

**Mine Waste Removal Assessment at Properties of Release or
Threatened Release
McDermitt, Humboldt County, Nevada, and Malheur County,
Oregon**

September 2012

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Contract No.: EP-S5-08-01
TDD No.: TO2-09-10-06-0002
Project No.: EE-002693-2094

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List of Abbreviations and Acronyms

bgs	below ground surface
CDP	census-designated place
DQOs	Data Quality Objectives
E & E	Ecology and Environment, Inc.
ERS	Emergency Response Section
FOSC	Federal On-Scene Coordinator
FP	Fundamental Parameter
GPS	Global Positioning System
NDEP	Nevada Division of Environmental Protection
mg/kg	milligrams per kilogram
PST	Pacific Strike Team
QA	Quality Assurance
QC	Quality Control
R ²	Coefficient of Determination
RSL	Regional Screening Level
SAP	Sampling and Analysis Plan
SSL	Soil Screening Level
SOP	Standard Operating Procedure
SRM	Standard Reference Material
START	Superfund Technical Assessment and Response Team
U.S. EPA	United States Environmental Protection Agency
XRF	X-Ray Fluorescence

1 Introduction

The United States Environmental Protection Agency (U.S. EPA) Region 9 Emergency Response Section (ERS) tasked Ecology and Environment, Inc.'s (E & E's) Superfund Technical Assessment and Response Team (START) to support additional removal assessment actions in the Town of McDermitt (McDermitt), Humboldt County, Nevada, and Malheur County, Oregon.

The removal assessment actions discussed herein were initiated in response to regulatory concern over elevated concentrations of arsenic and mercury in soils at residential and public properties and unpaved roadways throughout McDermitt. These concerns arose as a result of sampling and human health risk assessment data collected from McDermitt, the Fort McDermitt Paiute-Shoshone Reservation, and the former Cordero and McDermitt mercury mines by the U.S. EPA between September 2010 and January 2012.

This June 2012 removal assessment extends the scope of the U.S. EPA-funded removal assessment to focus on the magnitude and extent of elevated arsenic and mercury soil concentrations at residential and public properties and in unpaved roadways located throughout McDermitt.

Data from this assessment will be used by the U.S. EPA Region 9 ERS to determine whether environmental hazards are present in McDermitt that may pose an "imminent and substantial endangerment to human health or the environment". As appropriate, the U.S. EPA will use this assessment data to evaluate the potential for a removal action at the site and identify alternatives to mitigate environmental hazards that meet endangerment criteria.

The removal assessment was performed in accordance with the site-specific Sampling and Analysis Plan (SAP) and Data Quality Objectives (DQOs) developed by the U.S. EPA and START as part of the project planning phase, available under a separate cover: *Sampling and Analysis Plan, Mine Waste Removal Assessment at Sites of Release or Threatened Release of Hazardous Substances, McDermitt, Humboldt County, Nevada and Malheur County, Oregon, April 2012* (E & E, 2012).

The specific actions performed during this removal assessment include:

- Collection of composite surface soil samples from residential and public properties where imported calcine mine wastes are believed to be present;
- Collection of discrete point surface soil samples from unpaved roadways where imported calcine mine waste are believed to be present;
- X-ray fluorescence (XRF) field analysis by U.S. EPA Method 6200 of all collected soil samples to determine the arsenic and mercury concentrations;
- Identification using field XRF analysis of soil samples with concentrations that exceed the site-specific Soil Screening Levels (SSLs) of 45 milligrams per kilogram (mg/kg) for arsenic and 60 mg/kg for mercury;



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- Submittal of soil samples that exceed the SSL for arsenic and/or mercury to the U.S. EPA Region 9 Laboratory for additional analysis of arsenic by U.S. EPA Method 6010B and mercury by U.S. EPA Method 7471.
- Preparation of a correlation study between data generated by field XRF sample analysis (U.S. EPA Method 6200) and data produced by U.S. EPA Region 9 Laboratory sample analysis (U.S. EPA Methods 6010C and 7471B) to confirm the accuracy and precision of the arsenic and mercury soil concentrations detected in the field; and
- Documentation of all sampling locations and their associated arsenic and mercury soil concentrations at limits above and below the site-specific SSLs and above and below the site-specific action levels.

2 Site Background

2.1 Site Location

The site is located in and around McDermitt, Humboldt County, Nevada, and Malheur County, Oregon. McDermitt is an unincorporated community situated on the Nevada-Oregon border and is served by U.S. Highway 95, a major north-south highway linking Boise, Idaho, 192 miles to the north, with Winnemucca, Nevada, 73 miles to the south. The geographical coordinates for the approximate center of McDermitt are 41° 59' 51.43" Latitude North and 117° 43' 08.00" Longitude West.

The areas of concern include specific residential and public properties and unpaved roadways in McDermitt where imported mine waste is believed to be present. The project area and surrounding vicinity are provided as Figure 1 (Appendix A).

2.2 Site Description

McDermitt is located in the Oregon high desert, with a semi-arid climate averaging 9.3 inches of rain annually with hot, dry summers and cold winters. The area receives the majority of its precipitation from March through June (51%), and during the winter months from September through February (42%), falling primarily as snow.

McDermitt's economy has historically been based around mining, and from 1917 to 1989 the area surrounding McDermitt, known as the McDermitt Caldera, proved to be a nationally significant resource for mercury production. During the period from 1933 to 1989, four mines located within the McDermitt Caldera, the Bretz Mine, the Opalite Mine, the Cordero Mine, and the McDermitt Mine, were the largest producers of mercury in North America. The closure of mercury mining within the McDermitt Caldera in 1990 resulted in a significant decline of the McDermitt population.

McDermitt currently occupies approximately 13.2 square miles and is identified by the United States Census Bureau as the McDermitt, Nevada, census-designated place (McDermitt CDP). The Oregon portion of McDermitt is not included within the McDermitt CDP, but it is included as part of the Ontario, Oregon-Idaho, micropolitan statistical area. For statistical purposes, as of the 2010 United States Census, the McDermitt CDP had a population of 172 people, of which 18% were under the age of 18 years and 22% were over the age of 65 years. There were 101 housing units with 77% described as occupied. The McDermitt Combined School is located in the McDermitt CDP and operates as a kindergarten through twelfth grade school.

2.3 Distribution and Description of Calcine Mine Waste

As a result of historical mercury mining practices in the McDermitt Caldera, processed and heat-treated waste rock (calcine mine waste) from the former Cordero and McDermitt mines have been historically transported to McDermitt and used as fill material at residential and public properties and in unpaved roadways throughout the community. Subsequent information received by the U.S. EPA during an April 2012 public meeting indicates that calcine mine waste may have also been obtained from the Bretz and Opalite mines located in southern Oregon.

2. Site Background

Between September 2010 and January 2012 the U.S. EPA collected arsenic and mercury concentration data from surface soils (0 to 6 inches) and shallow subsurface soils (6 to 18 inches) at numerous locations throughout McDermitt and the Fort McDermitt Paiute-Shoshone Reservation where imported calcine mine waste are believed to be visibly apparent. Laboratory and field XRF analytical data from these samples documented a concentration range for arsenic between 3.6 mg/kg and 79 mg/kg, and a concentration range for mercury between 0.15 mg/kg and 160 mg/kg. Additionally, the U.S. EPA evaluated sample data collected from calcine waste located at the former Cordero and McDermitt mine sites in order to provide a contaminant correlation between calcine waste at the mines and the material sampled from McDermitt and Fort McDermitt Paiute-Shoshone Reservation. Results indicated that the concentrations of arsenic and mercury in soil samples collected from McDermitt and the Fort McDermitt Paiute-Shoshone Reservation were consistent with concentrations of arsenic and mercury in samples collected from the former Cordero and McDermitt mines calcine waste pile. These findings corroborate reports that calcine waste from the former mine sites were imported to McDermitt and Fort McDermitt Paiute-Shoshone Reservation for use as fill and road base.

Based on these results, the U.S. EPA concluded that there is a potential for human health risks and provided a subsequent human health risk assessment based on the exposure to and bioavailability of arsenic and mercury species found within the imported calcine mine waste. The U.S. EPA human-health risk assessment concluded that exposure to calcine mine waste with concentrations of arsenic greater than 60 mg/kg and mercury greater than 80 mg/kg in residential soil, may potentially pose a human health risk. The data criteria utilized by U.S. EPA to establish site-specific Action Levels for exposure to arsenic above 60 mg/kg and mercury above 80 mg/kg for residential soil are presented under a separate cover as the *Soil Action Level for Arsenic (McDermitt, Nevada), U.S. EPA Region 9, 2012* (U.S. EPA, 2012a); and, *Soil Action Level for Mercury (McDermitt, Nevada), U.S. EPA Region 9, 2012* (U.S. EPA, 2012b). Additionally, the U.S. EPA Region 9 Regional Screening Levels (RSLs) of 310 mg/kg for mercuric chloride and mercury salts and 160 mg/kg for arsenic were utilized by the U.S. EPA to evaluate the potential human health risks from exposure to non-residential soils.

3 Field Assessment

The field assessment phase of the project was performed from June 11 through 13, 2012, under the authority of U.S. EPA Federal On-Scene Coordinator (FOSC) Tom Dunkelman. During the field assessment, on-site personnel included Tom Dunkelman (U.S. EPA), Jack Yates (Nevada Division of Environmental Protection (NDEP)), two START members, and two United States Coast Guard Pacific Strike Team (PST) members. Generally, one START member operated the XRF in the field laboratory and one sampling team including U.S. EPA, NDEP, START and PST members completed field tasks; specific field tasks are discussed in further detail in Section 3.1. START also compiled site data into the U.S. EPA's SCRIBE database. Photographic documentation of START activity is provided as Appendix B.

3.1 START Field Procedures

The START followed all pre-determined standard operating procedures (SOPs) as outlined in the site SAP (E & E, 2012) for sample collection and documentation procedures during the field investigation phase of this project, unless otherwise specified below. The following deviation from the SAP (E & E 2012) resulted from changes made during the field assessment in response to field observations and conditions:

- At the direction of the FOSC, discrete roadway surface soil samples were collected from every 80 feet of over the entire length of each roadway decision unit.

This section provides a summary of specific field procedures used to ensure accurate assessment data.

3.1.1 Property Sampling

Surface soil samples were collected from residential and public properties where calcine mine wastes are believed to be present in order to characterize arsenic and mercury concentrations. Individual properties were identified by using parcel data provided by both the Humboldt County, Nevada, and Malheur County, Oregon, geographic information system mapping departments. For the purposes of this assessment, residential properties include any property that contains single and/or multi-family dwellings and vacant lots with the potential for residential construction; public properties include any property with public access, such as churches, parking lots, recreational vehicle lots, and street right-of-ways. Prior to conducting sampling activity at a property, access permission was obtained by the U.S. EPA FOSC. Sampling of some properties was not possible due to the property owner denying access or not responding to access requests.

Once a property was cleared for sampling and analysis, a visual inspection of the property was then performed by the U.S. EPA, NDEP, and START to determine whether or not calcine mine wastes were apparent. If calcine mine wastes were identified at the subject property during visual inspection, the property was selected for sampling. In order to allow for better delineation, all properties were divided into separate decision units: front, back, side, and/or driveway decision units. Composite samples were then collected from each decision unit at the subject property where calcine mine wastes were visibly apparent. Surface composite samples consisted of five homogenized discrete aliquots of equal volume collected from 0 to 6 inches below ground surface (bgs), in which four of the aliquots were collected 5 feet from a single mid-point where global

positioning system (GPS) coordinates were collected and recorded. Each composite sample collected was given a unique identifier generally containing a prefix indicating the street address, followed by the street name, and a final letter indicating the decision unit area in which the sample was collected; front (F), back (B), side (S), or driveway (DR) decision unit. A field documentation sheet was completed at each sample location that included: the property address (if available), sample number(s), date, time, a relative sketch of sample location(s) and property structures, photograph numbers, and GPS coordinates (Field Documentation, Appendix C).

3.1.2 Roadway Sampling

Surface soil samples were collected from unpaved roadways where calcine mine wastes were believed to be present in order to characterize arsenic and mercury concentrations. For the purposes of this assessment, roadways include unpaved areas that provide public access to vehicles. A visual inspection of roadways at the site was performed by the U.S. EPA, NDEP, and START to determine whether or not calcine mine wastes were apparent. If calcine mine wastes were identified during the visual inspection, the roadway was selected for sampling.

In order to allow for better delineation, one discrete point surface soil sample was collected from the center of each identified roadway at approximately every 80 feet of the roadway expanse. Discrete point surface samples consisted of a single aliquot collected from 0 to 6 inches bgs. GPS coordinates were collected and recorded for each discrete sample location. Each discrete sample collected was given a unique identifier generally containing a prefix indicating the roadway name, followed by the roadway description (i.e., alley), and a final sequential number indicating the decision unit area in which the sample was collected. A field documentation sheet was completed at each sample location that included: the roadway name or association (if available), sample number(s), date, time, a relative sketch of sample location(s) and nearby structures, photograph numbers, and GPS coordinates (Field Documentation, Appendix C).

3.1.3 Sample Collection and Preparation

Composite property samples and discrete roadway samples were collected by sample teams wearing clean nitrile gloves and using a clean stainless-steel trowel; they were then placed into a clean plastic zip-lock bag for homogenization and holding. After collection, each sample was individually labeled with its unique sample identifier and delivered to XRF personnel for sample preparation. Upon receipt for sample preparation, all samples were recorded in a sample log. Samples were homogenized in the sample bag by kneading, crushing, and shaking the soil for approximately one minute. After homogenization, approximately equal volumes of the individual aliquots for each composite sample were collected into one bag. The final sample intended for analysis, discrete or composite, was passed through a 250 micron (#60) mesh sieve to remove large particles. The sieved sample was transferred into a new pre-labeled polyethylene cup and covered with Mylar[®] film. After sample preparation, samples were delivered to the field laboratory for XRF analysis. All non-dedicated sample handling devices (i.e., trowels, sieves) were decontaminated after each use according to the site SAP standard operating procedure (SOP) E & E SOP #3.15.

3.2 XRF Analysis Procedures

During this field assessment, a total of 134 individual soil samples were analyzed by using an Innov-X Systems field portable XRF unit operated in accordance with the manufacturer guidance

and U.S. EPA SW-846 Method 6200, including Quality Assurance/Quality Control (QA/QC) procedures.

Before operation of the XRF each day, the unit was allowed the manufacturer-recommended warm up time of 25-30 minutes. The XRF unit was then subjected to an initial calibration that included energy calibration and resolution check and standard reference material (SRM) analysis. The SRM used for XRF calibration was obtained from soils collected within the McDermitt project area for use as a site-specific SRM during this assessment and referenced as Hg 56 when analyzed. Once calibrated, a second blank source control standard was analyzed to determine instrument performance and referenced as BLANK when analyzed. In addition to instrument performance checks, sand blank samples were prepared and analyzed by XRF at the end of each set of 20 site soil samples to monitor for cross-contamination. Sand blank samples were ground with a mortar and pestle and then prepared by following the same preparation method and using the same sample preparation equipment as for site soil samples.

One out of every 10 site samples was selected for preparation duplicate analysis. Preparation duplicates were collected by splitting a single site sample after homogenization and sieving occurred and then preparing two separate sample aliquots for XRF analysis. Preparation duplicates were labeled and recorded with a “PD” following the corresponding sample identifier for identification.

The energy calibration and resolution check analysis, SRM sample analysis, blank source control sample analysis, and sand blank sample analysis used for XRF calibration, performance, and quality control are discussed under Section 4.1 (Field XRF Data Quality Control) of this report.

All XRF sample analyses were performed within a designated field laboratory with the XRF in the intrusive mode with a 90-second count time for measurement. Each sample was analyzed one time and the corresponding arsenic and mercury concentrations were recorded in the site XRF logbook. Following XRF analysis each sample was evaluated based upon the arsenic and mercury concentrations versus the site SSL and either prepared for laboratory analysis or archived. Arsenic and mercury concentrations for all soil samples analyzed by XRF are provided as Table 1 and Table 2 (Appendix D).

4 Analytical Results

During this removal assessment, 92 composite soil samples were collected from 44 residential and public land parcels and 14 discrete point soil samples were collected from two unpaved roadways within the McDermitt project area and subjected to XRF analysis. Sample location result maps for surface soil samples analyzed by XRF are provided as Figure 2 and Figure 3 (Appendix A). An XRF data summary is provided as Table 1 and Table 2 (Appendix D). In addition, 11 field duplicate composite soil samples, 11 preparation duplicates and 6 sand blank samples were analyzed by XRF for quality control objectives.

Of the 92 composite soil samples and 14 discrete point soil samples subjected to XRF analysis, a total of 55 composite soil samples from 30 residential and public land parcels and nine discrete point soil samples from the two unpaved roadways were submitted to the U.S. EPA Region 9 Laboratory in Richmond, California, for total arsenic analysis by U.S. EPA Method 6010C and total mercury analysis by U.S. EPA Method 7471B. A laboratory data summary is provided as Table 1 and Table 2 (Appendix D), and complete laboratory analysis and data validation reports are provided under Appendix E.

4.1 Data Quality

During the McDermitt removal assessment, efforts were made to ensure that the quality of all data generated through XRF and laboratory analyses met appropriate U.S. EPA-established criteria. A discussion of XRF and laboratory data quality control (QC) efforts is provided below.

4.1.1 Field XRF Data Quality Control

To provide QC for the field analytical effort, U.S. EPA SW-846 Method 6200 was adhered to during XRF sample analysis. Each sample was prepared carefully, homogenized thoroughly, placed into appropriate XRF analysis containers, and analyzed as an independent sample (Sections 3.1 and 3.2). The concentration of the obtained sample analyte was reported.

Effective energy fundamental parameters (FP) calibration was performed during this field analytical effort to ensure QC of the XRF unit. Effective energy FP relies on pure element standards, SRM standards, and control standard samples.

To determine whether the XRF instrument was within resolution and stability tolerances, an energy calibration check was run with a pure manganese element standard at the beginning of each day as the first XRF analysis, and at any time in which the instrument detected that the characteristic x-ray lines were shifting. To check the accuracy of the instrument and to assess the stability and consistency of analyses for the analytes of concern (arsenic and mercury) a site-specific SRM sample (Hg 56) was analyzed at the beginning of each day, after each set of 20 site samples, and at the end of each work day. The measured concentrations of arsenic and mercury for each SRM run during field XRF analysis for the project were within ± 20 percent standard deviation and considered acceptable.

4. Analytical Results

Two types of blank samples were analyzed to provide quality control for XRF analysis: instrument blanks and method blanks. Method blank samples were obtained from “clean” silica sand and were free of arsenic and mercury at concentrations above the method detection limit.

- An instrument blank sample was used to verify that no contamination existed on the probe window during XRF analysis. The instrument blank sample was analyzed at the beginning of each day, after each set of 20 site samples, and at the end of each work day. No arsenic or mercury concentrations above the method detection limits were found during instrument blank sample analyses.
- Method blank samples were used to monitor for sample preparation-induced contaminants or interferences. Each method blank sample was prepared by following the same preparation procedure and equipment as the site soil samples. Method blank samples were analyzed after each set of 20 site samples. No arsenic or mercury concentrations above the method detection limits were found during method blank sample analyses.

A precision and accuracy study was conducted using the site-specific SRM sample (Hg 56) to determine the reliable detection limits of the XRF equipment. The study was performed by analyzing the SRM sample nine separate times with the XRF and calculating the average. The SRM sample was then submitted to the U.S. EPA Region 9 Laboratory for total arsenic and total mercury analysis. The calculated average from XRF analysis and laboratory analytical result were compared for SRM sample Hg 56 to determine the precision and accuracy of the XRF unit. Site-specific SRM sample Hg 56 had a laboratory concentration of 52 mg/kg for arsenic and 61 mg/kg for mercury. The average field XRF concentration was 30 mg/kg for arsenic and 58 mg/kg for mercury. The data used in detection limit and performance verification studies are presented in the Table 4, Appendix D.

4.1.2 Laboratory Data Quality Control

Confirmation soil samples were analyzed by the U.S. EPA Region 9 Laboratory. Once data were generated by the U.S. EPA Region 9 Laboratory, a data review was completed, and the laboratory data were validated using the *Region 9 Draft Superfund Data Evaluation/Validation Guidance* (U.S. EPA, 2001). Data validation indicated that all results for mercury were qualified as estimated (e.g., “J”) due to sample temperature upon laboratory receipt. Data validation indicated that all other laboratory data were acceptable without qualification as definitive data.

All laboratory analytical results were provided by the U.S. EPA Region 9 Laboratory with Tier 1 data validation. A START chemist then conducted Tier 2 data validation for all laboratory-generated data in accordance with the EPA guidance *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004 OSWER Directive 9360.4-01) April 1990 (U.S. EPA, 1990). Tier 2 data validation included evaluation of criteria such as laboratory QA/QC summaries, holding times, and matrix-related recoveries. Data qualifiers were applied by START according to the *U.S. EPA CLP National Functional Guidelines for Inorganic Data Review* (OSWER 9240.1-45, EPA 540-R-04-004) October 2004 (U.S. EPA, October 2004). All data were found to be acceptable for use as definitive data. Laboratory analysis and data validation reports are provided under Appendix E.

4.2 XRF and Laboratory Data Correlation

U.S. EPA SW-846 Method 6200 suggests that a minimum of 5 to 10 percent of the XRF-analyzed samples be submitted to an analytical laboratory for confirmation analysis to verify the quality of the XRF data. However, due to the project objectives outlined within the SAP (E & E, 2012), all samples with an XRF analysis concentration that ranged between the site-specific SSL and action level for arsenic and/or mercury were submitted for laboratory confirmation analysis for both analytes, even if only one analyte concentration was above the SSL.

Out of the 92 composite soil samples and 14 discrete point soil samples collected for XRF analysis, 64 samples (70%) were submitted to the U.S. EPA Region 9 Laboratory for analysis. The data correlation between XRF analysis and laboratory analysis for arsenic and mercury concentrations detected during this removal assessment are discussed below.

4.2.1 Total Arsenic Data Correlation

From the 64 total soil samples selected for total arsenic laboratory analysis, 13 XRF-analyzed samples had concentrations between 20 mg/kg and 45 mg/kg, 41 XRF-analyzed samples had concentrations between 45 mg/kg and 60 mg/kg, and 10 XRF-analyzed samples were greater than or equal to 60 mg/kg. The validated laboratory analysis results and XRF analysis results were then evaluated by least squares linear regression analysis, which provided a coefficient of determination (R^2) and slope for the linear relationship between the data sets. The final R^2 for XRF results and laboratory results was 0.6606 (66.06%) with a slope of 1.046. Therefore, the XRF data for arsenic collected during this assessment do not quite meet the U.S. EPA criteria for use as screening level data ($R^2=0.7$ or 70%). Due to the arsenic data correlation between field XRF results and laboratory results falling below the U.S. EPA criteria for use as screening level data, detected arsenic concentrations for sampled properties and roadways are evaluated based primarily on laboratory results for comparison to the site-specific action level of 60 mg/kg (Sections 4.3.1 and 4.3.2); although, the field XRF results were still considered. The laboratory and XRF analysis results used for the total arsenic data correlation study are summarized in Table 3 (Appendix D), and the least squares linear regression analysis is provided as Figure 4 (Appendix A).

During previous sampling events performed by U.S. EPA and START at the site (E&E, 2011), XRF analysis results and confirmation laboratory analysis results provided a 0.9801 (98%) R^2 between data sets for concentrations of arsenic in soil, which exceeds the U.S. EPA criteria for use as screening level data (70%). It is unknown at this time as to why the final R^2 between XRF analysis results and laboratory analysis results evaluated during this assessment did not meet the U.S. EPA criteria for use as screening level data for arsenic. Although field QC of the XRF instrument provided acceptable stability tolerances, the x-rays utilized for detection of total arsenic concentrations may need further internal adjustment.

4.2.2 Total Mercury Data Correlation

From the 64 total soil samples selected for total mercury laboratory analysis, 2 XRF-analyzed samples had concentrations between 0 mg/kg and 60 mg/kg, 18 XRF-analyzed samples had concentrations between 60 mg/kg and 80 mg/kg, and 44 XRF-analyzed samples were greater than 80 mg/kg. The validated laboratory analysis results and XRF analysis results were then evaluated by least squares linear regression analysis, which provided an R^2 value and slope for the linear relationship between the data sets. The final R^2 for XRF results and laboratory results

was 0.4959 (49.59%) with a slope of 1.1169. Therefore, the XRF data for mercury collected during this assessment do not meet the U.S. EPA criteria for use as screening level data ($R^2=0.7$ or 70%). Due to the mercury data correlation between field XRF results and laboratory results falling below the U.S. EPA criteria for use as screening level data, detected mercury concentrations for sampled properties and roadways are evaluated primarily on laboratory results for comparison to the site-specific action level of 80 mg/kg (Sections 4.3.1 and 4.3.2); although, the field XRF results were still considered. The laboratory and XRF analysis results used for the total mercury data correlation study are summarized in Table 3 (Appendix D), and the least squares linear regression analysis is provided as Figure 5 (Appendix A).

During previous sampling events performed by U.S. EPA and START at the site (E&E, 2011), XRF analysis results and confirmation laboratory analysis results provided a 0.7706 (77%) R^2 between data sets for concentrations of mercury in soil, which exceeds the U.S. EPA criteria for use as screening level data (70%). It is unknown at this time as to why the final R^2 between XRF analysis results and laboratory analysis results evaluated during this assessment did not meet the U.S. EPA criteria for use as screening level data for mercury. Although field QC of the XRF instrument provided acceptable stability tolerances, the x-rays utilized for detection of total mercury concentrations may need further internal adjustment.

4.3 Discussion of Results

Data collected during this assessment were evaluated to determine if surface soils within the project area contain arsenic and mercury at concentrations above the U.S. EPA site-specific action levels and the U.S. EPA RSLs. Site data from the field XRF and laboratory analysis were compared to the U.S. EPA site-specific action level for arsenic in residential soil of 60 mg/kg (U.S. EPA, 2012a), the U.S. EPA site-specific action level for mercury in residential surface soil of 80 mg/kg (U.S. EPA, 2012b), the U.S. EPA RSL for mercuric chloride and mercury salts in non-residential surface soil of 310 mg/kg, and the U.S. EPA RSL for arsenic in non-residential surface soil of 160 mg/kg.

4.3.1 Property Sampling Results

A total of 92 composite soil samples (excluding duplicates) were collected from within the project area and subjected to field XRF analysis; a total of 44 land parcels, consisting of 92 decision units, were sampled. Of the 92 field XRF analyzed composite soil samples, 55 samples exceeding the SSL for arsenic and/or mercury were submitted to U.S. EPA Region 9 Laboratory for analysis. Due to the arsenic and mercury data correlation between field XRF results and laboratory analysis results falling below the U.S. EPA criteria for use as screening level data, both the Field XRF analysis results and laboratory analysis results are discussed in this section.

