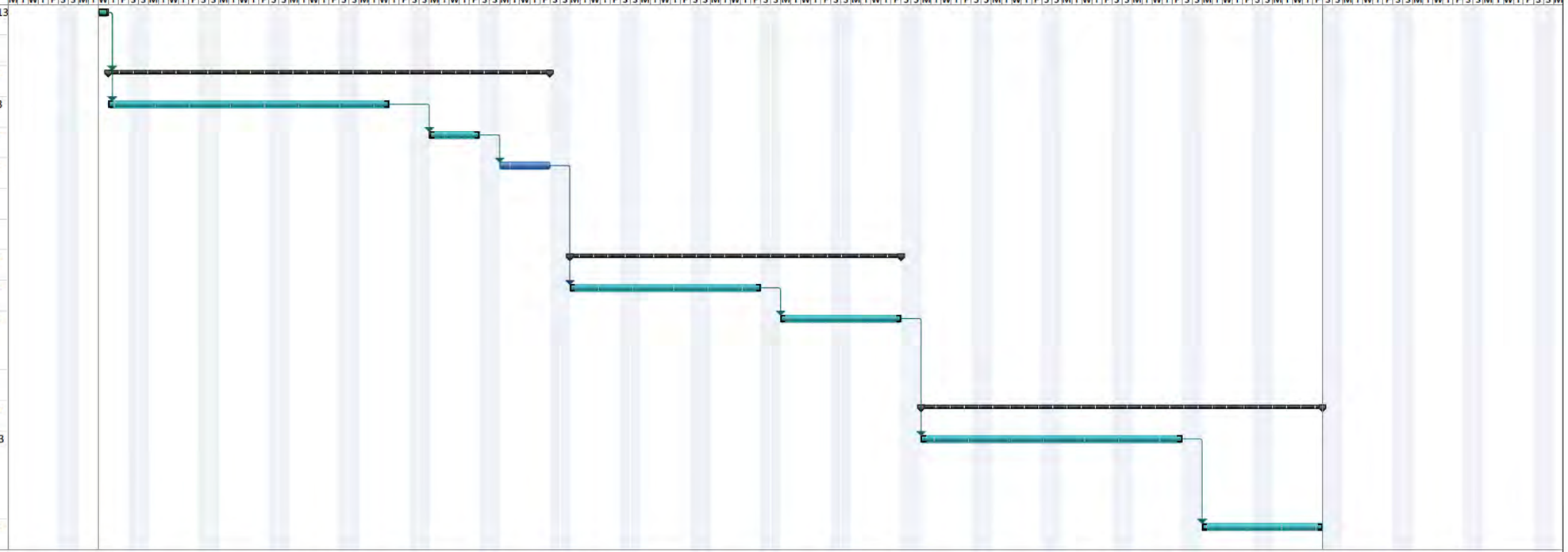
APP−E−4. LINEAR REGRESSION − XRF VS LABORATORY TOTAL LEAD WITH EXTREME VALUES REMOVED (ppm)



APPENDIX F

TIMELINE

ID	Task Name	Duration	Start	Finish
1	Design Phase Report Finalized	1 day	Wed 7/10/13	Wed 7/10/13
2				
3	**Reclamation**	**32 days?**	**Thu 7/11/13**	**Fri 8/23/13**
4	Engineering Design	20 days	Thu 7/11/13	Wed 8/7/13
5	Review	5 days	Mon 8/12/13	Fri 8/16/13
6	Finalize	5 days	Mon 8/19/13	Fri 8/23/13
7				
8				
9	**Bid Process**	**25 days?**	**Mon 8/26/13**	**Fri 9/27/13**
10	Advertise	15 days	Mon 8/26/13	Fri 9/13/13
11	Contractor Bonding/Insurance	10 days	Mon 9/16/13	Fri 9/27/13
12				
13	**Dig and Haul**	**30 days**	**Mon 9/30/13**	**Fri 11/8/13**
14	Structure removal,excavation, backfill	20 days	Mon 9/30/13	Fri 10/25/13
15	Revegetation, restorarion	10 days	Mon 10/28/13	Fri 11/8/13



Appendix F. ESTIMATED PROJECT
Project: SPRING MEADOW LAKE
Date: 6/28/2013

Task	Summary	External Milestone	Inactive Summary	Manual Summary Rollup	Finish-only
Split	Project Summary	Inactive Task	Manual Task	Manual Summary	Deadline
Milestone	External Tasks	Inactive Milestone	Duration-only	Start-only	Progress