Field XRF arsenic concentrations detected in the project area from residential and public land parcels ranged from 8 mg/kg to 492 mg/kg. Of the 92 property samples analyzed by field XRF, 15 samples (16%) had arsenic concentrations that met or exceeded the residential action level of 60 mg/kg. Based on the field XRF analysis data, 13 parcels were identified during this assessment from which samples containing arsenic concentrations in excess of 60 mg/kg were collected. These parcels are identified in Table 1 (Appendix D). Field XRF Mercury concentrations detected in the project area from residential and public land parcels ranged from 12 mg/kg to 953 mg/kg. Of the 92 property samples analyzed by field XRF, 58 samples (63%) had mercury concentrations that met or exceeded the residential action level of 80 mg/kg. Based

on the field XRF analysis data, 33 parcels were identified during this assessment from which samples containing mercury concentrations in excess of 80 mg/kg were collected. These parcels are identified in Table 1 (Appendix D).

Laboratory arsenic concentrations detected in the project area from residential and public land parcels ranged from 4.5 mg/kg to 97 mg/kg. Of the 55 laboratory-analyzed property samples, 20 samples (36%) had arsenic concentrations that met or exceeded the residential action level of 60 mg/kg. Based on the laboratory analysis data, 16 parcels were identified during this assessment from which samples containing arsenic concentrations in excess of 60 mg/kg were collected. These parcels are identified in Table 1 (Appendix D). Laboratory mercury concentrations detected in the project area from residential and public land parcels ranged from 0.87 mg/kg to 230 mg/kg. Of the 55 laboratory-analyzed property samples, 42 samples (76%) had mercury concentrations that met or exceeded the residential action level of 80 mg/kg. Based on the laboratory analysis data, 23 parcels were identified during this assessment from which samples containing mercury concentrations in excess of 80 mg/kg were collected. These parcels are identified in Table 1 (Appendix D).

Arsenic and mercury concentrations exceeding the site-specific action level were documented throughout the project area where calcine materials were suspected to be present. Based on the collected residential and public land parcel soil sample data, a total of 23 parcels have been identified in which the calcine mine wastes deposited as fill material contain arsenic and/or mercury concentrations that may potentially pose a health risk, although there does not appear to be any geographic pattern associated with the release of arsenic and mercury contamination in the project area at concentrations above the site-specific action levels (Figure 2, Appendix A).

4.3.2 Roadway Sampling Results

A total of 14 discrete point soil samples (excluding duplicates) were collected from within the project area subjected to field XRF analysis; a total of two public access roadways, consisting of 14 decision units, were sampled. Of the 14 field XRF analyzed discrete soil samples; nine samples exceeded the SSL for either arsenic and/or mercury and were submitted to U.S. EPA Region 9 Laboratory for analysis. Due to the arsenic and mercury data correlation between field XRF results and laboratory analysis results falling below the U.S. EPA criteria for use as screening level data, both the Field XRF analysis results and laboratory analysis results are discussed in this section.

Field XRF arsenic concentrations detected in the project area from public access roadways ranged from 9 mg/kg to 63 mg/kg. Of the 14 roadway samples analyzed by field XRF, no samples exceeded the U.S. EPA RSL for arsenic in non-residential soil of 160 mg/kg. Field XRF arsenic concentrations for the public access roadways are identified in Table 2 (Appendix D). Field XRF mercury concentrations detected in the project area from public access roadways ranged from less than the instrument detection limit of 8 mg/kg to 247 mg/kg. Of the 14 roadway samples analyzed by field XRF, no samples exceeded the U.S. EPA RSL for mercury in non-residential soil of 310 mg/kg. Field XRF mercury concentrations for the public access roadways are identified in Table 2 (Appendix D).

Laboratory arsenic concentrations detected in the project area from public access roadways ranged 34 mg/kg to 71 mg/kg. Of the nine laboratory-analyzed roadway samples, no samples

4. Analytical Results

exceeded the U.S. EPA RSL for arsenic in non-residential soil of 160 mg/kg. Laboratory arsenic concentrations for the public access roadways are identified in Table 3 (Appendix D). Laboratory mercury concentrations detected in the project area from public access roadways ranged from 1.3 mg/kg to 320 mg/kg. Of the nine laboratory-analyzed roadway samples, one sample (11%) exceeded the U.S. EPA RSL for mercury in non-residential soil of 310 mg/kg. Laboratory mercury concentrations for the public access roadways are identified in Table 2 (Appendix D).

5 Conclusions

In June 2012, the U.S. EPA and START conducted a removal assessment throughout the town of McDermitt by collecting soil samples from residential and public properties and unpaved roadways at locations where calcine mine wastes were suspected to be used as fill material. The data collected from this removal assessment will be used by the U.S. EPA Region 9 ERS to determine whether environmental hazards are present in McDermitt that may pose an “imminent and substantial endangerment to human health or the environment”. As appropriate, the U.S. EPA will use this assessment data to evaluate the potential for a removal action at the site and identify alternatives to mitigate environmental hazards that meet endangerment criteria. The conclusions reached from the results of this removal assessment are provided below.

- Due to the arsenic and mercury data correlation between field XRF results and laboratory analysis results falling below the U.S. EPA criteria for use as screening level data, the laboratory analysis results are primarily used for comparison to the site action levels.
- The laboratory results collected during this removal assessment indicate that arsenic and mercury concentrations exceed their respective U.S. EPA site-specific residential action levels protective of human health in surface soils (0 to 6 inches) throughout the project area where calcine mine wastes are believed to be present.
- Results from this removal assessment document that elevated concentrations of arsenic and mercury in surface soil samples collected throughout McDermitt at residential and public properties and unpaved public access roadways are consistent with the concentrations of arsenic and mercury in samples collected from the calcine mine waste pile located at the former Cordero and McDermitt mine sites (E & E, 2011). These findings corroborate reports that material from the calcine waste pile was used as fill and road base throughout McDermitt.
- Based on laboratory analysis results collected during this removal assessment, a total of 23 residential and public properties contained soils with arsenic and/or mercury concentrations that exceeded their respective U.S. EPA site-specific residential action levels and may require remedial actions to reduce the potential endangerment to human health.
- Based on laboratory analysis results collected during this removal assessment, the sampled public access roadways contained soils with arsenic and/or mercury concentrations that exceed the U.S. EPA site-specific action level for residential soil, but were below the U.S. EPA Region 9 RSLs for non-residential soil, except for one sample.

6 Report References

E & E, 2011. *Cordero and McDermitt Mercury Mine Sites, Humboldt County, Nevada Interim Removal Assessment Report*, September 2011.

E & E, 2012. *Sampling and Analysis Plan, Mine Waste Removal Assessment at Sites of Release or Threatened Release of Hazardous Substances, McDermitt, Humboldt County, Nevada and Malheur County, Oregon*, April 2012.

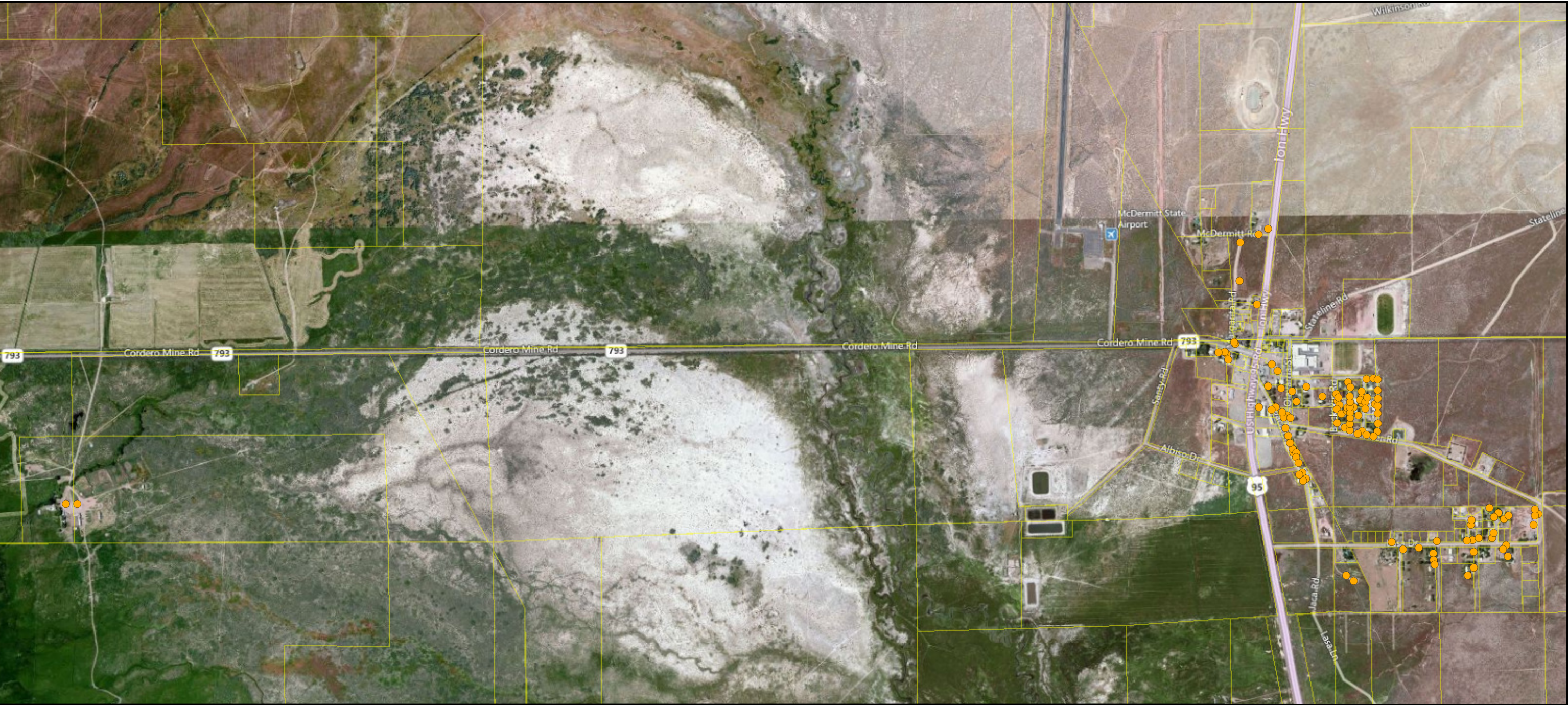
U.S. EPA, 2012a. *Soil Action Level for Arsenic (McDermitt, Nevada)*, March 2012.

U.S. EPA, 2012b. *Soil Action Level for Mercury (McDermitt, Nevada)*, March 2012.

U.S. EPA, 2007. *Office of Solid Waste Method 6200 - Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment*, February 2007.

Appendix A: Figures

- Figure 1 2012 Removal Assessment Project Area
- Figure 2 2012 Removal Assessment Sample Locations (Nevada)
- Figure 3 2012 Removal Assessment Sample Locations (Oregon)
- Figure 4 Total Arsenic Linear Regression Analysis
- Figure 5 Total Mercury Linear Regression Analysis



- Sample Location
- Parcel Boundary



0 1,000 2,000 3,000 4,000 feet

Figure 1
2012 Removal Assessment Project Area
McDermitt, Humboldt County, Nevada
and Malheur County, Oregon



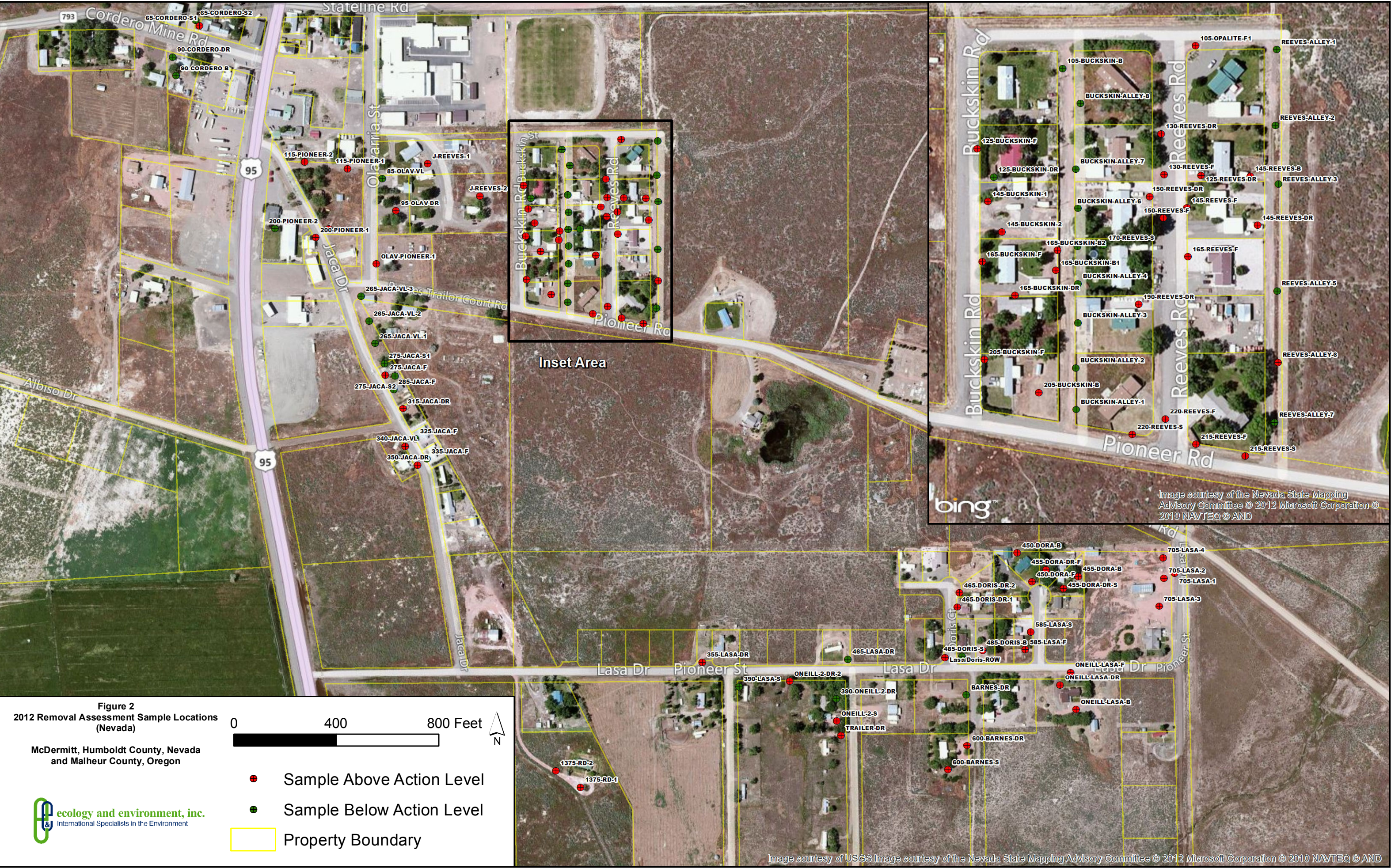




Figure 3
2012 Removal Assessment Sample Locations
(Oregon)

McDermitt, Humboldt County, Nevada
and Malheur County, Oregon



0 100 200 300 Feet






-  Sample Above Action Level
-  Sample Below Action Level
-  Property Boundary

Figure 4. Total Arsenic Linear Regression Analysis
McDermitt, Humboldt County, Nevada and Malheur County, Oregon
Mine Waste Removal Assessment at Properties of Release or Threatened Release

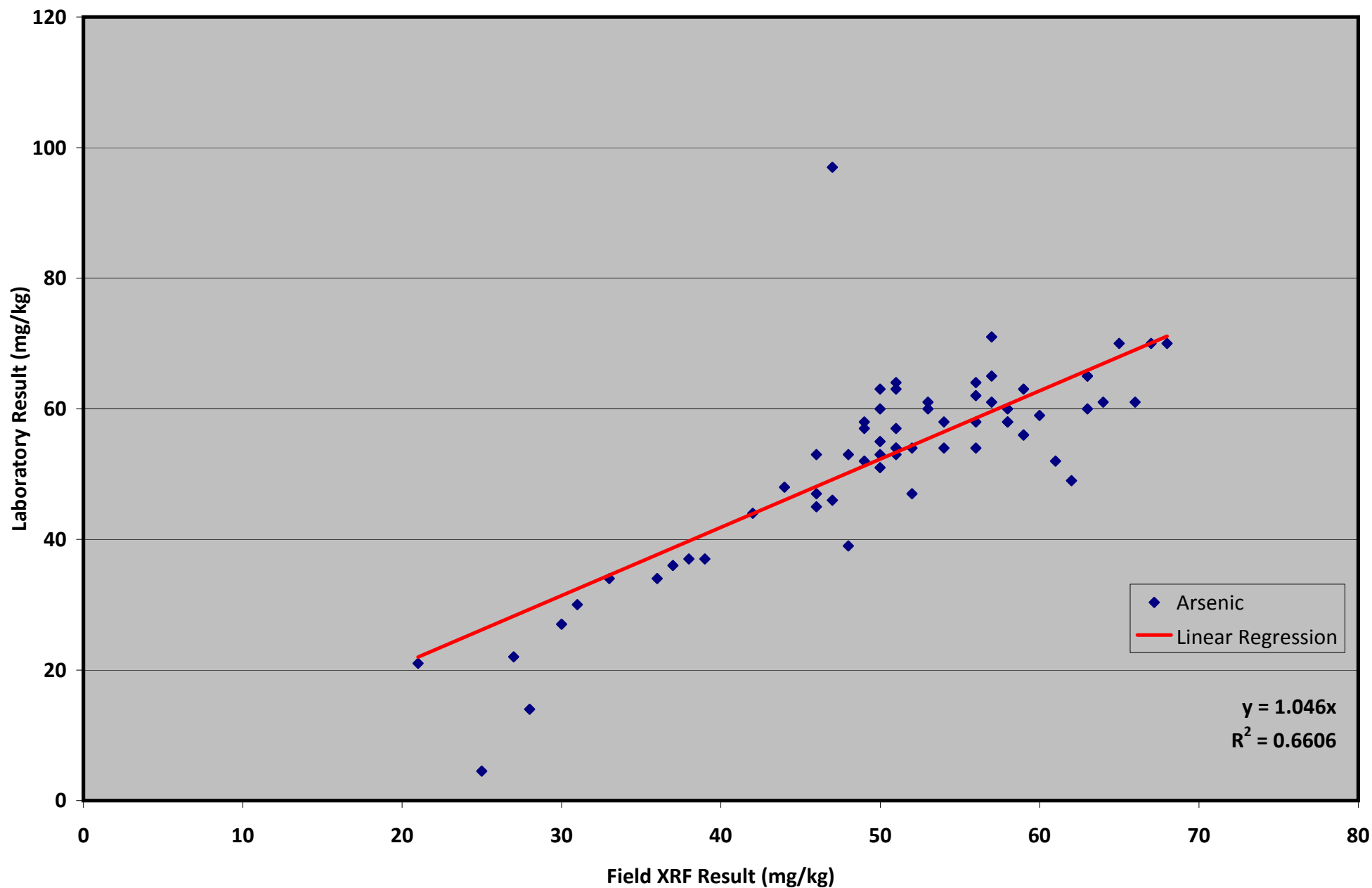
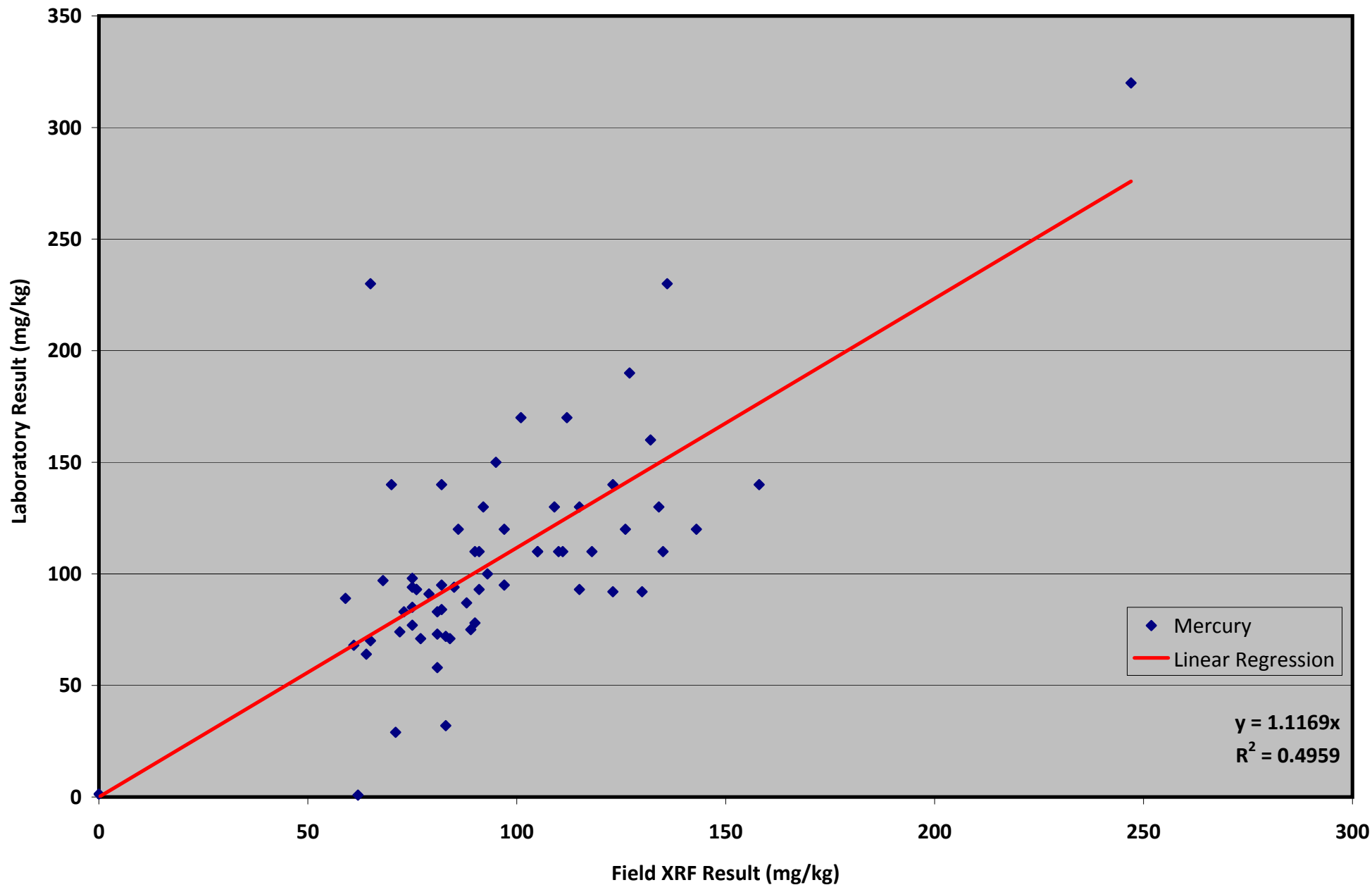


Figure 5. Total Mercury Linear Regression Analysis
 McDermitt, Humboldt County, Nevada and Malheur County, Oregon
 Mine Waste Removal Assessment at Properties of Release or Threatened Release

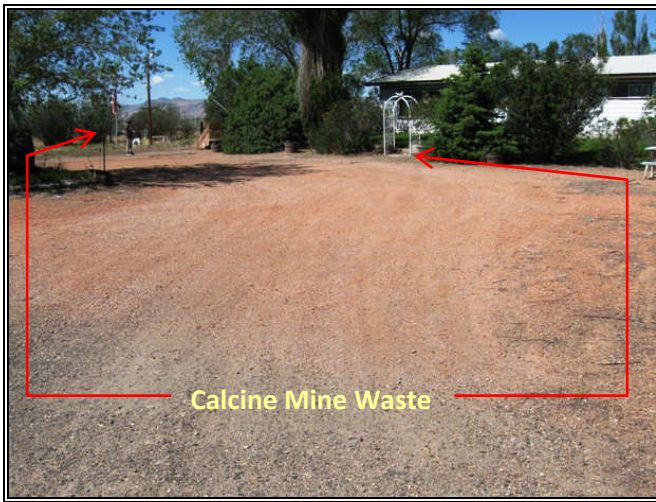


Appendix B:
Photographs

MCDERMITT, NEVADA-OREGON

Mine Waste Removal Assessment at Properties of Release or Threatened Release McDermitt, Humboldt County, Nevada and Malheur County, Oregon

TDD No.: TO2-09-10-06-0002; Project. No.: EE-002693-2094



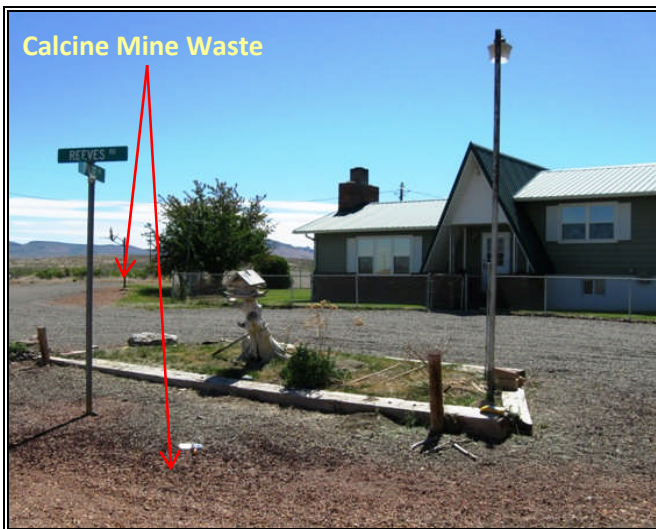
PHOTOGRAPH #1

Date: 6/13/2012

Direction: Southwest

Photographer: N. Ellis (E & E)

Description: 600 Barnes Rd.: View of calcine mine waste as fill material in residential yard and driveway areas.



PHOTOGRAPH #2

Date: 06/12/2012

Direction: East

Photographer: D. Lashbrook (USCG)

Description: 105 Reeves Rd.: View of calcine mine waste as fill material along right-of-way.



PHOTOGRAPH #3

Date: 6/12/2012

Direction: West

Photographer: D. Lashbrook (USCG)

Description: 130 Reeves Rd.: View of calcine mine waste as fill material along right-of-way.

MCDERMITT, NEVADA-OREGON

Mine Waste Removal Assessment at Properties of Release or Threatened Release McDermitt, Humboldt County, Nevada and Malheur County, Oregon

TDD No.: TO2-09-10-06-0002; Project. No.: EE-002693-2094



PHOTOGRAPH #4

Date: 06/13/2012

Direction: South

Photographer: D. Lashbrook (USCG)

Description: 705 Lasa Dr.: View of calcine mine waste as fill throughout residential property.



PHOTOGRAPH #5

Date: 6/13/2012

Direction: North

Photographer: D. Lashbrook (USCG)

Description: Buckskin Rd. Alley: View of calcine mine waste as road base material for vehicle access.



PHOTOGRAPH #6

Date: 6/13/2012

Direction: East

Photographer: N. Ellis (E & E)

Description: 455 Dora Ct.: View of calcine mine waste as fill material in residential driveway.

Appendix C:
Field Documentation

Site Name: McDermitt Residential Sampling

Front Yard Sample Coor. _____

Date/Time: 13 JUN 12

Back Yard Sample Coor. _____

Additional Coor. (Explain) _____

Sampler(s): _____

Photographs: _____

Sample Collection Address

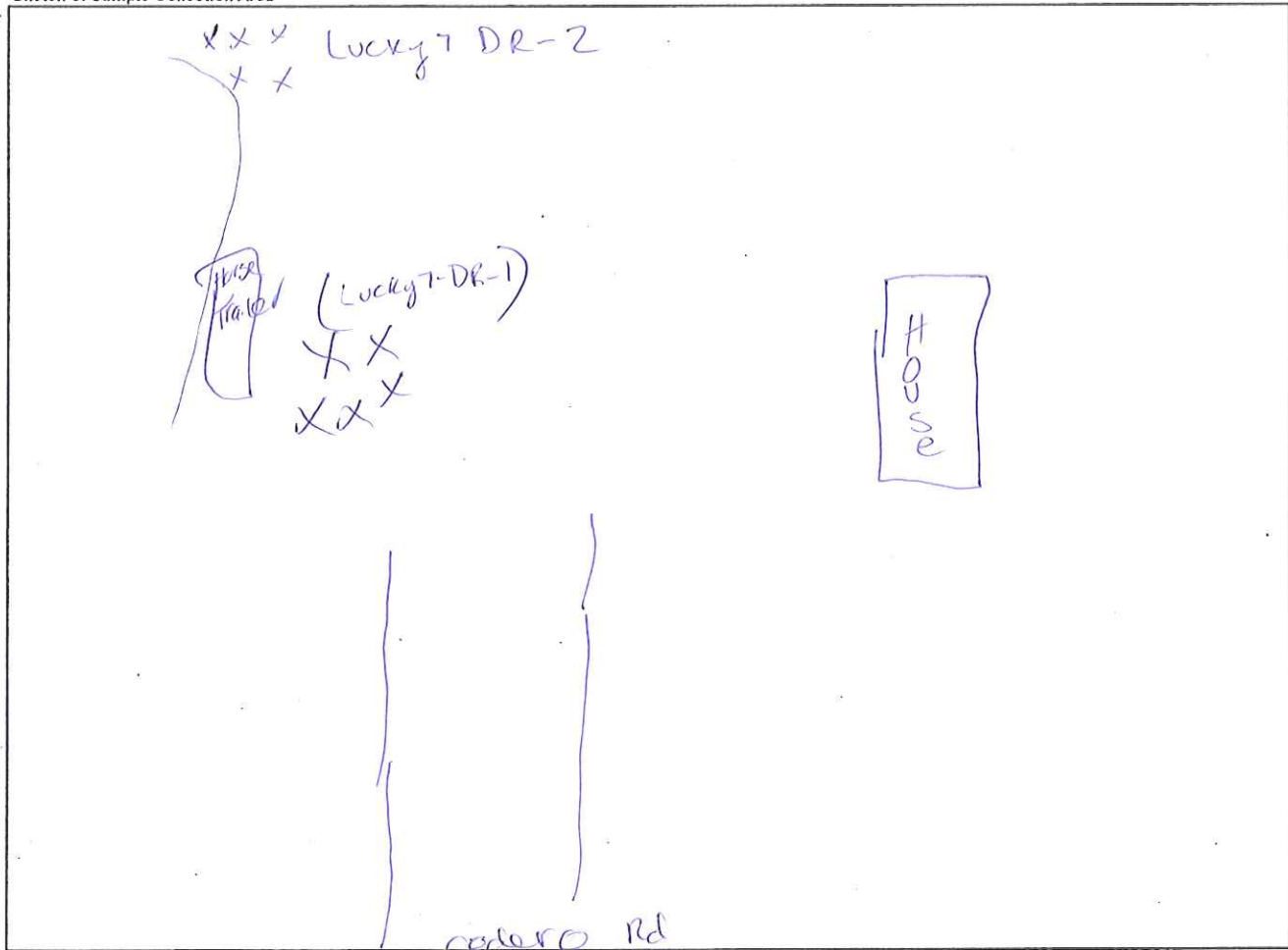
(# and Description)

Lucky Seven - DR - 1 1/2

100-2459 - Lucky 7 - DR-1

100-2460 - Lucky 7 - DR-2

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coor. _____

Date/Time: 13 Jun 12

Back Yard Sample Coor. _____

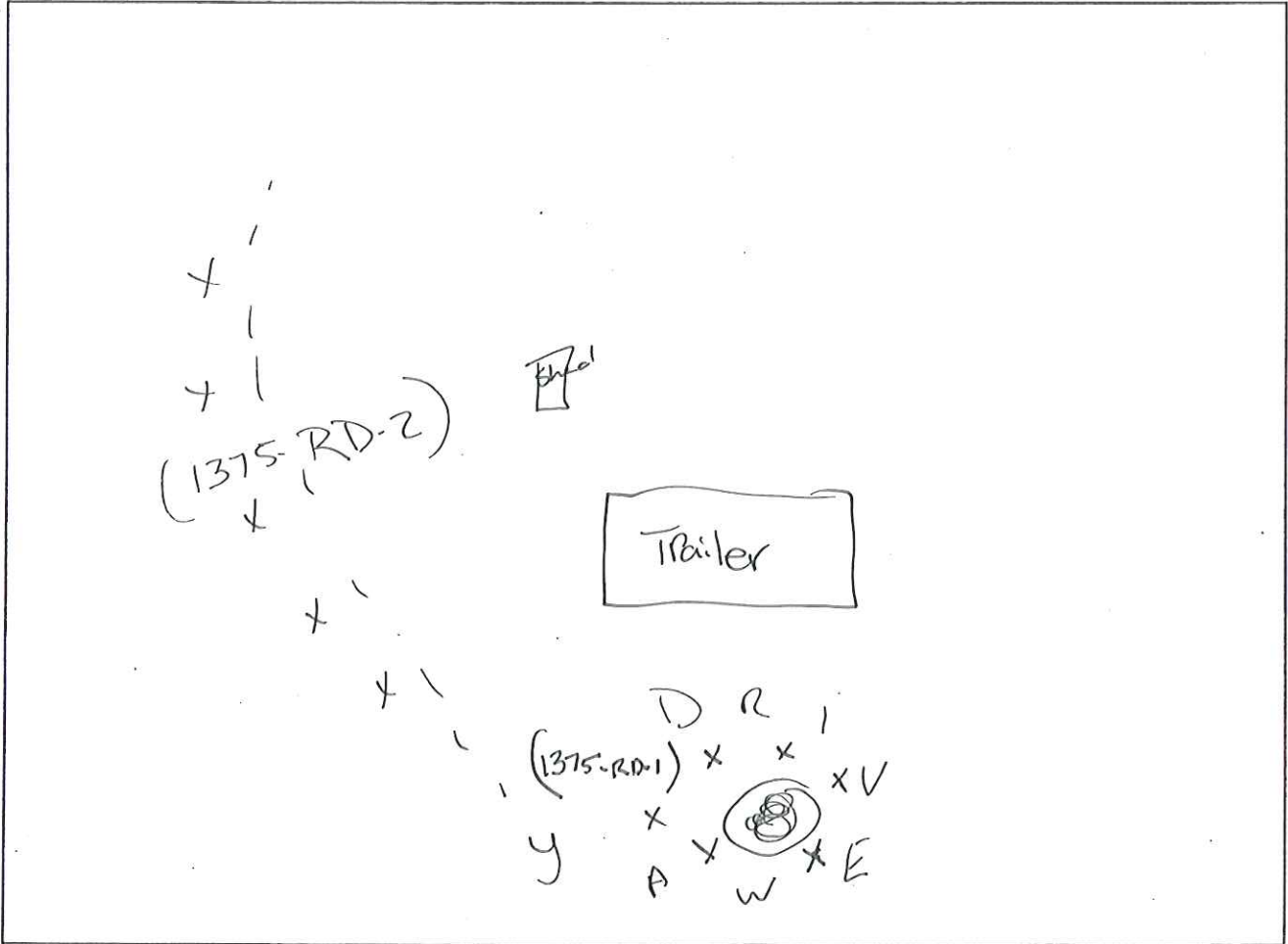
Sampler(s): NE

Additional Coor. (Explain) _____

Sample Collection Address
1375-RD-1 & 2

Photographs: 100-2445 - Trailer #1375
100-2446 - DRIVEWAY - RD-1
100-2447 - DRIVEWAY RD-2

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coor. _____

Date/Time: 13 JUN 12 / 530

Back Yard Sample Coor. _____

Sampler(s): NE

Additional Coor. (Explain) _____

Sample Collection Address

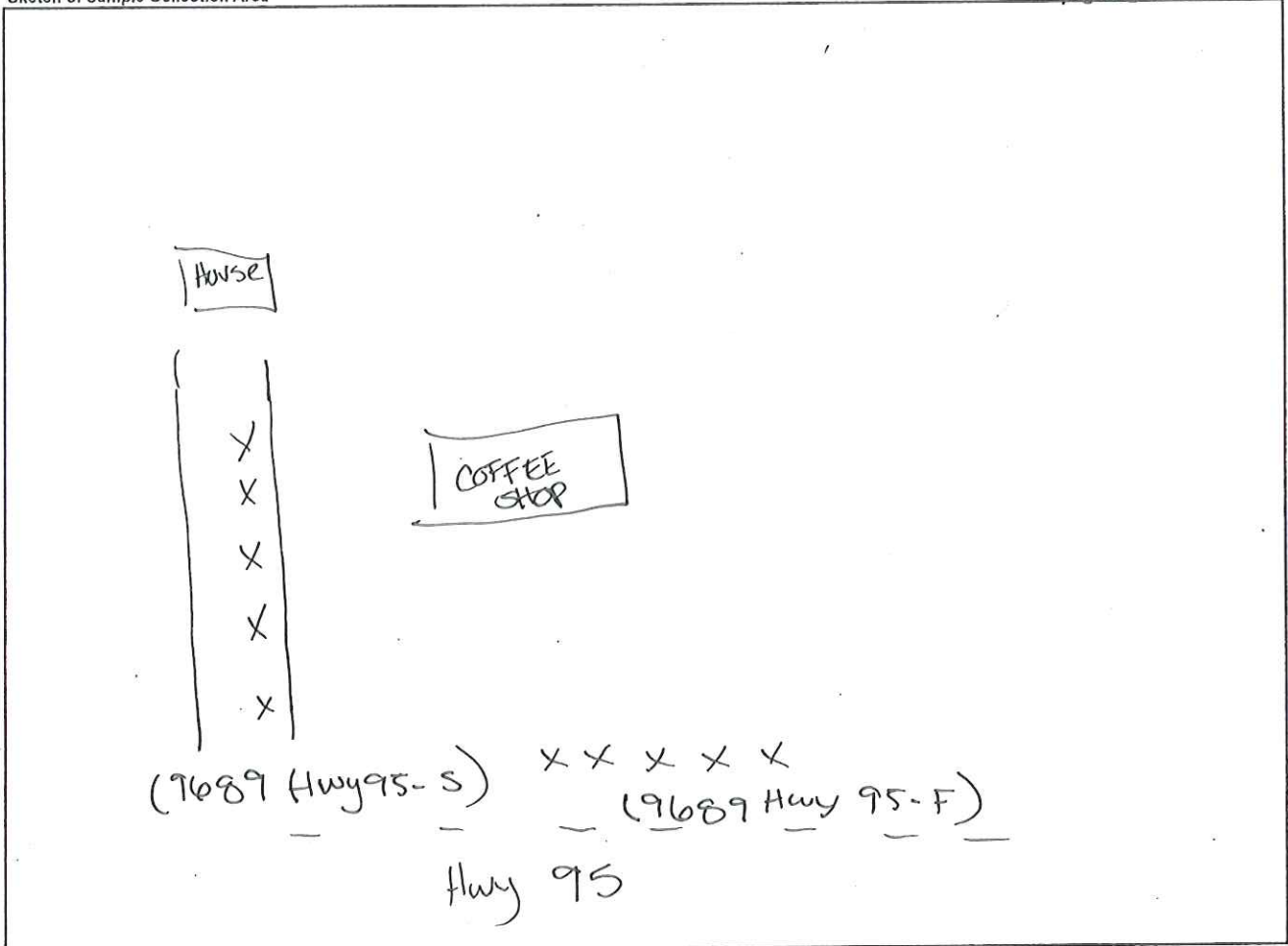
91689 Hwy 95

Photographs: 100-2456- FRONT SAMPLE

(# and Description)

100-2455- Side Sample
Driveway leading to
house

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Date/Time: 10/15/11 11537

Sampler(s): NE

Sample Collection Address: Margarita - RD-1
McDermitt, NV

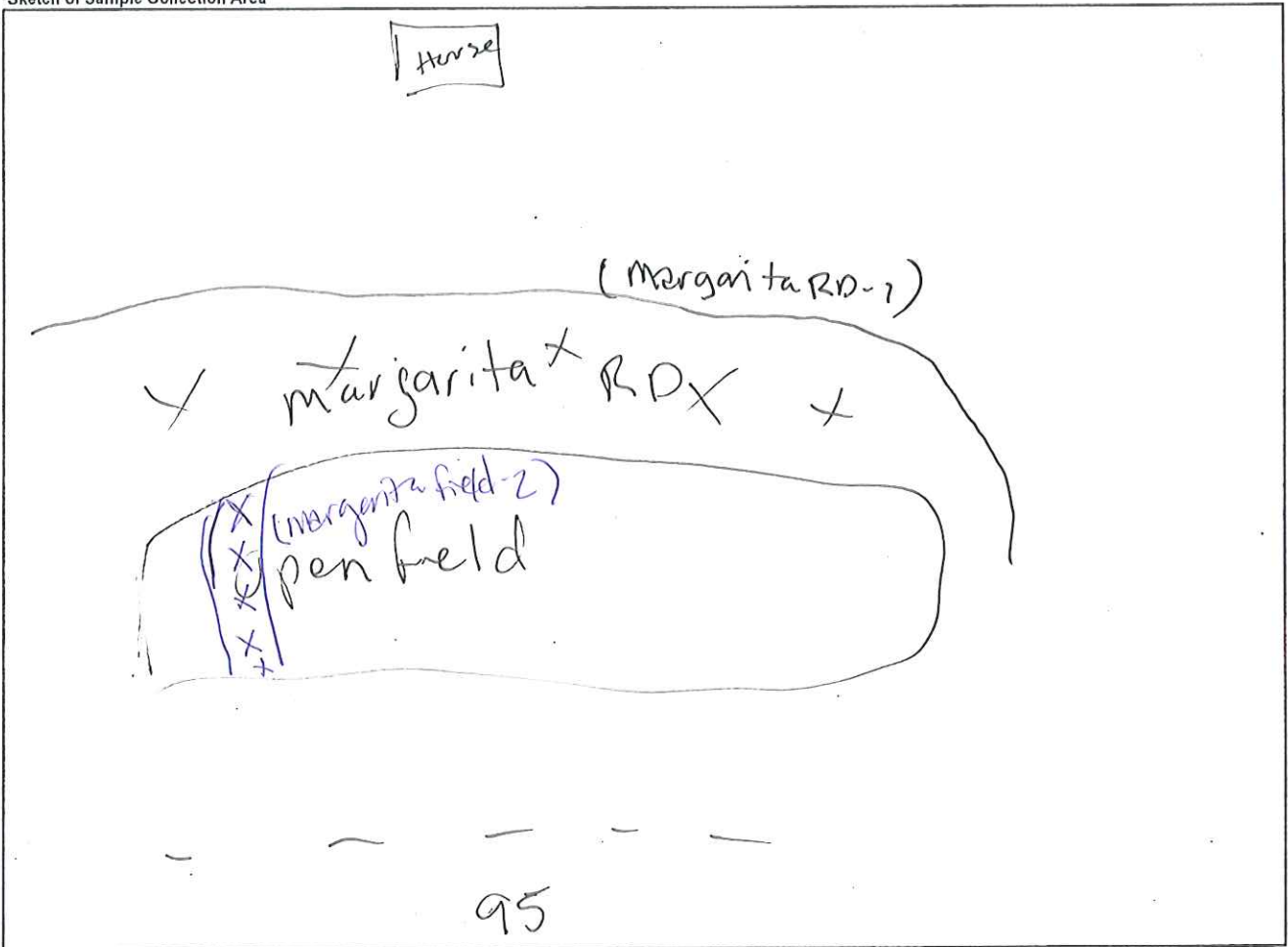
Front Yard Sample Coor. _____

Back Yard Sample Coor. _____

Additional Coor. (Explain) _____

Photographs: 100-2457 - Margarita Rd
(# and Description) 100-2458 - Margarita Field-2

Sketch of Sample Collection Area



Notes/Comments: _____

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 11 JUN 12 / 16 24

Back Yard Sample Coord. _____

Sampler(s): NE

Additional Coord. (Explain) _____

Sample Collection Address

145 BUCKSKIN RD

Photographs:

(# and Description)

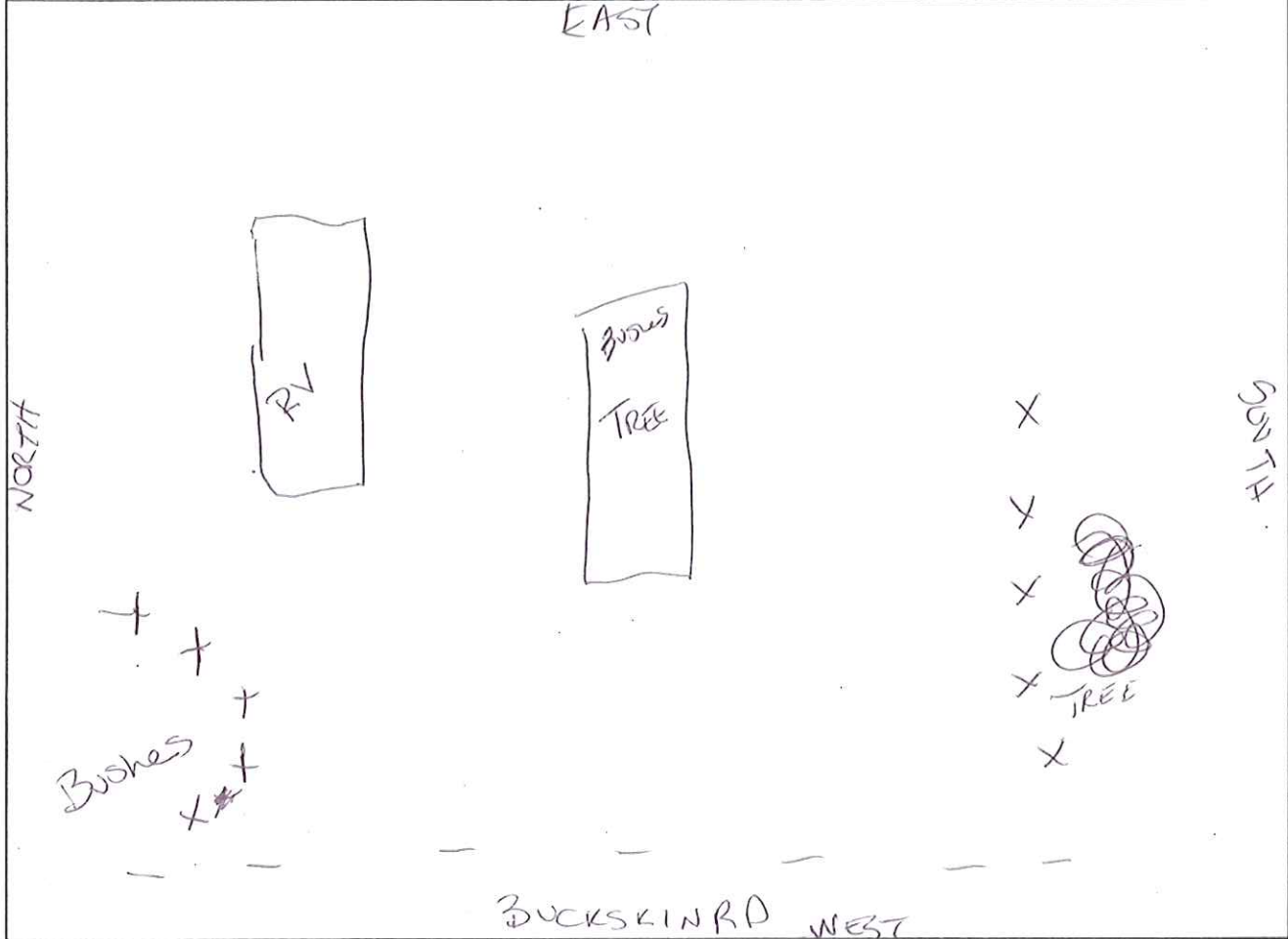
100-2359 - FIRST SAMPLE AREA NW

100-2360 - FIRST SAMPLE AREA N.W

100-2361 - SECOND SAMPLE AREA SOUTH SIDE

100-2362 - SECOND SAMPLE AREA SOUTH SIDE

Sketch of Sample Collection Area



Notes/Comments:

X - SAMPLE LOCATION

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 13 JUN 12 / 1336

Back Yard Sample Coord. _____

Sampler(s): NE

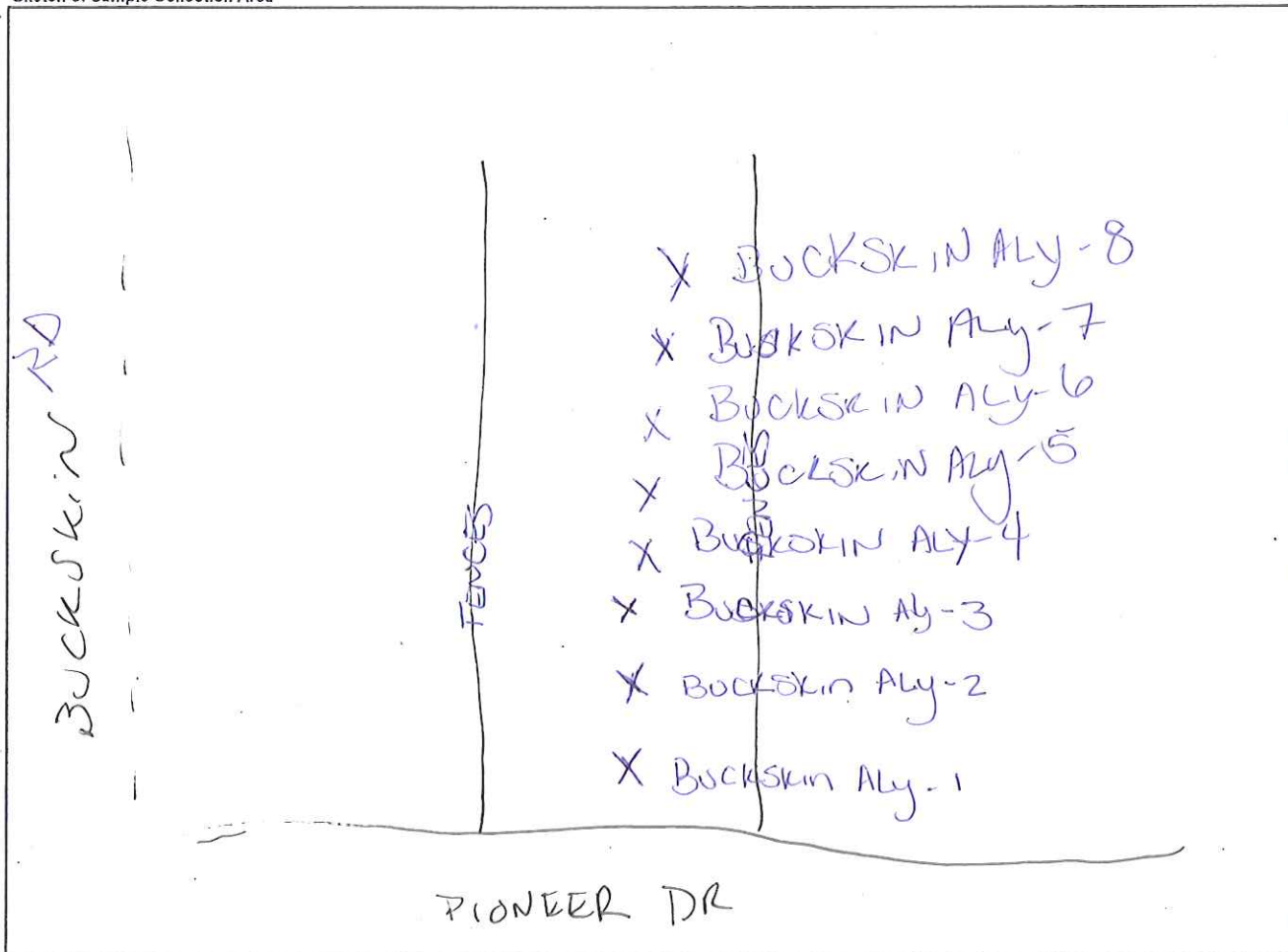
Additional Coord. (Explain) _____

Photographs: 100-2449-Buckskin alley
(# and Description)

Sample Collection Address

BUCKSKIN ALLEY - 1-

Sketch of Sample Collection Area



Notes/Comments:

1 sample every 80 ft

Site Name: McDermitt Residential Sampling

Front Yard Sample Coor. _____

Date/Time: 13 JUN 12 / 1418

Back Yard Sample Coor. _____

Sampler(s): _____

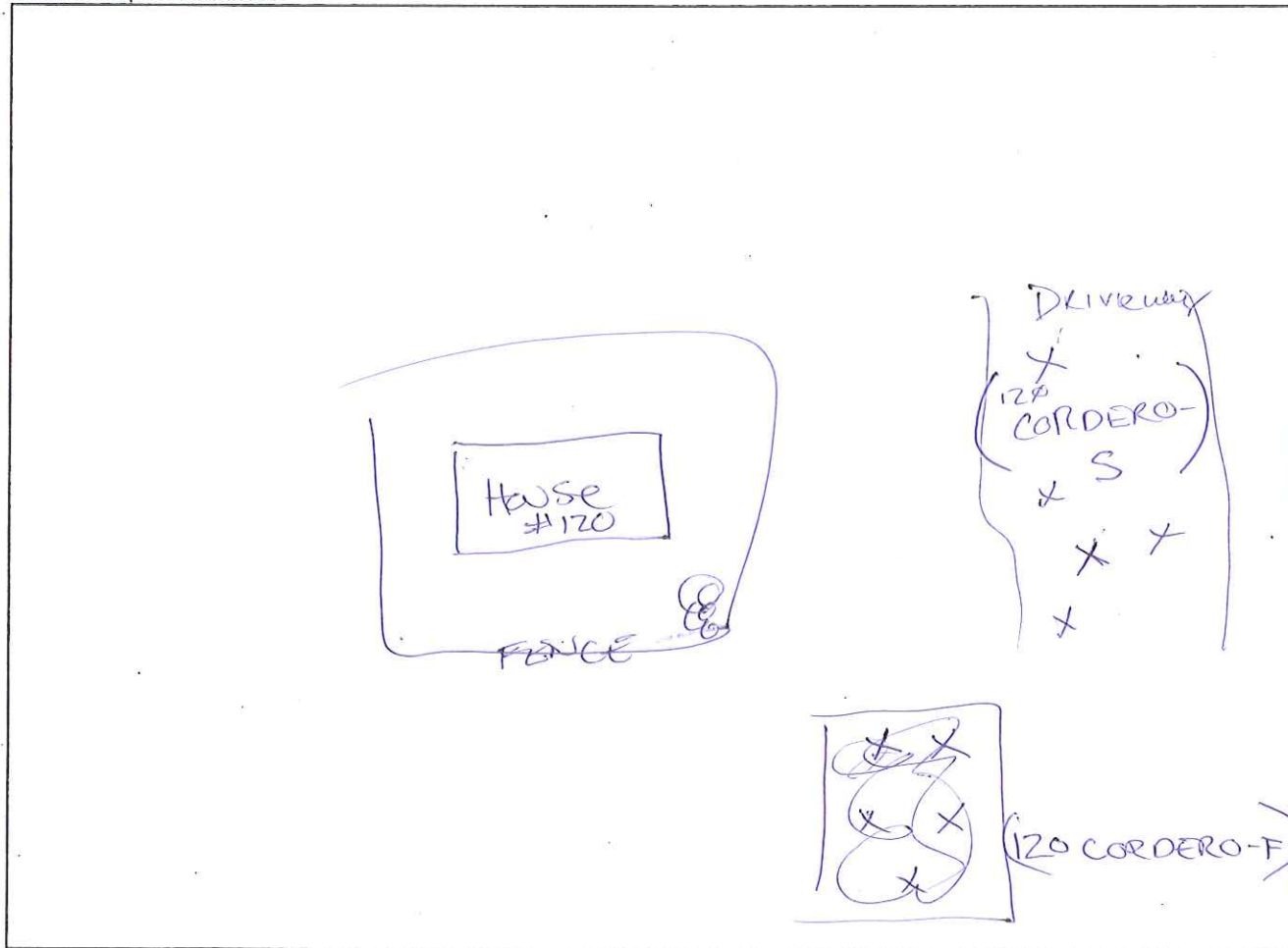
Additional Coor. (Explain) _____

Sample Collection Address

120 CORDERO RD

Photographs: 100-2455 - sample outside near the ("driveway")
(# and Description)

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 13 JUN 12

Back Yard Sample Coord. _____

Sampler(s): WE

Additional Coord. (Explain) _____

Sample Collection Address

90 CORDERO RD.

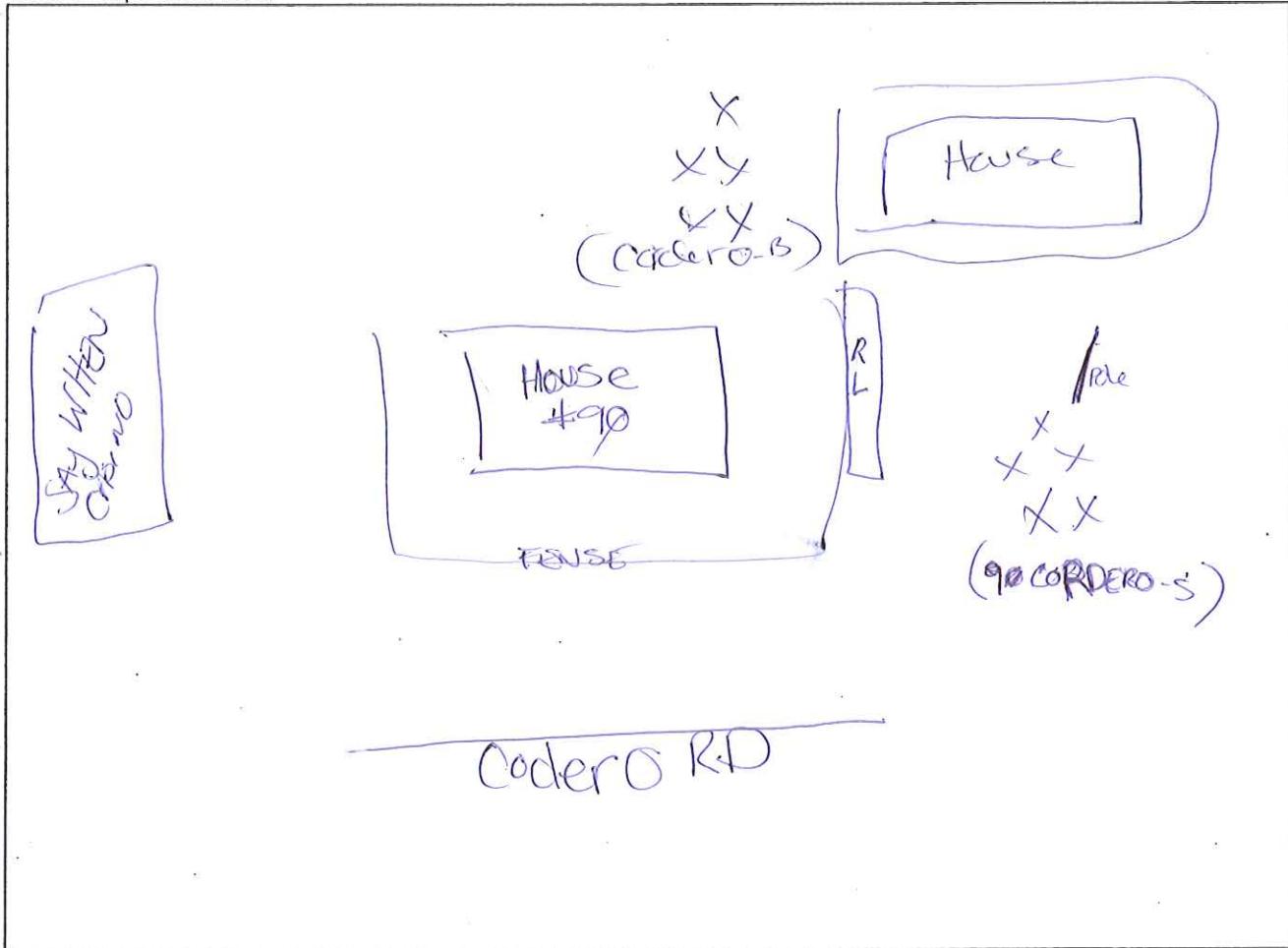
Photographs:

100-2449 (90 CORDERO-S) sample

(# and Description)

100-2450 (90 CORDERO-B) sample

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 13 JUN 12 / 1430

Back Yard Sample Coord. _____

Sampler(s): NE

Additional Coord. (Explain) _____

Photographs: _____

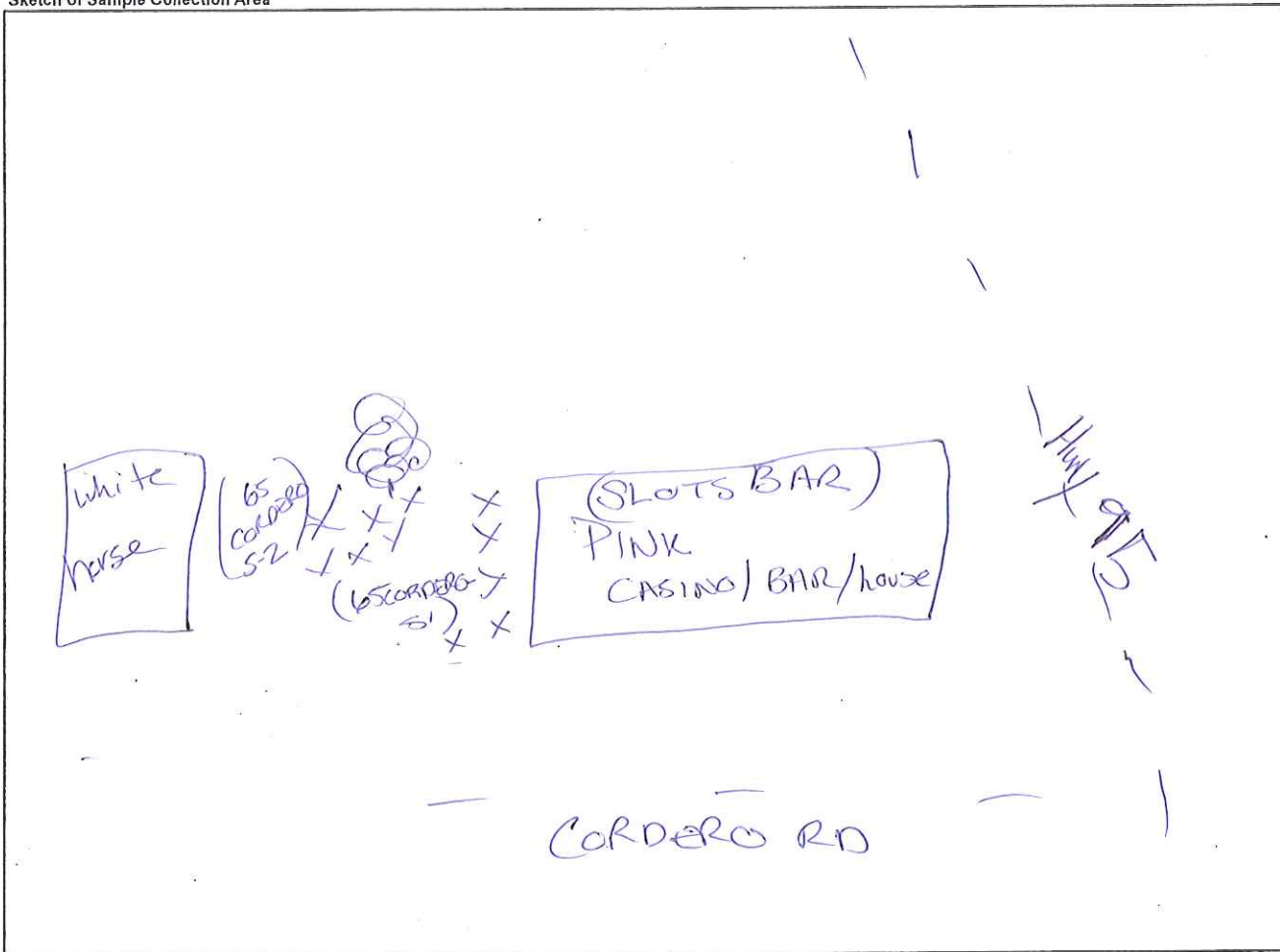
(# and Description)

Sample Collection Address

65 CORDERO RD (OREGON)

100-2453 - SIDE location
Next to casino where samples
were taken

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coor. _____

Date/Time: 13 JUN 12 / 1520

Back Yard Sample Coor. _____

Sampler(s): NE

Additional Coor. (Explain) _____

Photographs: _____

100-54 SIDE OF BUILDING

Sample Collection Address

9707 Hwy 95

(# and Description)

Sketch of Sample Collection Area

WEST

(9707 Hwy 95-S)

DRIVEWAY

X
X
X
X
X

Border
Line trees

Hwy 95

N

Notes/Comments:

E

Site Name: McDermitt Residential Sampling

Front Yard Sample Coor. _____

Date/Time: 12 JUN 12 / 0921

Back Yard Sample Coor. _____

Sampler(s): NE

Additional Coor. (Explain) _____

Sample Collection Address

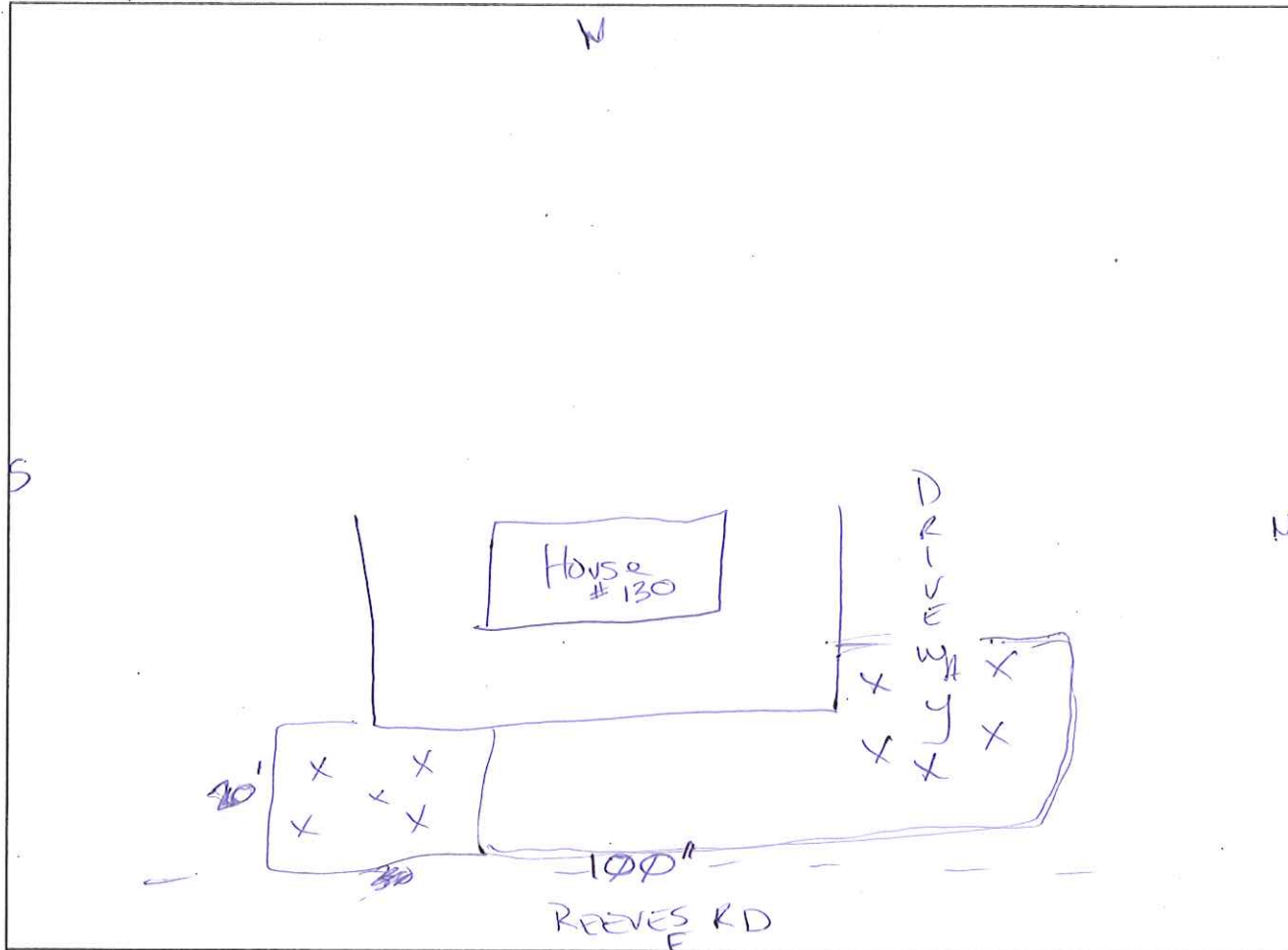
130 REEVES RD

Photographs:

100-2377 - FRONT 01 SOUTH EAST

(# and Description) 100-2378 - FRONT 02 NORTH EAST

Sketch of Sample Collection Area



Notes/Comments:

$$\text{AREA} = 100' \times 20'$$

X = SAMPLE APPROX.

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 12 JUN 12

Back Yard Sample Coord. _____

Sampler(s): _____

Additional Coord. (Explain) _____

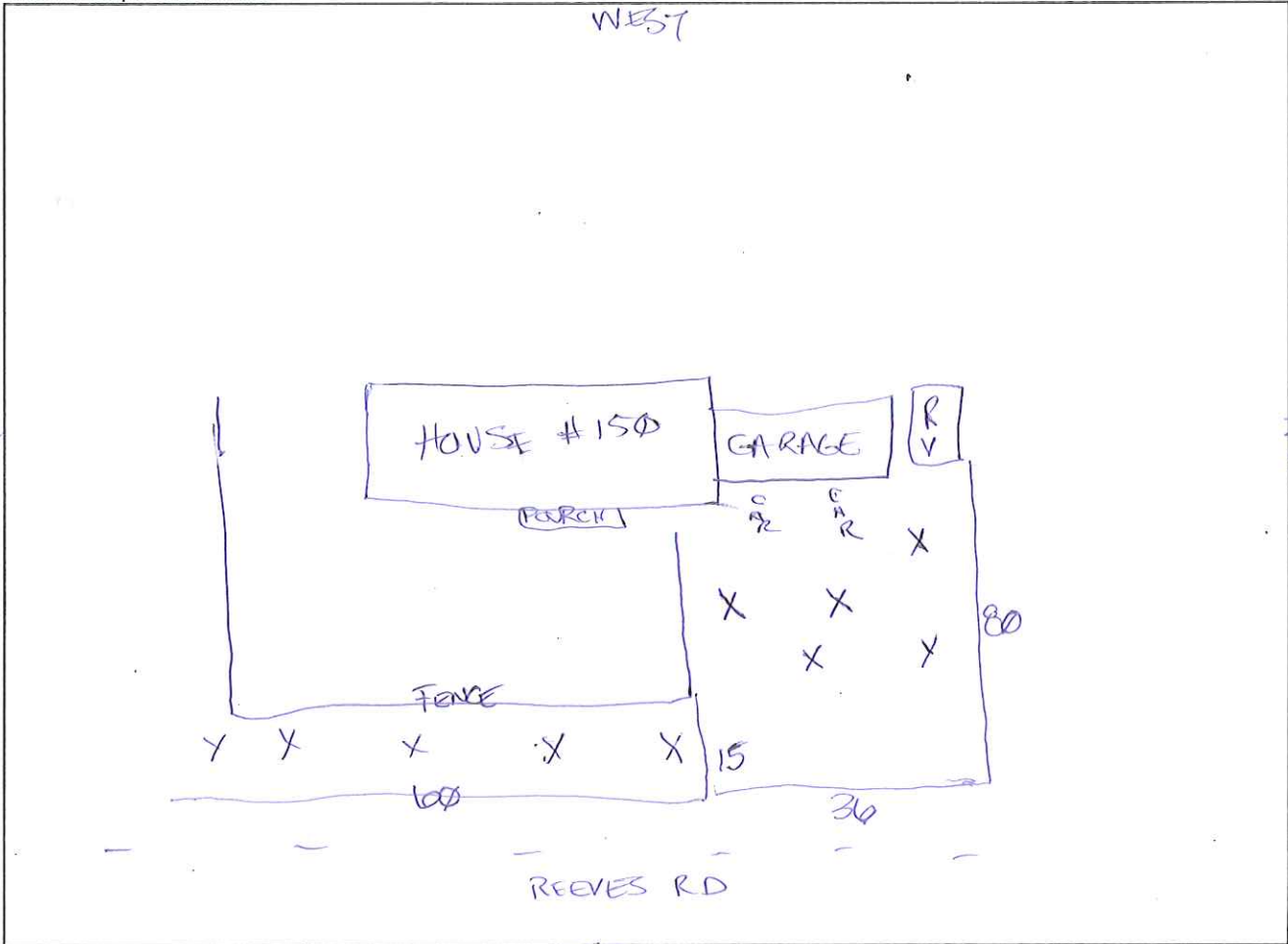
Sample Collection Address

150 REEVES RD

Photographs: 100-2379- F1 (EAST) FRONT yard By RD. INTERVIEW
OF ORTE.

(# and Description) 100-2380- DRIVEWAY - 30X80 (DR01)

Sketch of Sample Collection Area



Notes/Comments:

WEST

Site Name: McDermitt Residential Sampling

Front Yard Sample Coor. _____

Date/Time: 12 JUN 12 / 9:45

Back Yard Sample Coor. _____

Sampler(s): KE

Additional Coor. (Explain) _____

Sample Collection Address

145 REEVES RD

Photographs:

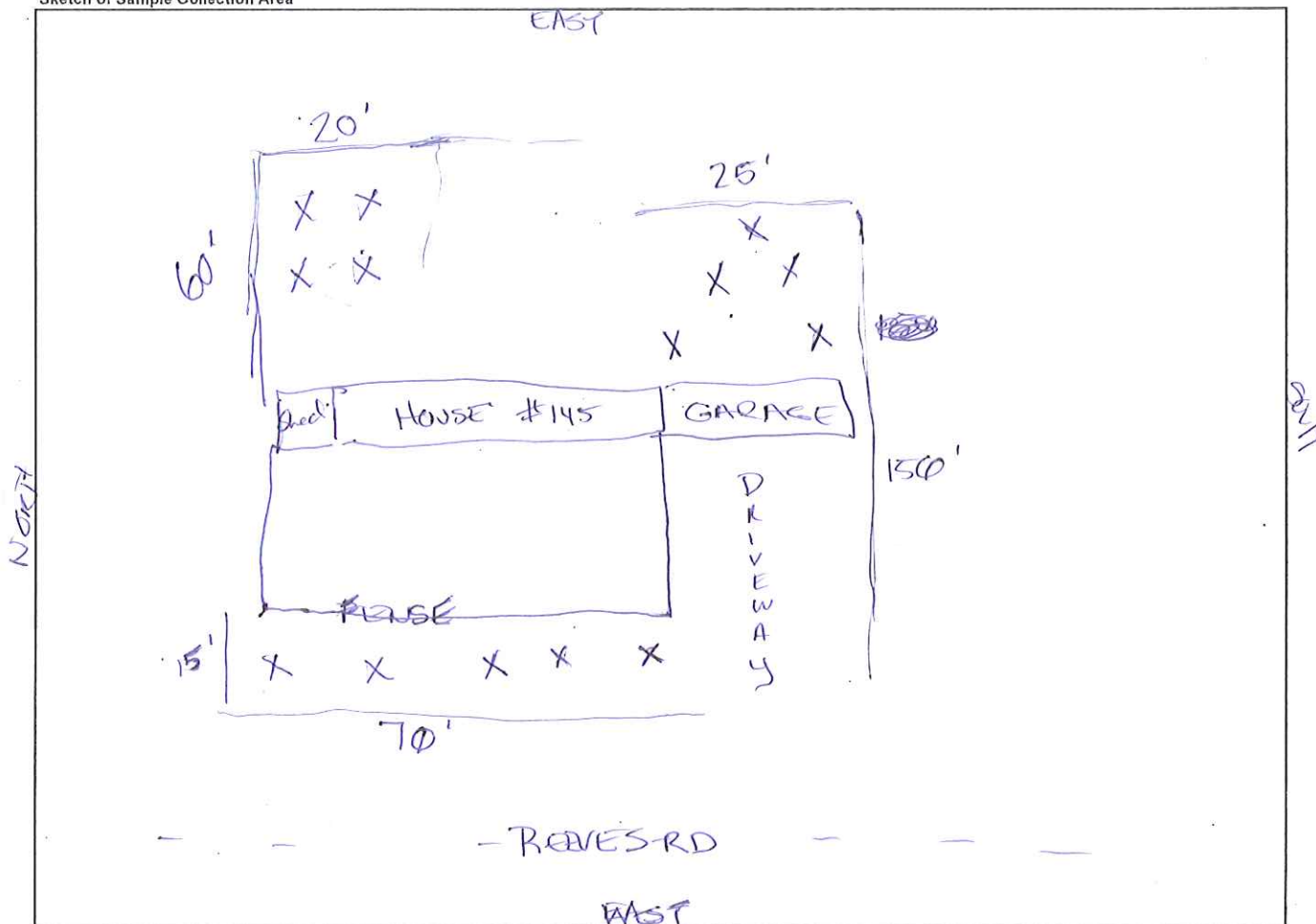
(# and Description)

100-2381 - Front Sample

100-2382 - Backyard, Behind GARAGE, (PRD)

100-2389 - Play area in Backyard

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 12 JUN 12 / 10

Back Yard Sample Coord. _____

Sampler(s): NE

Additional Coord. (Explain) _____

Photographs: _____

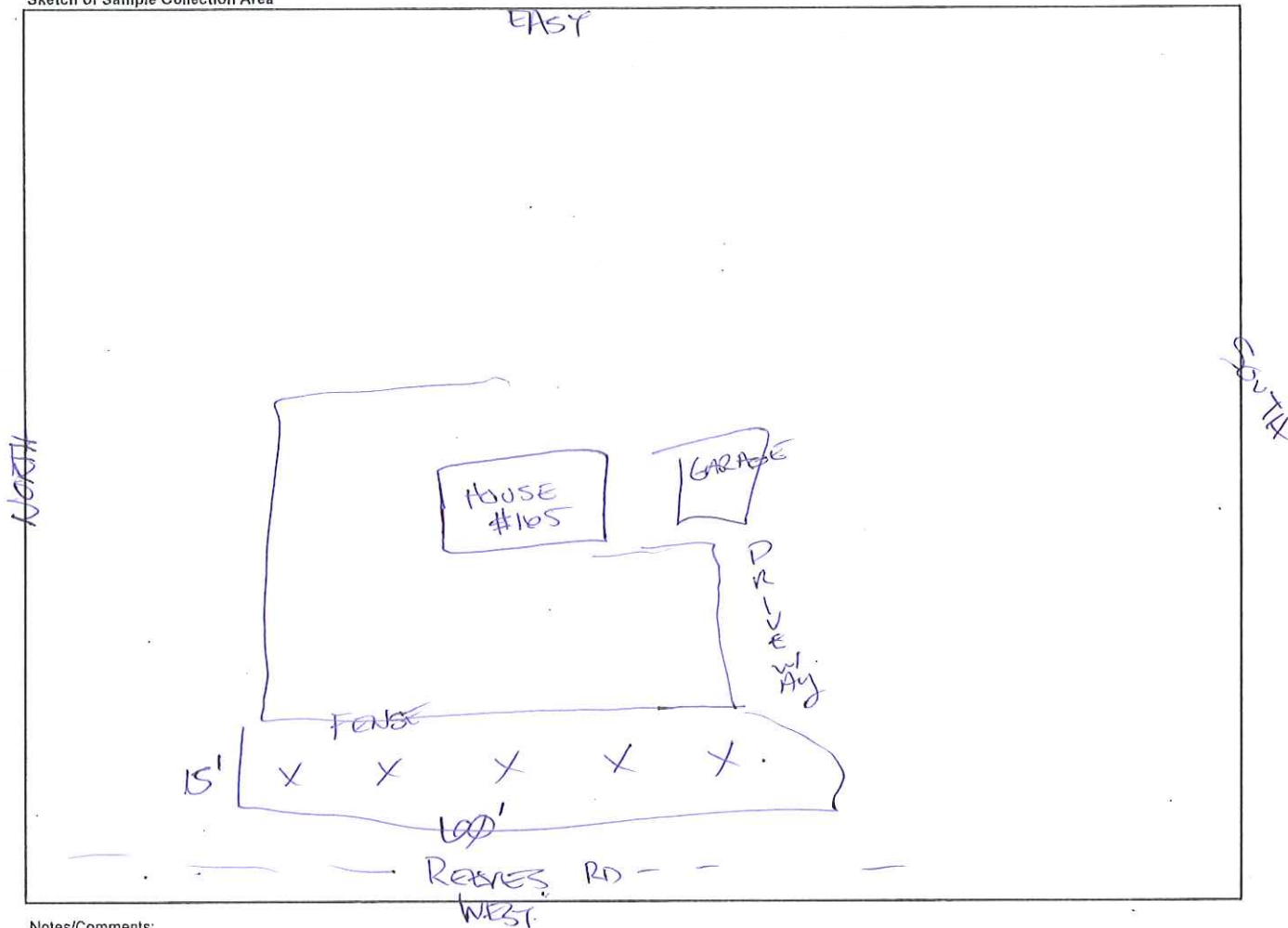
100-2383 - Front Yard NEAR ROAD
INTERSECTION FENCE Sample location

Sample Collection Address

1105 REEVES RD

(# and Description)

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Date/Time: 12 JUN 12 / 1010

Sampler(s): NE

Front Yard Sample Coord. _____

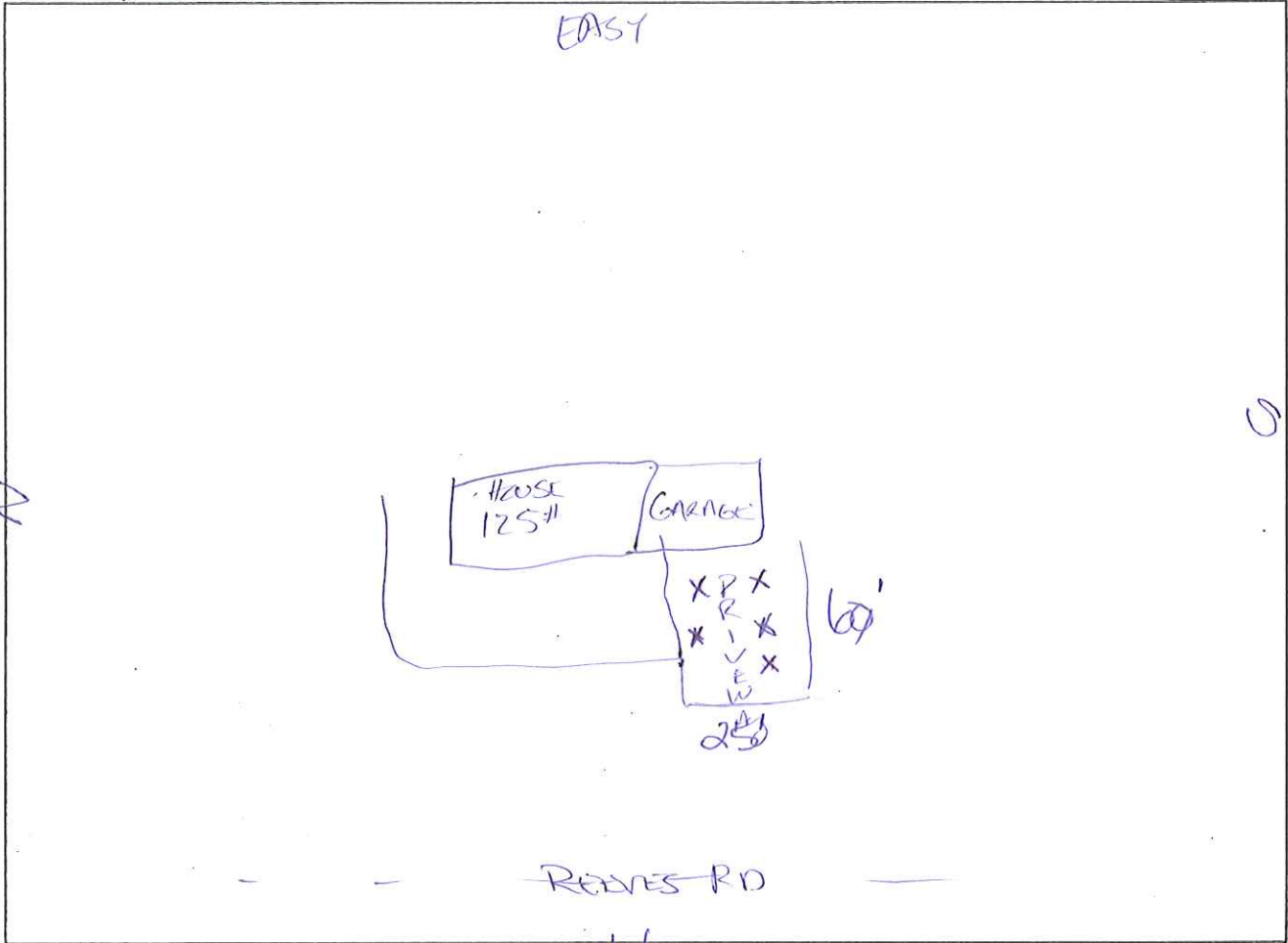
Back Yard Sample Coord. _____

Additional Coord. (Explain) _____

Sample Collection Address
125 REEVES RD

Photographs: 100-234-DRIVEWAY sample location
(# and Description)

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 12 JUN 12 / 1015

Back Yard Sample Coord. _____

Sampler(s): NE

Additional Coord. (Explain) _____

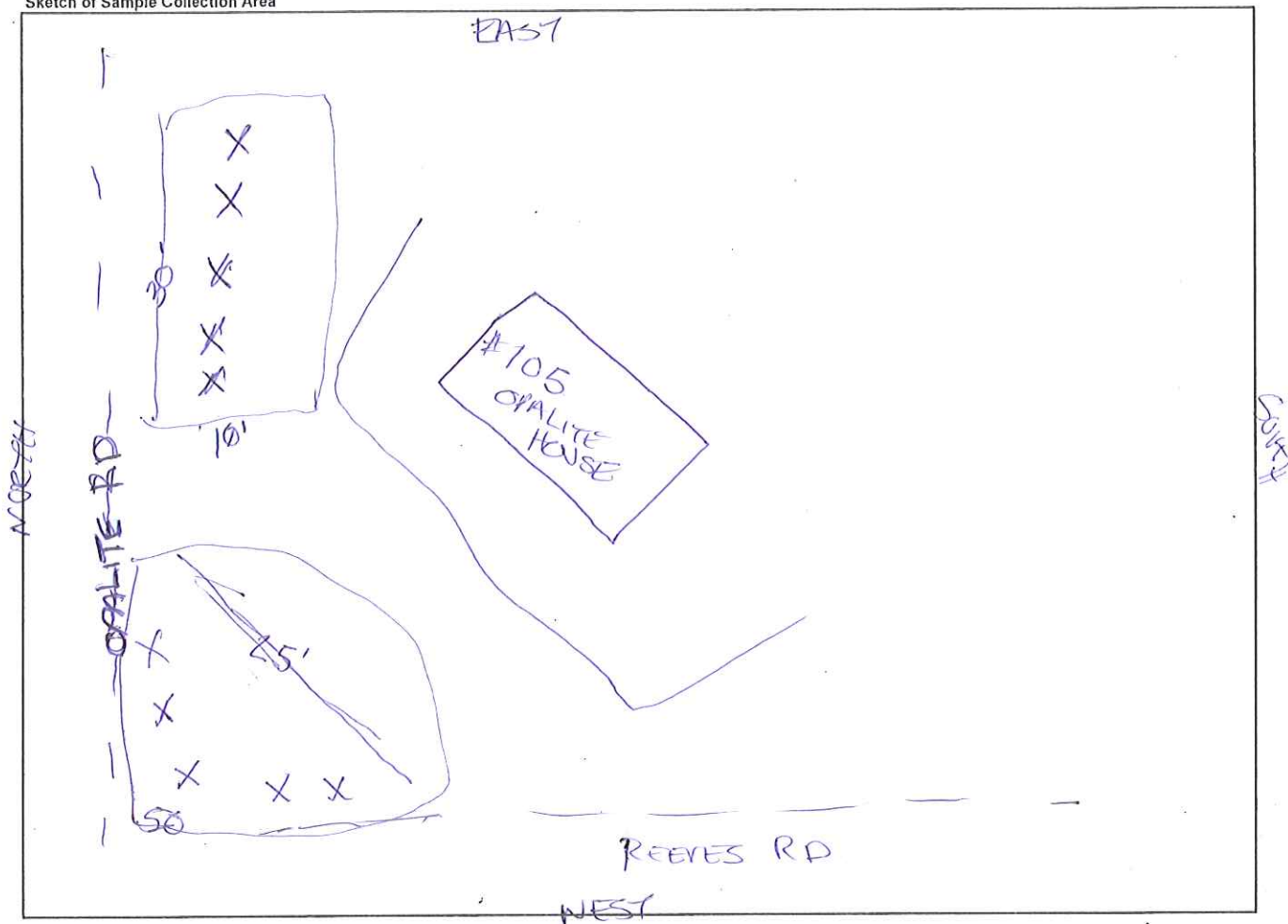
Sample Collection Address

105 OPALITE RD

Photographs: 100-2385 - CORNER OF OPALITE AND REEVES

(# and Description) 100-2386 - ALONG ROADSIDE OF OPALITE

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Date/Time: 12/30/12 / 1509

Sampler(s): NE

Front Yard Sample Coord. _____

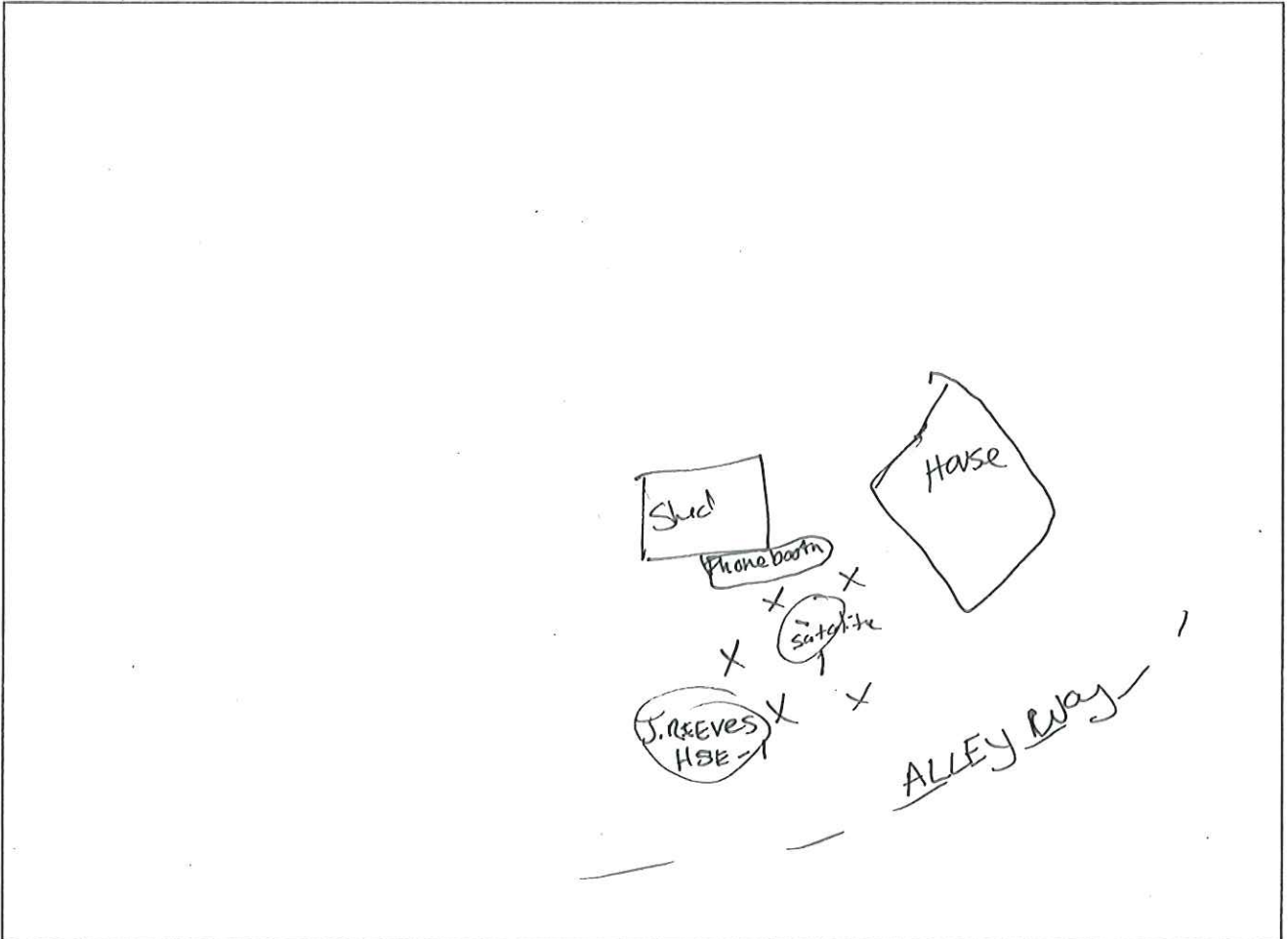
Back Yard Sample Coord. _____

Additional Coord. (Explain) _____

Sample Collection Address
J. REEVES HSE-1

Photographs: 106-24060 - FRONT YARD of J. REEVES
(# and Description) House near satellite

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Date/Time: 12 JUN 12 / 1458

Sampler(s): NE

Front Yard Sample Coord. _____

Back Yard Sample Coord. _____

Additional Coord. (Explain) _____

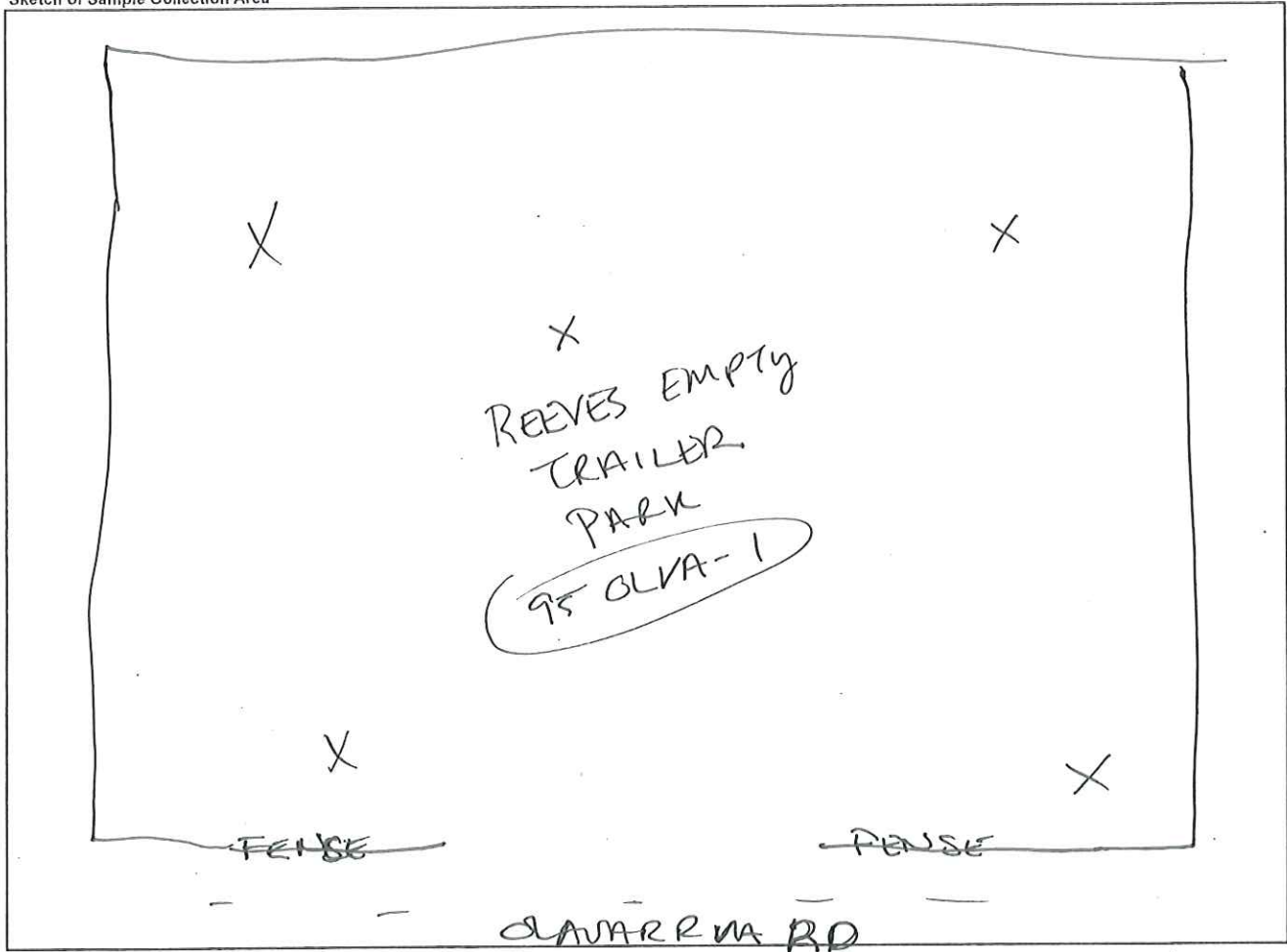
Photographs: 100-2404- Rv Site

Sample Collection Address

98 OLAVARRIA RD

(# and Description)

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Date/Time: 12 JUN 12 / 1500

Sampler(s): NE

Front Yard Sample Coord.

Back Yard Sample Coord.

Additional Coord. (Explain)

Sample Collection Address

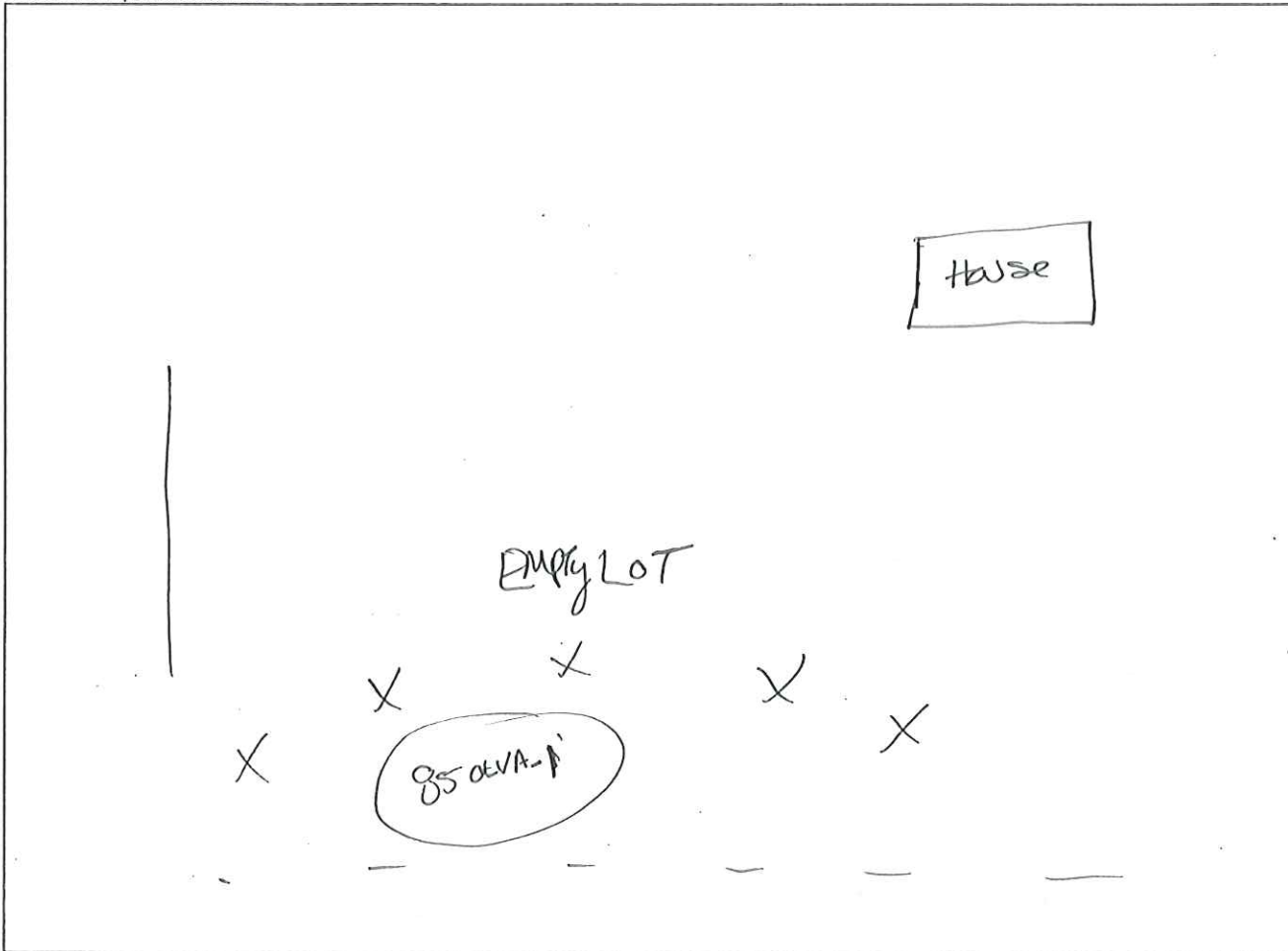
85 OLAVARRIA RD

Photographs:

(# and Description)

106-2405 - Empty Lot in Front
of House Location

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 12 JUN 12 / 1320

Back Yard Sample Coord. _____

Sampler(s): NE

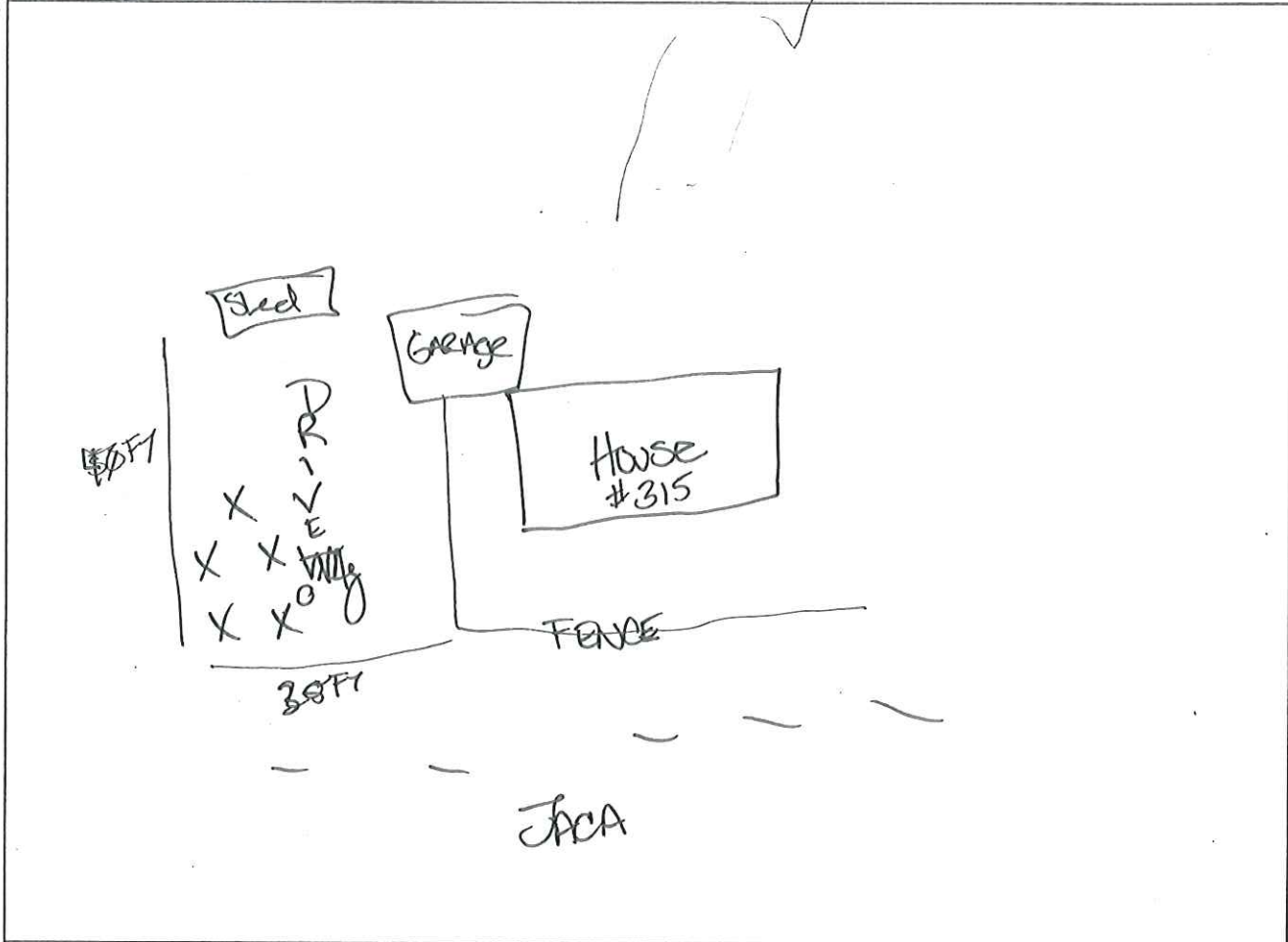
Additional Coord. (Explain) _____

Sample Collection Address

315 JACA Dr

Photographs: 100-23916 - Driveway of
(# and Description)

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coor. _____

Date/Time: 11 JUN 12 / 11003

Back Yard Sample Coor. _____

Sampler(s): NE

Additional Coor. (Explain) _____

Sample Collection Address

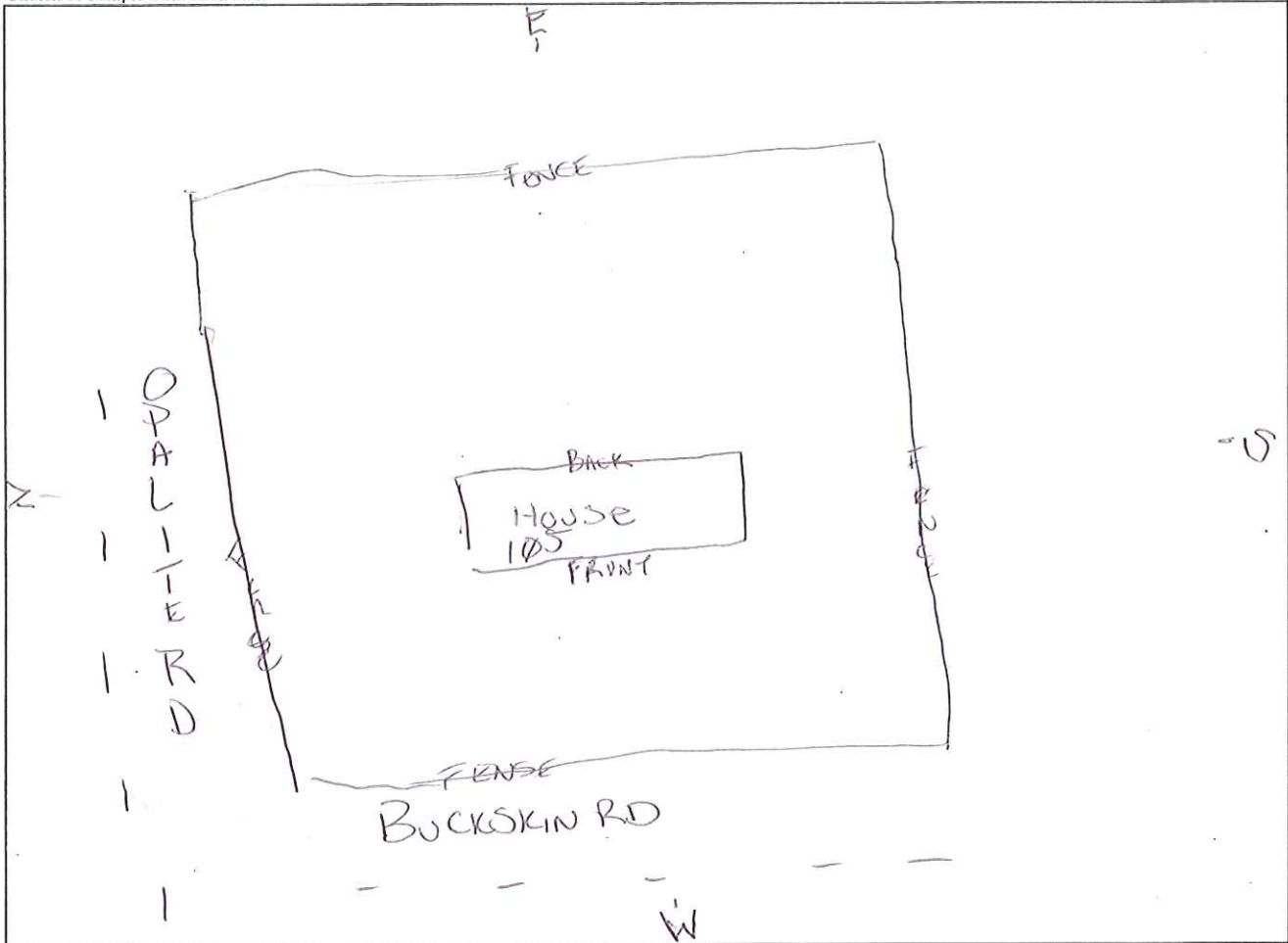
105 BUCKSKIN RD

Photographs:

(# and Description)

100-2355 - AREA OF FIRST SAMPLES
BACK YARD EAST SIDE
100-2356 - BACK YARD SAMPLES

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coor.

Red

Date/Time: 11 JUN 12 / 1619

Back Yard Sample Coor.

Sampler(s): NE

Additional Coor. (Explain)

Sample Collection Address

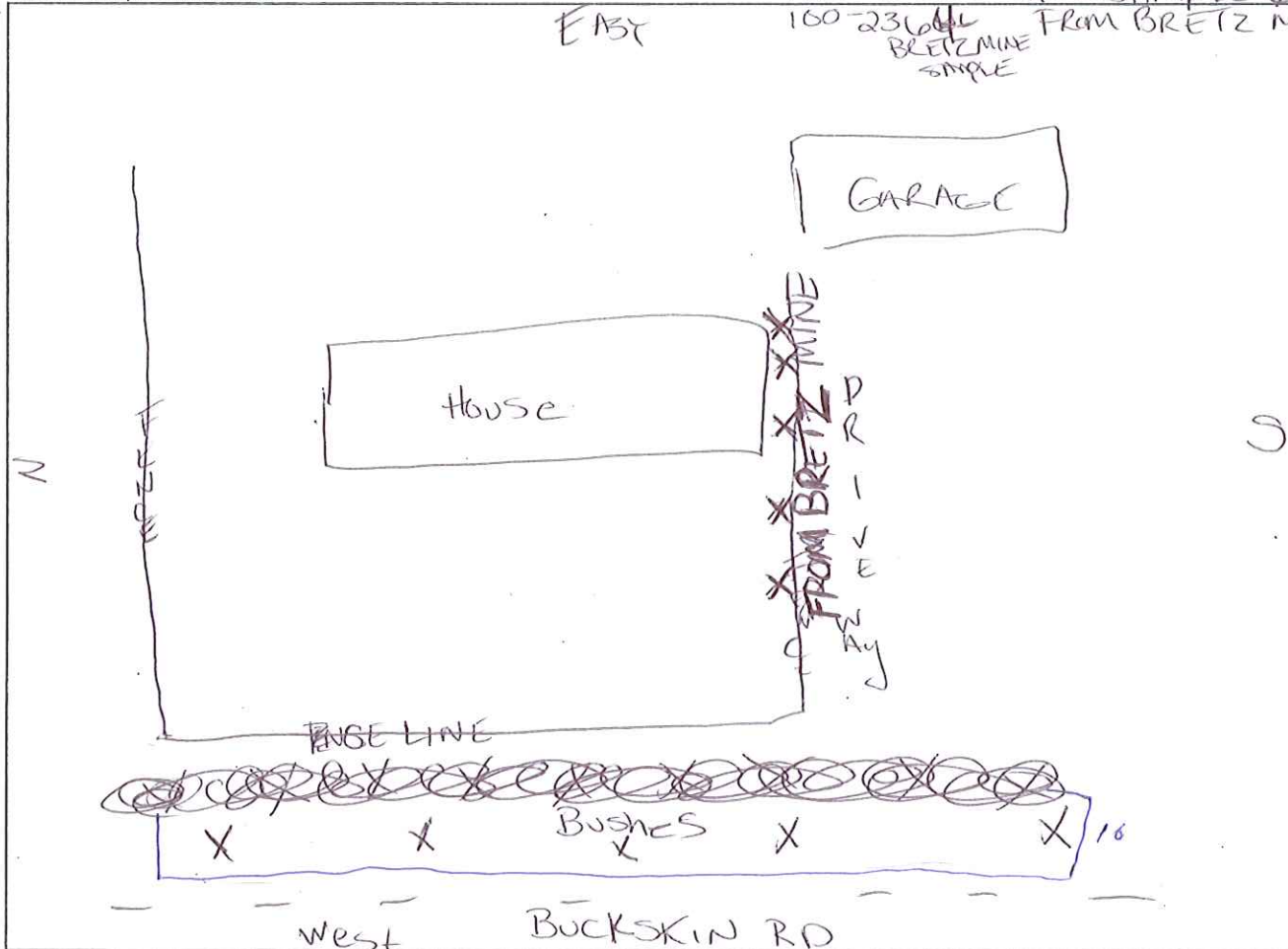
125 BUCKSKIN RD

Photographs:

(# and Description)

100-2357 - FRONT YARD NEAR ROAD AND IN FRONT OF Bushes
100-2358 - FRONT YARD - DISAMP
100-2363 - Side SAMPLE 02
100-2364 - FROM BRETZ MINE
BRETZ MINE
SAMPLE

Sketch of Sample Collection Area



Notes/Comments:

X - SAMPLE

2ND SAMPLE LOCATION - WHITE IN COLOR FROM BRETZ MINE

Site Name: McDermitt Residential Sampling

Date/Time: 11 JUN 12 / 1641

Sampler(s): NE

Front Yard Sample Coor. _____

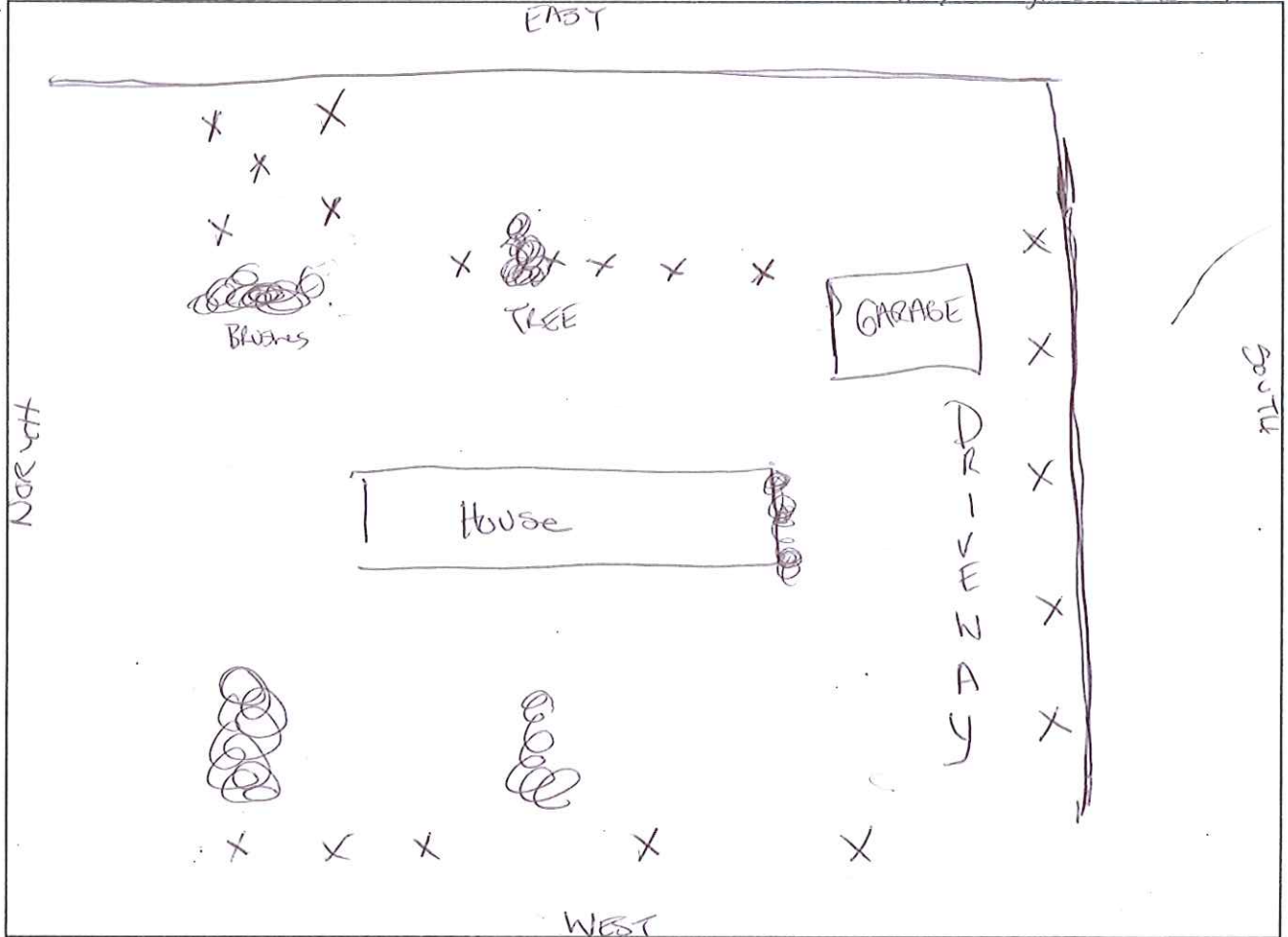
Back Yard Sample Coor. _____

Additional Coor. (Explain) _____

Sample Collection Address
165 BUCKSKIN RD

Photographs: 100-2366 } FRONT YARD SAMPLES NEAR RD
100-2367 }
(# and Description) 100-2368 - Side yard south side NEAR GARAGE
ALONG DRIVEWAY
100-2369 (6) BACKYARD - NEAR GARAGE - SOUTH SIDE
100-2370 (6) BACKYARD - Second sample near trailers on next lot NORTH SIDE

Sketch of Sample Collection Area



Notes/Comments:

NOT TO SCALE

Site Name: McDermitt Residential Sampling

Front Yard Sample Coor. _____

Date/Time: _____

Back Yard Sample Coor. _____

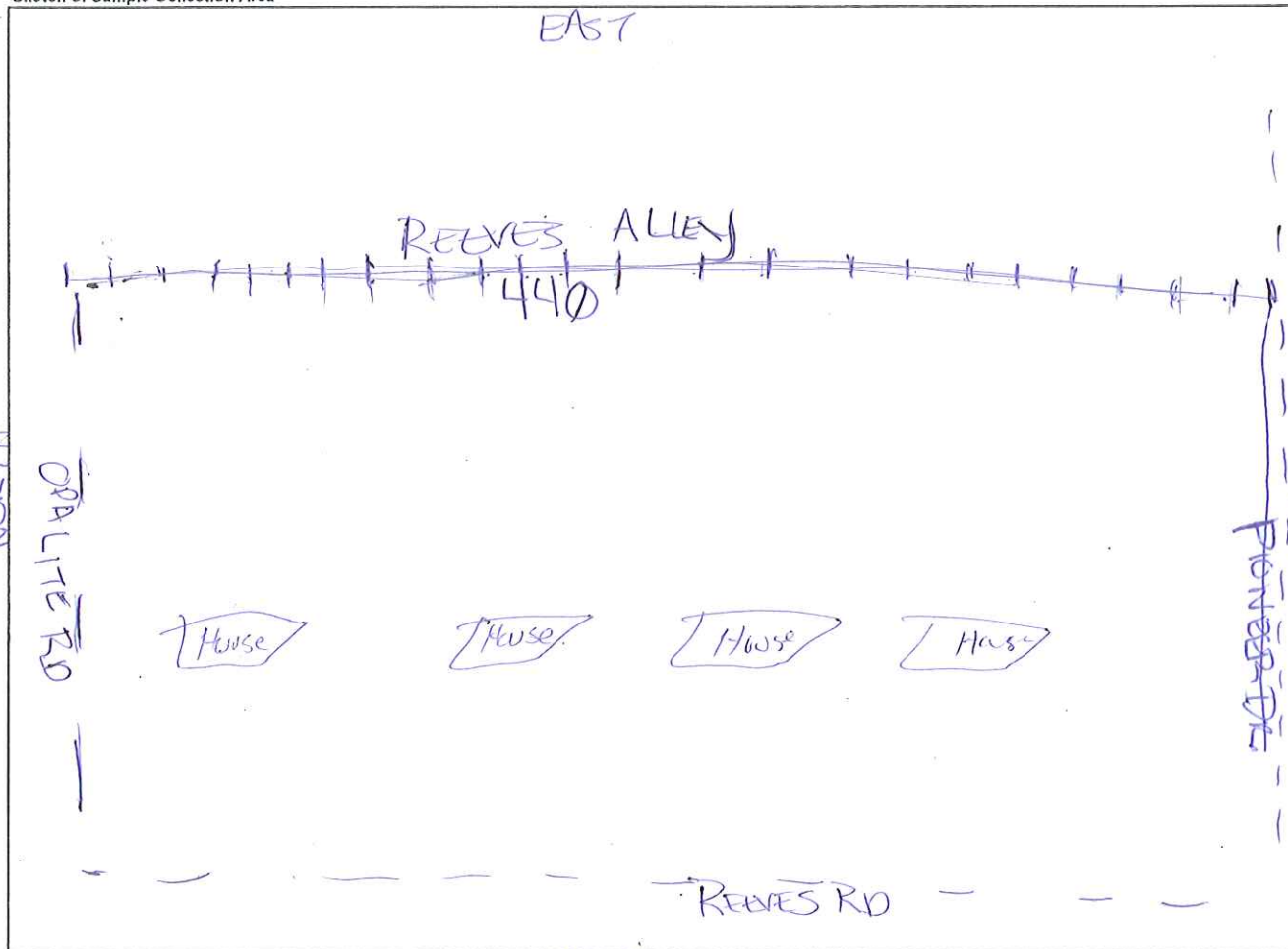
Sampler(s): _____

Additional Coor. (Explain) _____

Sample Collection Address _____

Photographs: 100-2387: picture from corner of
OPALITE RD AND REEVES ALE
(# and Description) 100-2388: REEVES ALE Sample locations

Sketch of Sample Collection Area



Notes/Comments:

WEST

EVERY 20 FT 05 SAMPLES TOTAL 22 SAMPLES
TAKEN AT

* Changed to every 100 FT AFTER SAMPLE 09

Site Name: McDermitt Residential Sampling

Date/Time: 12 JUN 12 / 1300

Sampler(s): NE

Front Yard Sample Coor. _____

Back Yard Sample Coor. _____

Additional Coor. (Explain) _____

Sample Collection Address

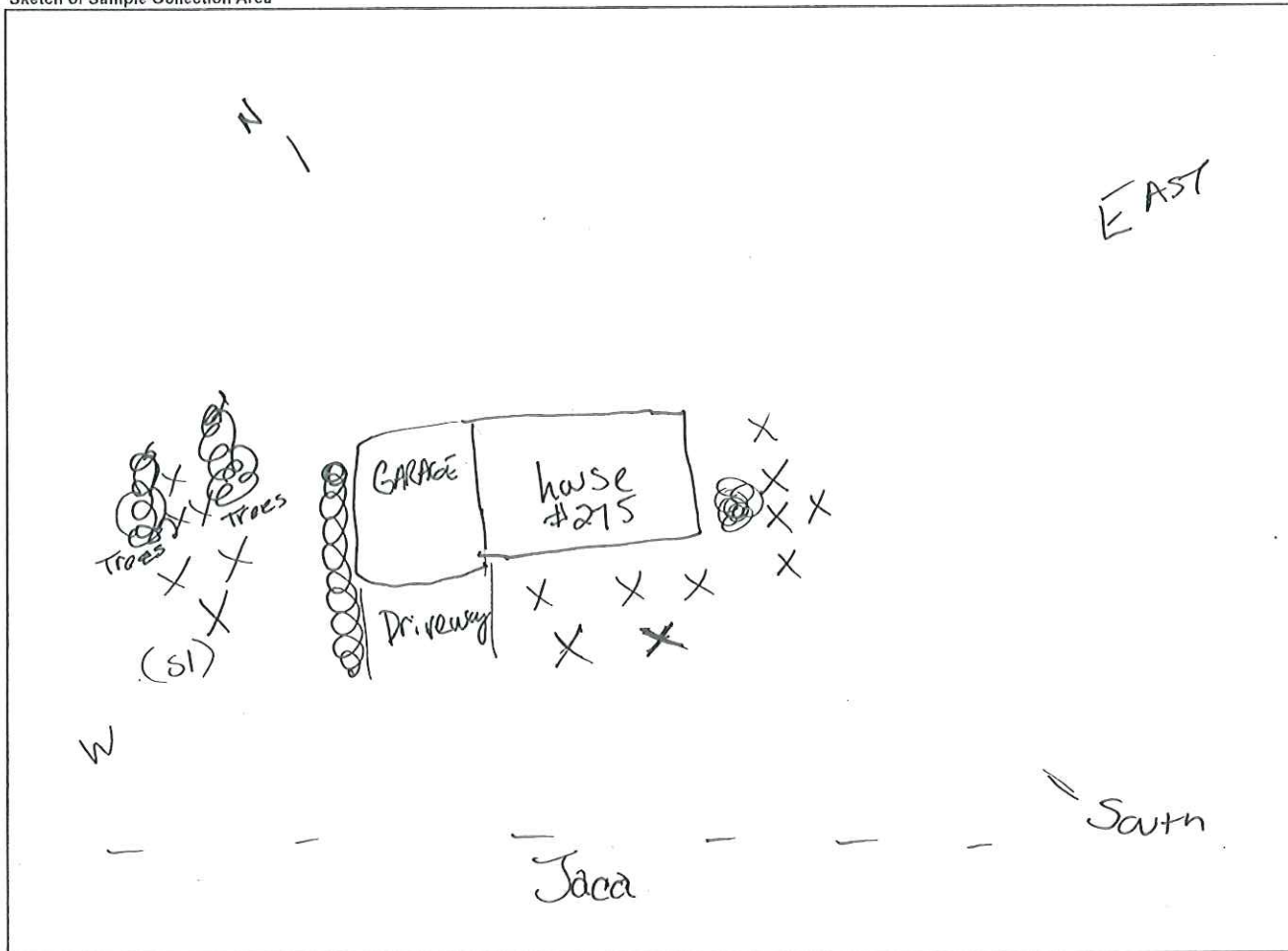
275 JACA

Photographs: 100-2392 - Front YARD (F1)

(# and Description) 100-2393 - side yard (S1)

100-2394 - side yard (S2)

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Date/Time: 12 JUN 12 / 1125

Sampler(s): NE

Front Yard Sample Coord. _____

Back Yard Sample Coord. _____

Additional Coord. (Explain) _____

Sample Collection Address

215 REEVES RD

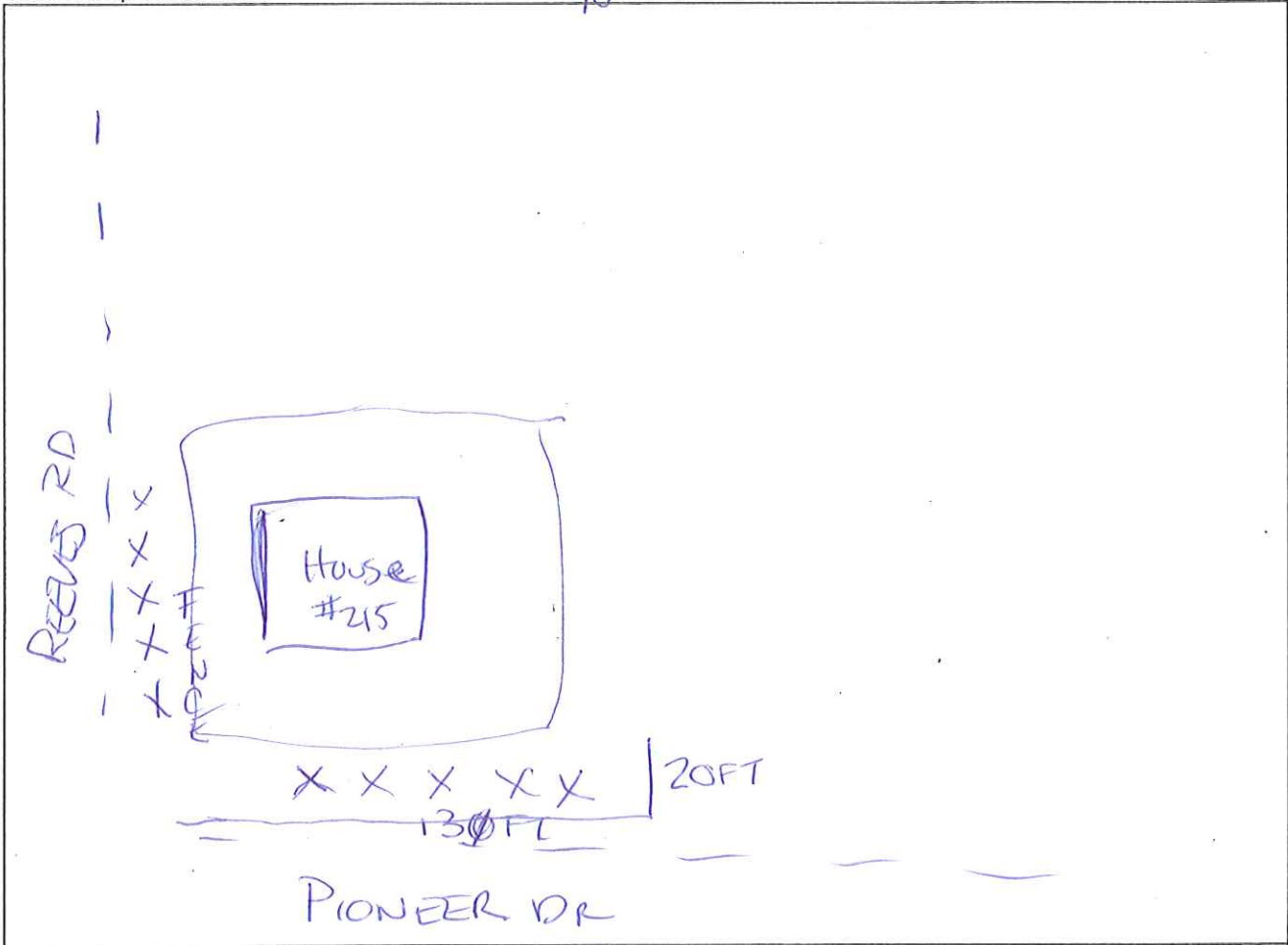
Photographs:

100-2390 - SIDE OF HOUSE ON PIONEER

(# and Description)

100-2391 - FRONT YARD REEVES RD

Sketch of Sample Collection Area



Notes/Comments:

S

Site Name: McDermitt Residential Sampling

Date/Time: 12 JUN 12 / 1315

Sampler(s): NE

Front Yard Sample Coord. _____

Back Yard Sample Coord. _____

Additional Coord. (Explain) _____

Photographs: _____

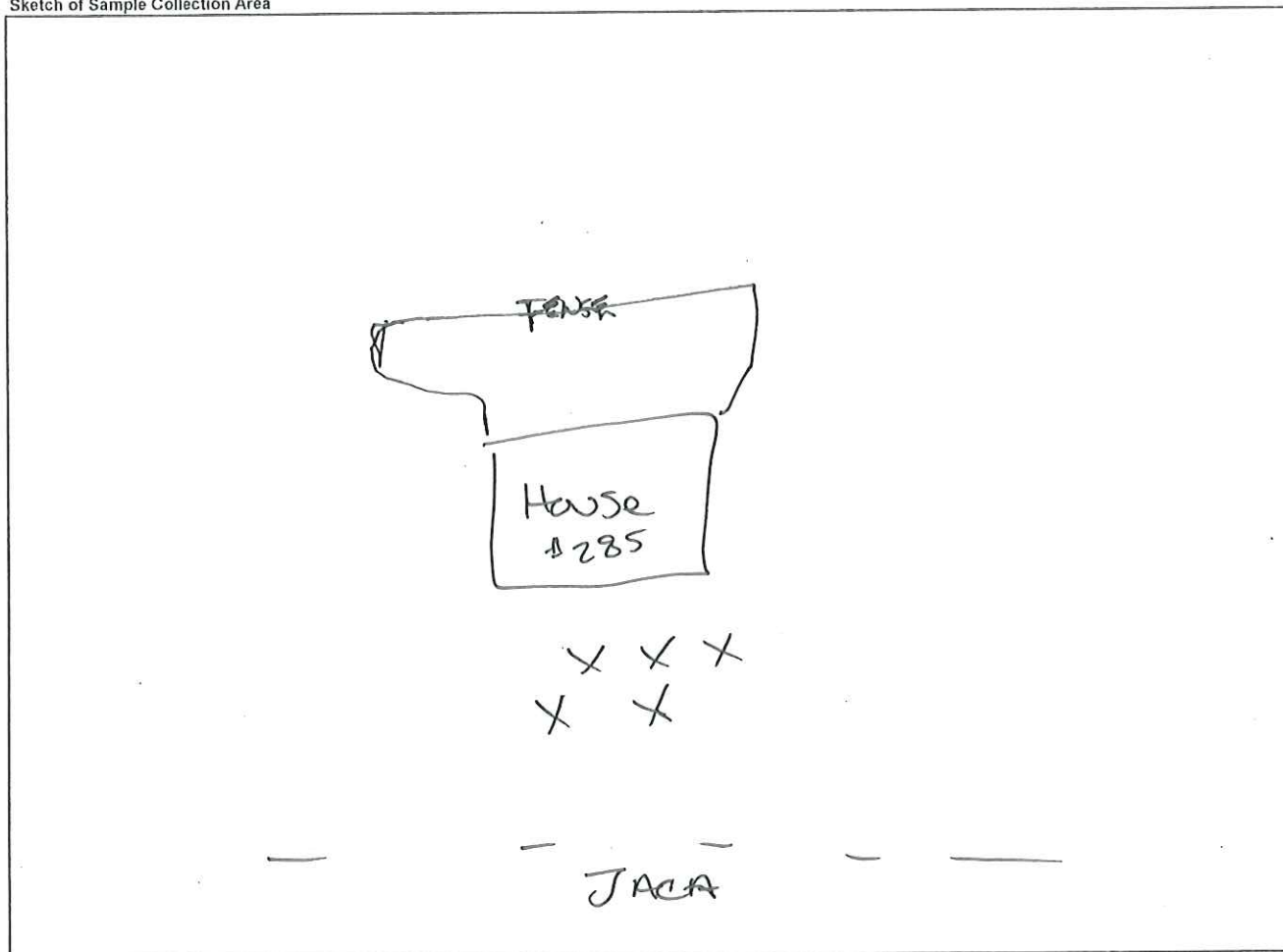
100-2395-FRONT YARD

Sample Collection Address

285 JACA

(# and Description)

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Date/Time: 12 JUN 12 / 1327

Sampler(s): NE

Front Yard Sample Coor. _____

Back Yard Sample Coor. _____

Additional Coor. (Explain) _____

Sample Collection Address

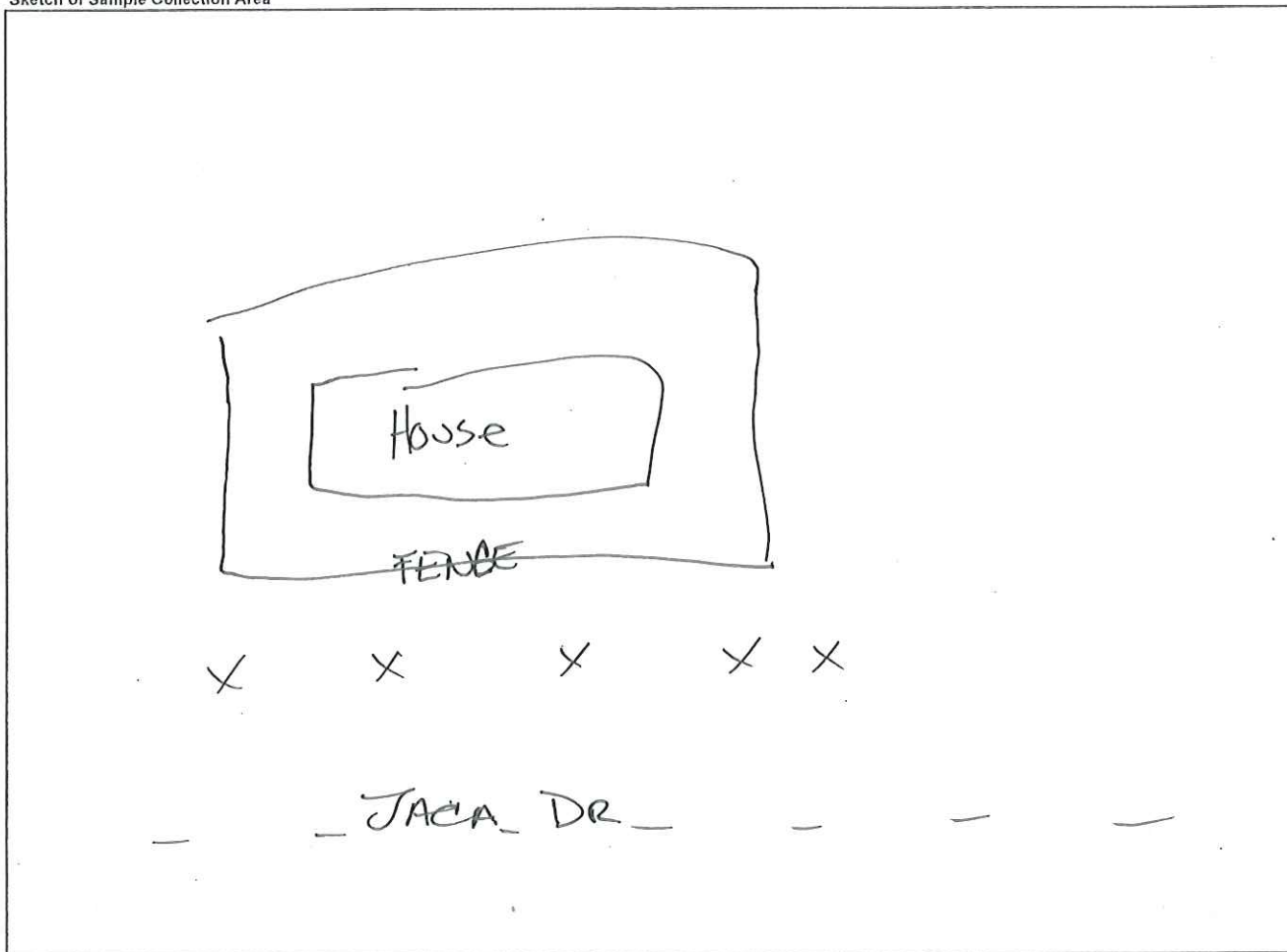
32.5 JACA Dr

Photographs:

100-2397 - FRONT YARD NEAR ROAD.

(# and Description)

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 12 JUN 12 / 1330

Back Yard Sample Coord. _____

Sampler(s): NE

Additional Coord. (Explain) _____

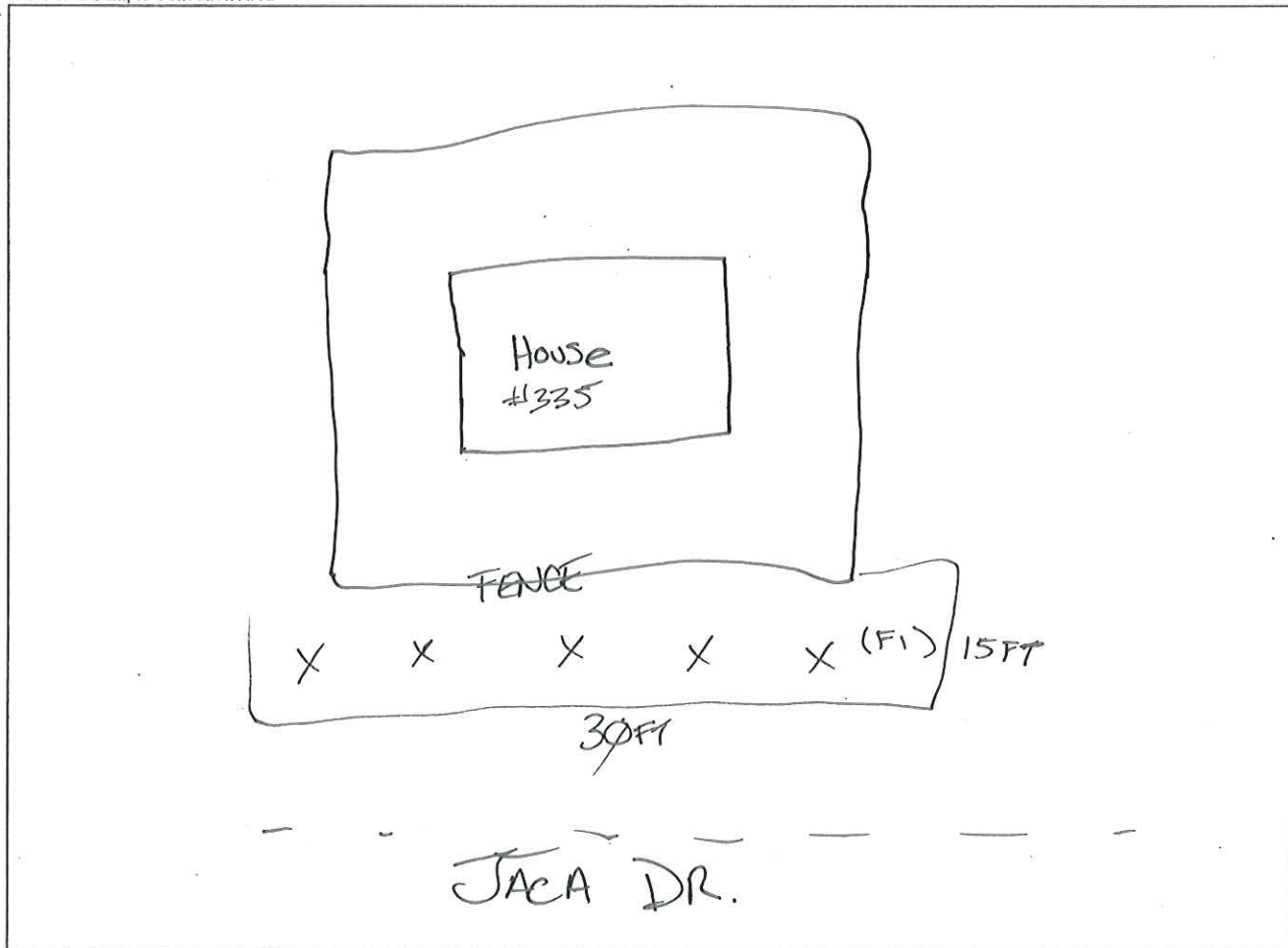
Sample Collection Address

335 JACA DR

Photographs: 100-2398 - FRONT YARD IN FRONT OF GATE NEXT TO ROAD.

(# and Description)

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Date/Time: 12 JUN 12 / 1343

Sampler(s): NE

Front Yard Sample Coor. _____

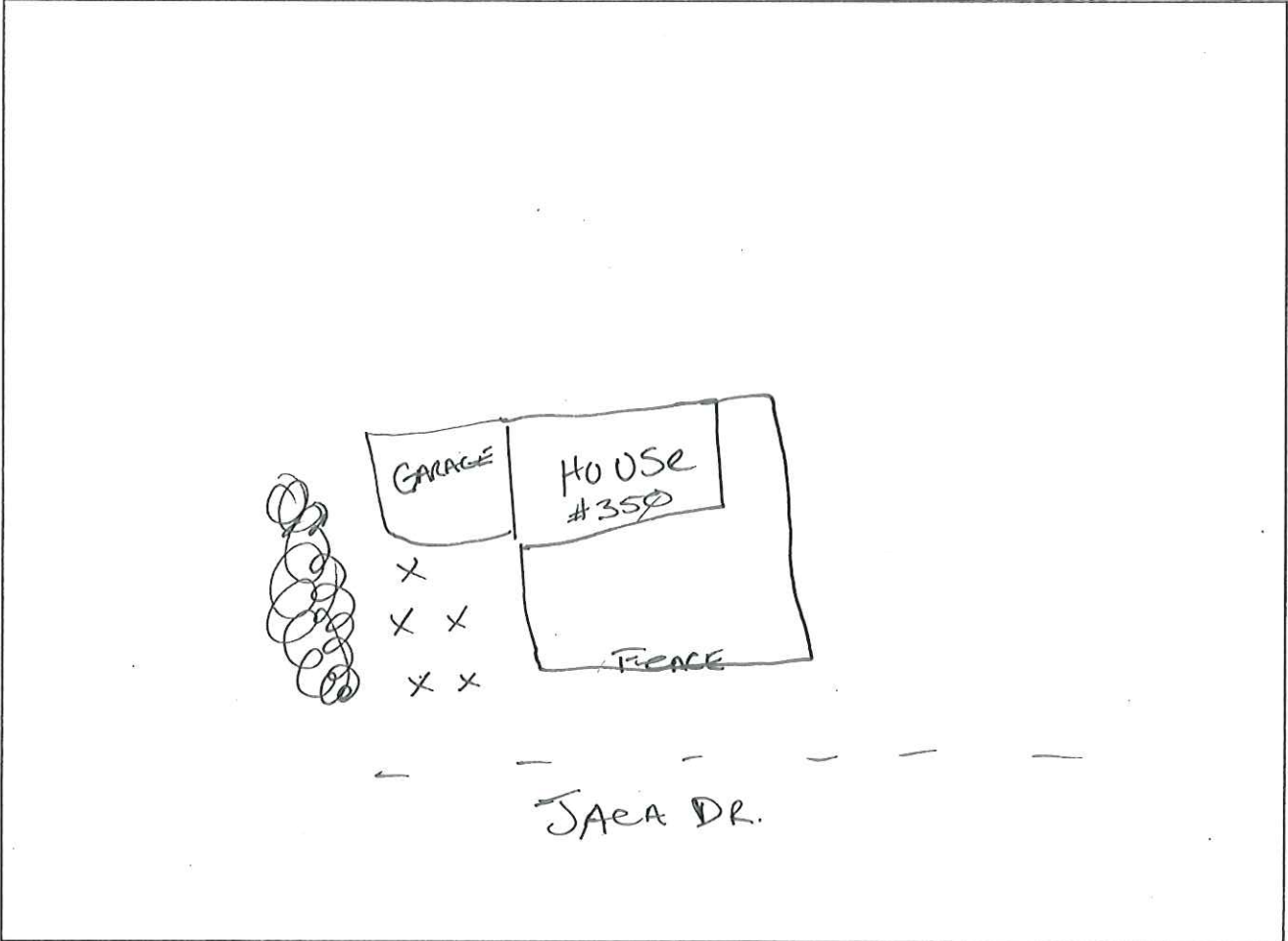
Back Yard Sample Coor. _____

Additional Coor. (Explain) _____

Sample Collection Address
350 JACA DR

Photographs: 100 2399 - SAMPLE LOCATION DR
(# and Description)

Sketch of Sample Collection Area



Notes/Comments:

X - SAMPLE

Site Name: McDermitt Residential Sampling

Front Yard Sample Coor. _____

Date/Time: 12 JUN 12 / 1351

Back Yard Sample Coor. _____

Sampler(s): NE

Additional Coor. (Explain) _____

Photographs: _____

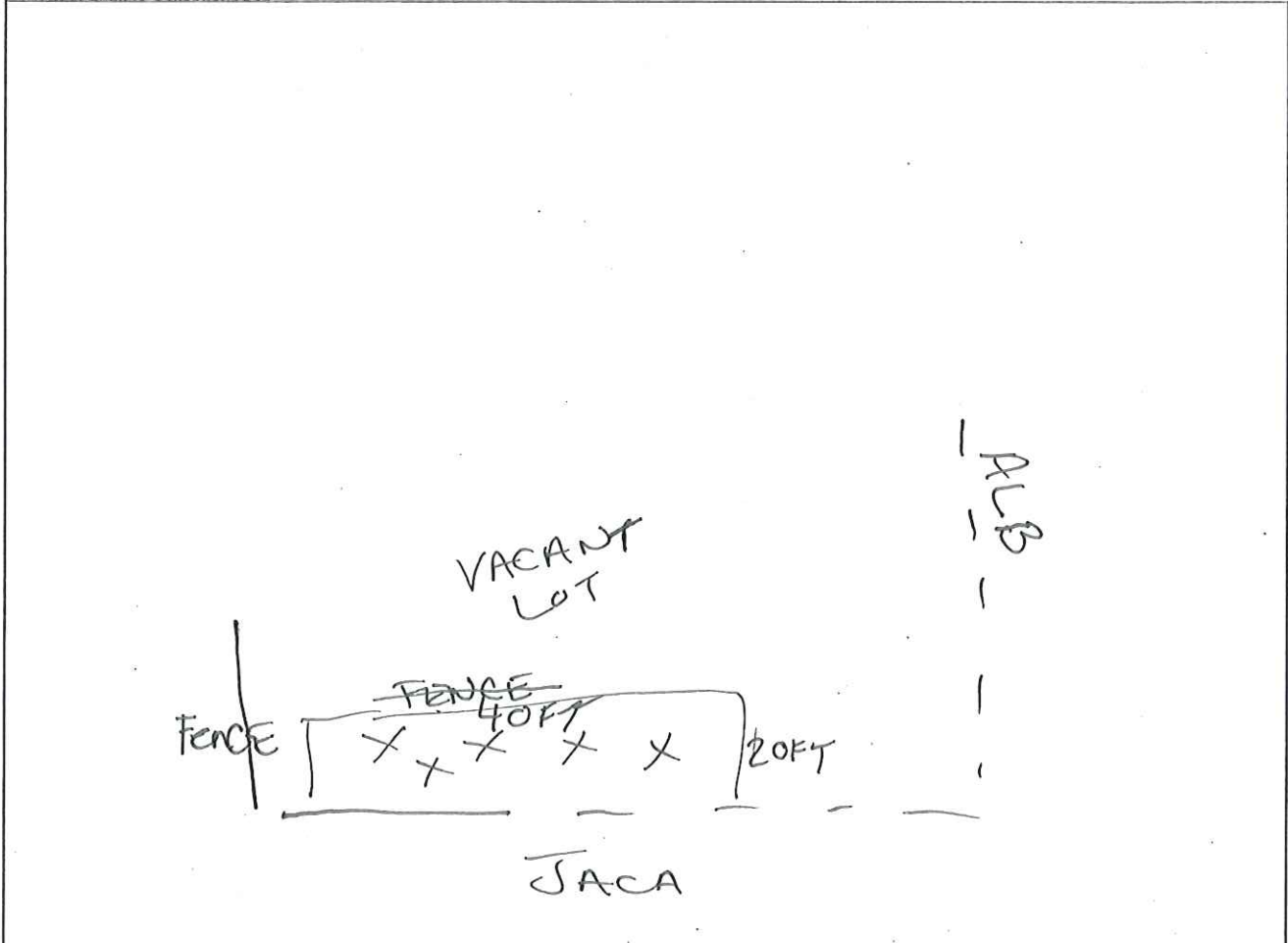
Sample Collection Address

340 JACA DR (VACANT LOT)

(# and Description)

100 - ~~00000~~ 02/08 - FRONT
PART OF VACANT LOT ON
JACA DR.

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 12 JUN 12 / ~~10:00~~

Back Yard Sample Coord. _____

Sampler(s): NE

Additional Coord. (Explain) _____

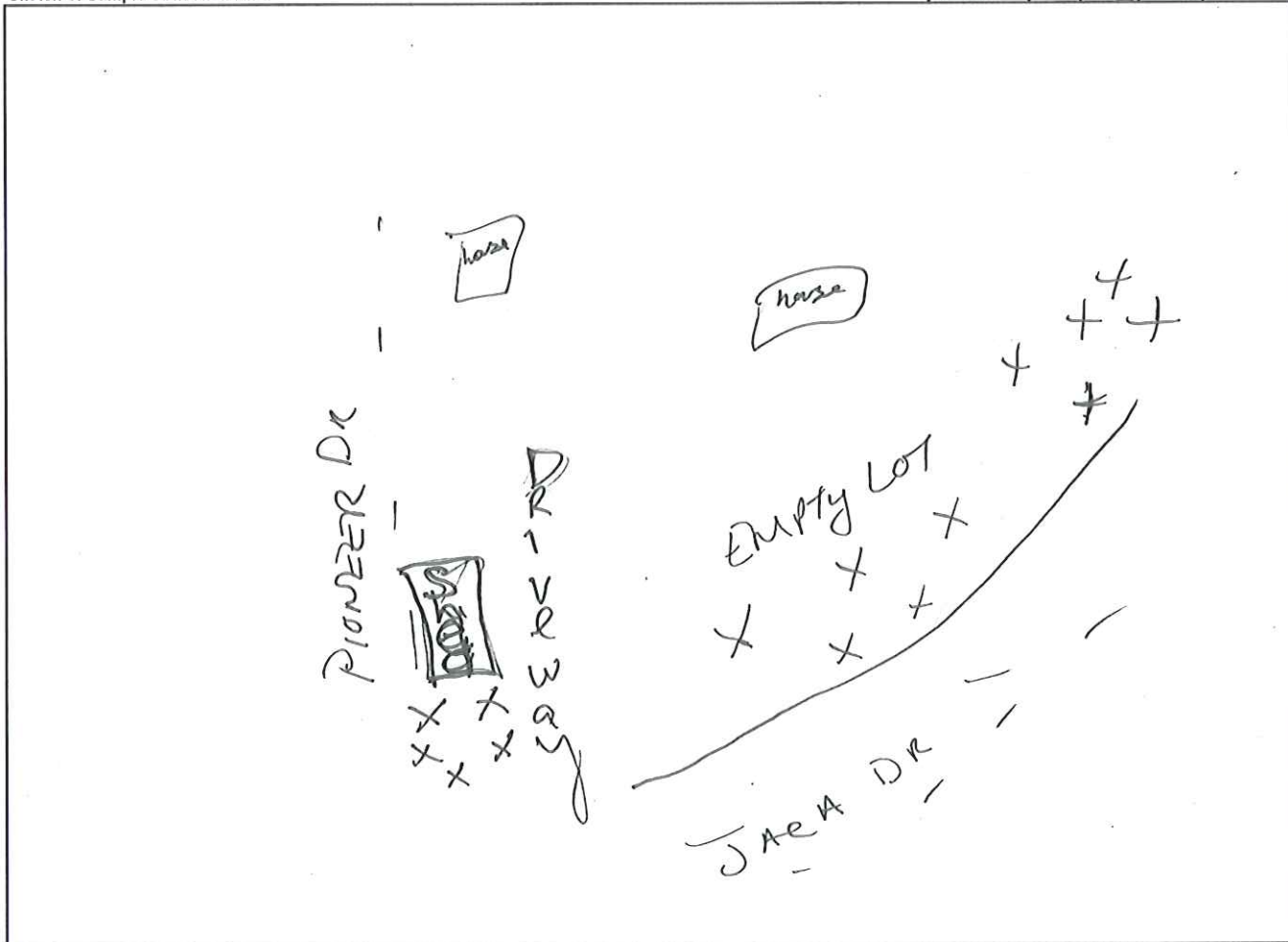
Sample Collection Address

265 JAEA DR.

Photographs:
(# and Description)

100-2401 - EMPTY LOT IN FRONT
OF HOUSE NEXT TO JAEA RD.
100-2402 - 3rd sample location in
FRONT OF shed

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Date/Time: 12JUN12/1420

Sampler(s): _____

Front Yard Sample Coor. _____

Back Yard Sample Coor. _____

Additional Coor. (Explain) _____

Sample Collection Address

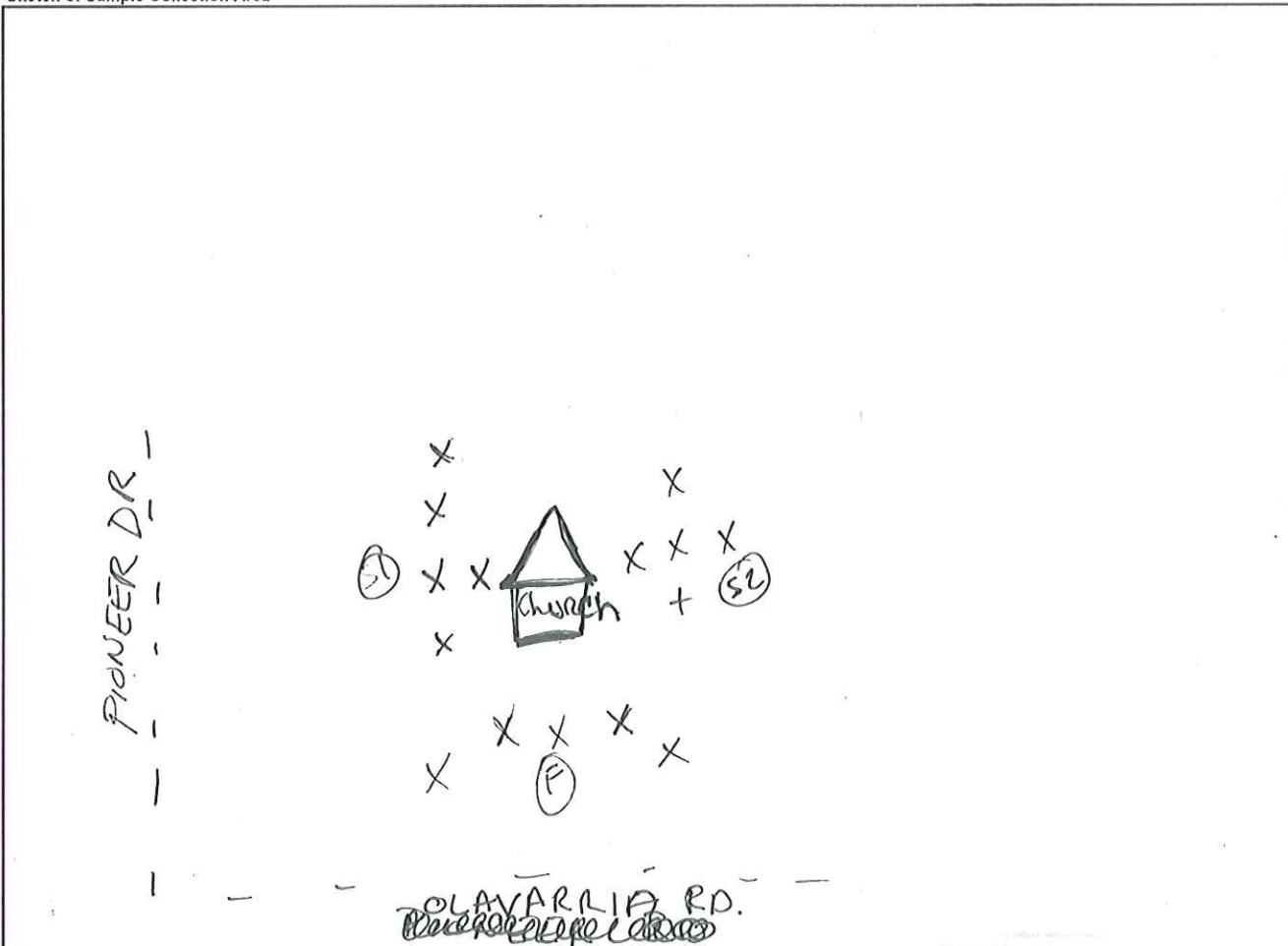
OLAVARIA RD

Photographs:

100-2403 - FRONT OF CHURCH
SAMPLES

(# and Description)

Sketch of Sample Collection Area



Notes/Comments:

NO NUMBER ON CHURCH

Site Name: McDermitt Residential Sampling

Date/Time: 12 JUN 12 / 1612

Sampler(s): NE

Front Yard Sample Coord. _____

Back Yard Sample Coord. _____

Additional Coord. (Explain) _____

Sample Collection Address

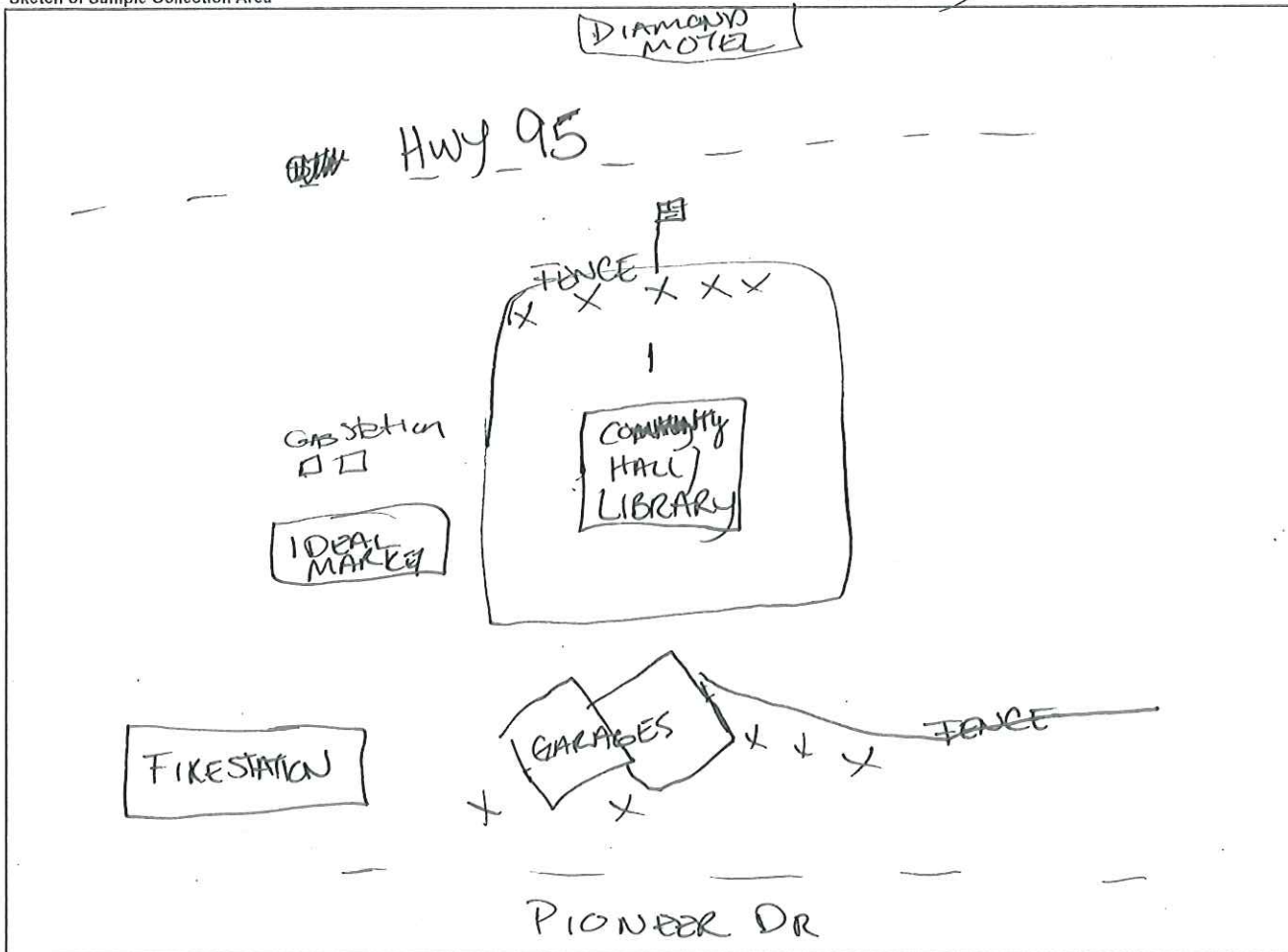
200 PIONEER

Photographs: 100-2411 - AREA ALONG PIONEER RD.

(# and Description)

100-2412 AREA IN FRONT OF LIBRARY

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Date/Time: 12 JUN 12 / 1530

Sampler(s): NE

Front Yard Sample Coor. _____

Back Yard Sample Coor. _____

Additional Coor. (Explain) _____

Sample Collection Address

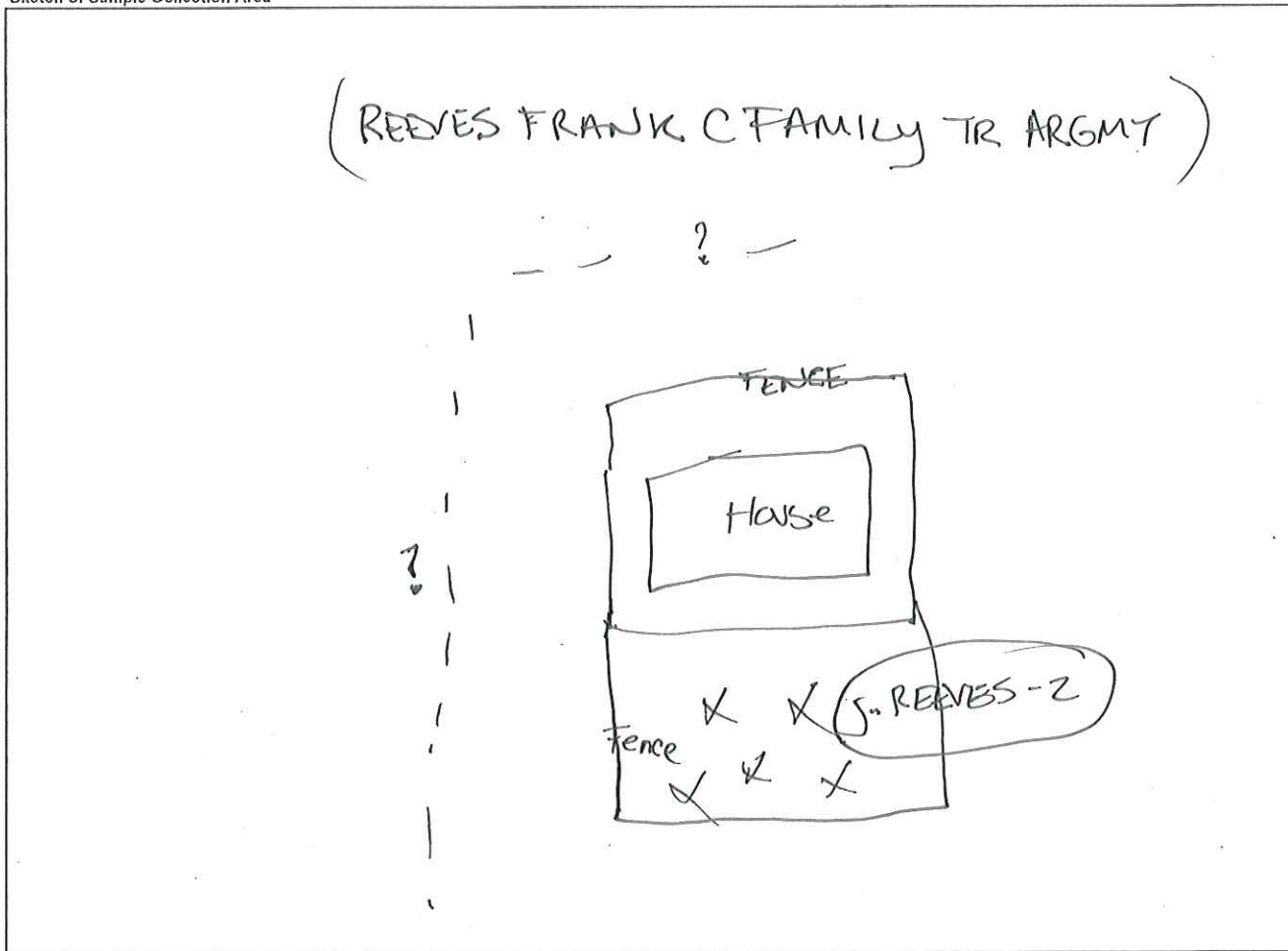
J. REEVES - 2

Photographs:

100-2407 - Vacant area fenced in area behind house

(# and Description)

Sketch of Sample Collection Area



Notes/Comments:

NO ADDRESS OR HOUSE #S

Site Name: McDermitt Residential Sampling

Date/Time: 12 JUN 12 / 1534

Sampler(s): NE

Front Yard Sample Coord. _____

Back Yard Sample Coord. _____

Additional Coord. (Explain) _____

Sample Collection Address

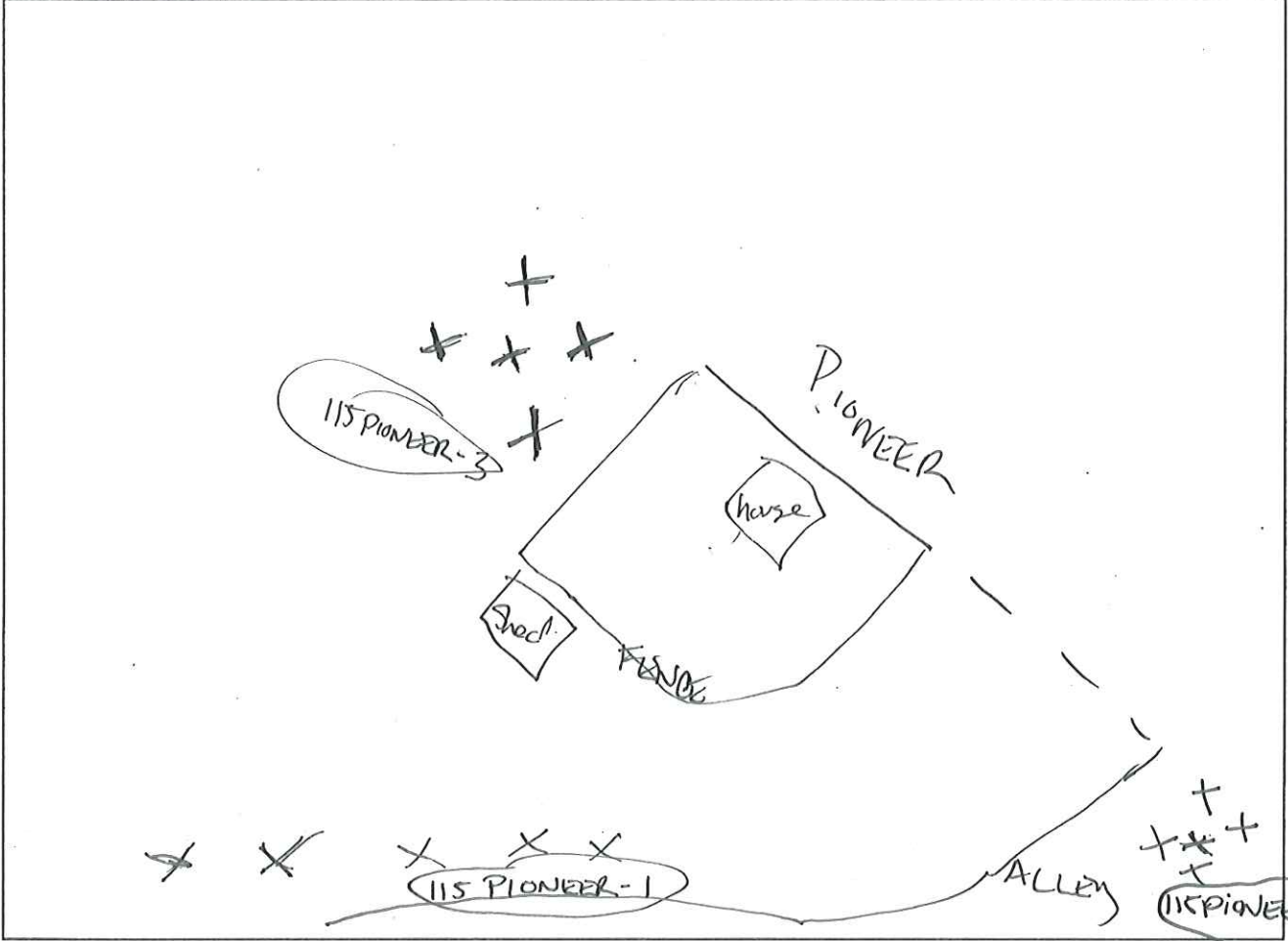
115 PIONEER - 1

Photographs: 100-2408 - Empty lot BEHIND house (-1)

(# and Description) 100-2409 - Next to ALLEY (-2)

100-2410 - 3 Sample Location Next to house close to church

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Date/Time: 12 JUN 12 / 1630

Sampler(s): NE

Front Yard Sample Coord. _____

Back Yard Sample Coord. _____

Additional Coord. (Explain) _____

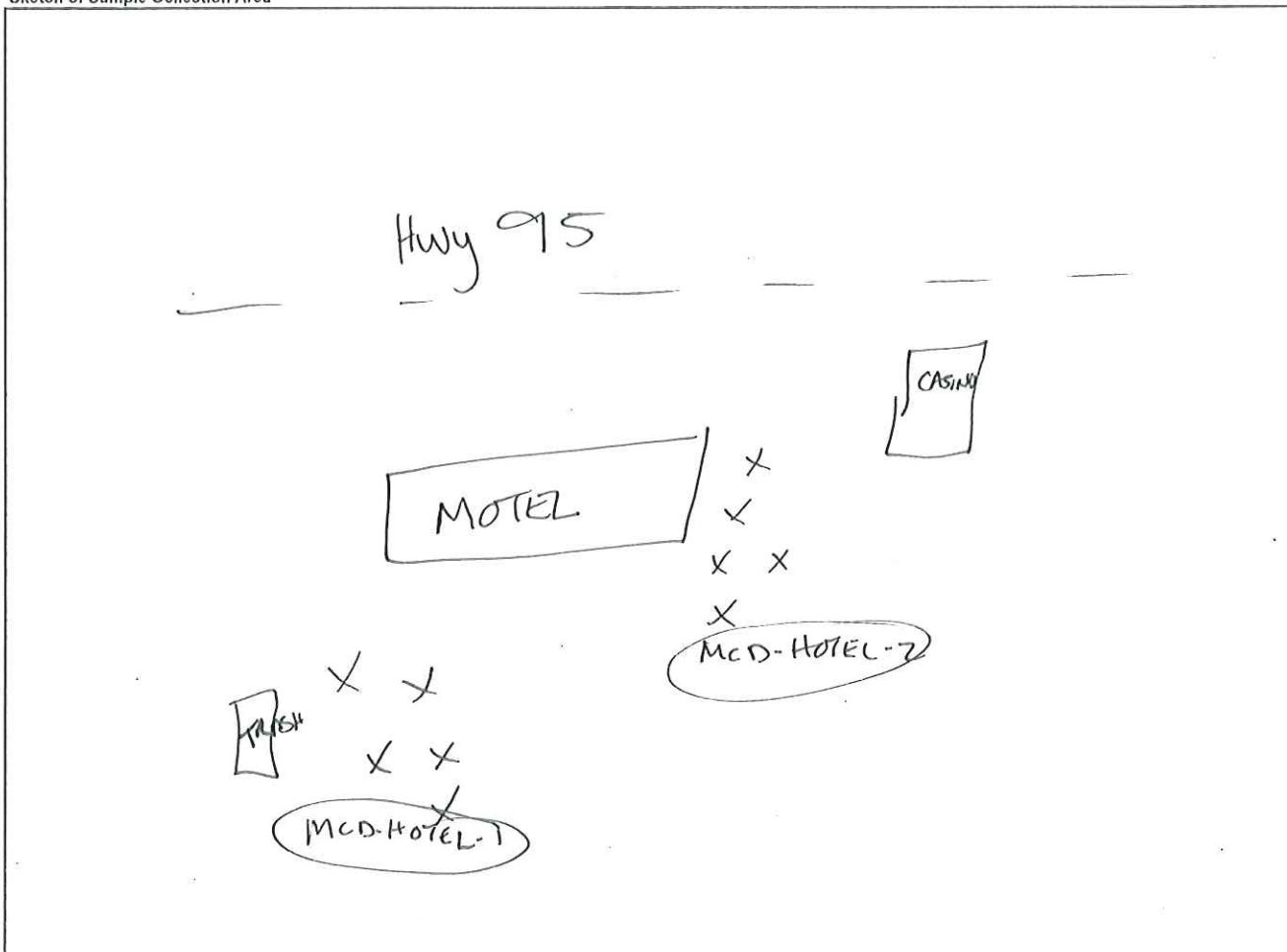
Sample Collection Address

MCD - HOTEL - 1

Photographs: 100-2413 - Behind MOTEL SAMPLE

(# and Description) 100-2414 - Side of MOTEL SAMPLE

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coor. _____

Date/Time: 11 JUN 12 / 1704

Back Yard Sample Coor. RED

Sampler(s): NE

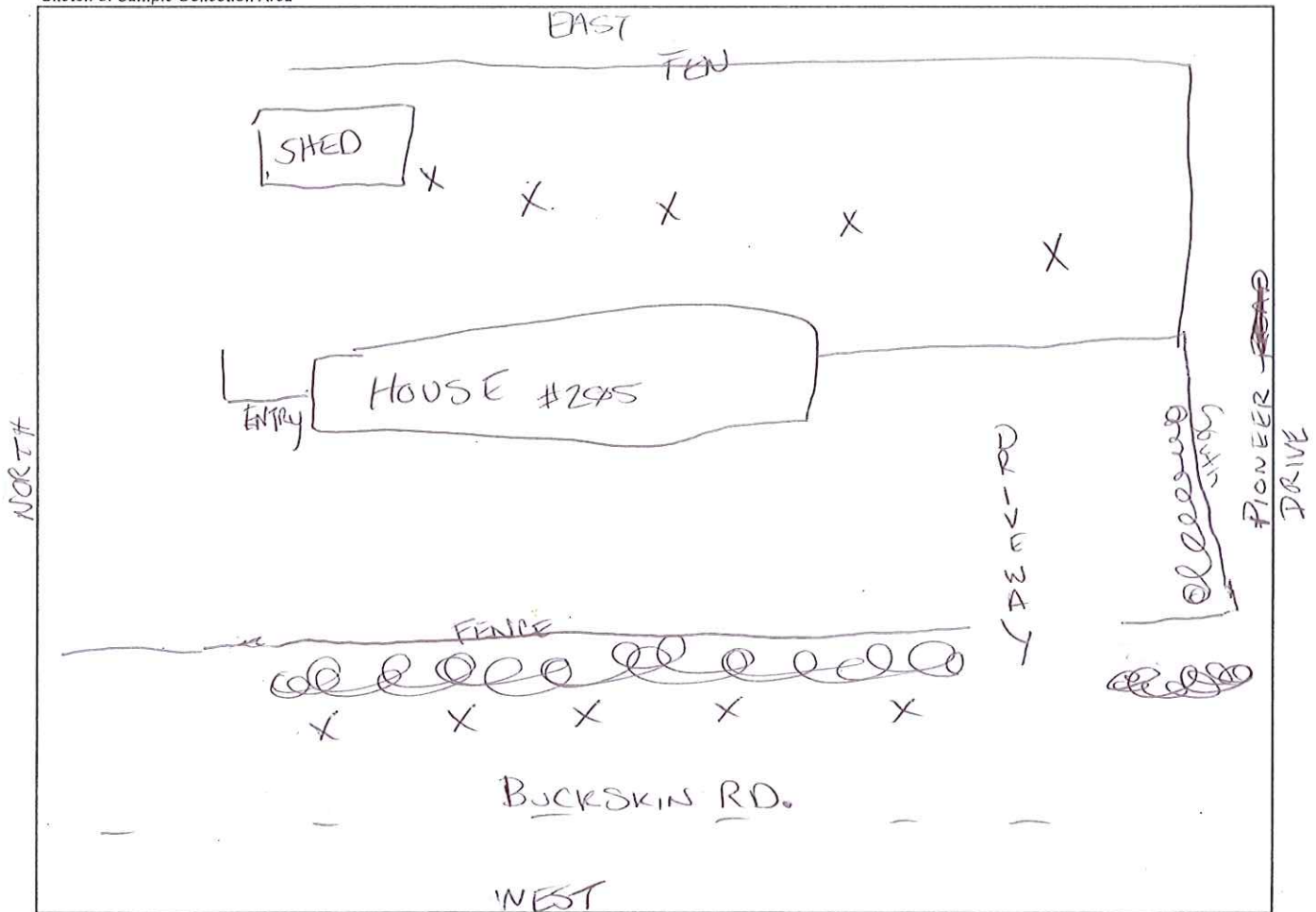
Additional Coor. (Explain) _____

Sample Collection Address

205 BUCKSKIN RD

Photographs: 100-2371 - FRONT YARD IN NEAR ROAD
100-2372 - BACK YARD NEAR SHED TO ROAD SIDE
~~100-2373~~

Sketch of Sample Collection Area



Notes/Comments:

X - SAMPLE LOCATIONS

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. ~~000001~~

Date/Time: 11 JUN 12 /

Back Yard Sample Coord. ~~000002~~

Sampler(s): NE

Additional Coord. (Explain) _____

Photographs: 100-2373 - SAMPLE NEAR ROAD ACCESS OF REEVES

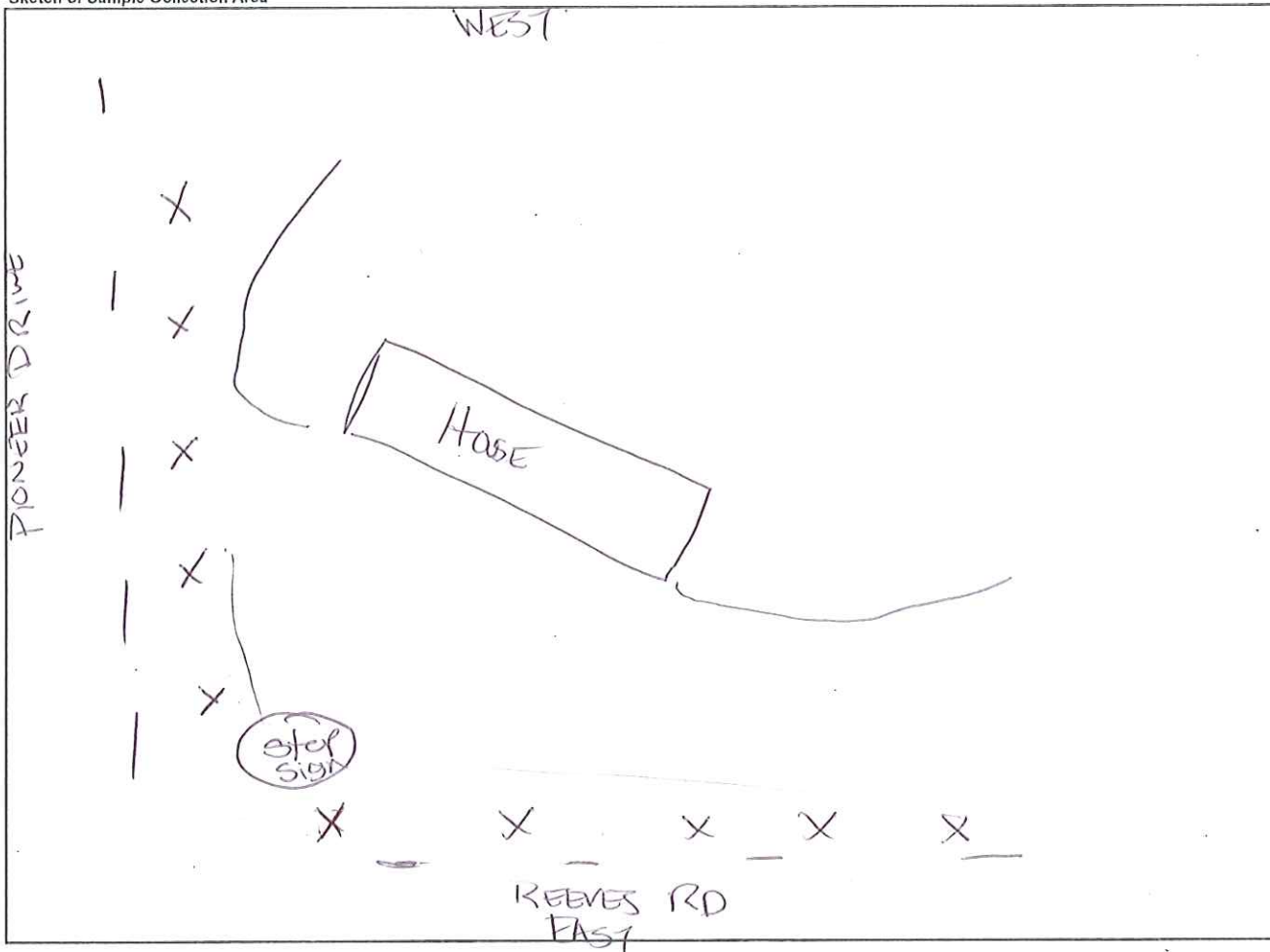
Sample Collection Address

220 REEVES RD

(# and Description)

100-2374 - SAMPLE ALONG ROAD PIONEER DR

Sketch of Sample Collection Area



Notes/Comments:

*RIGHTAWAY ONLY

X - MARKS SAMPLE LOCATION

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 11 JUN 12 / 1741

Back Yard Sample Coord. _____

Sampler(s): NE

Additional Coord. (Explain) _____

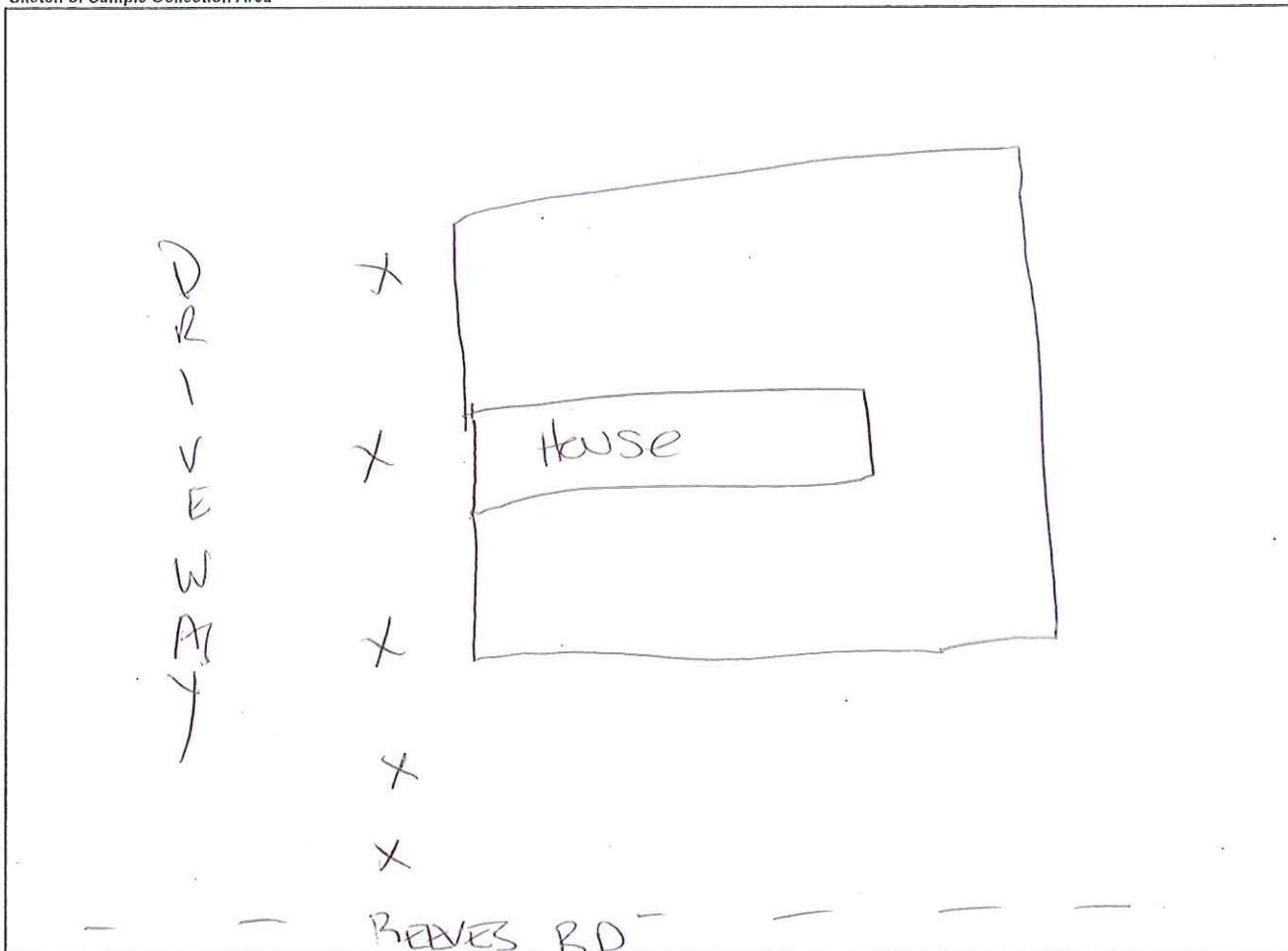
Photographs: 100-2375 - DRIVEWAY of 198

Sample Collection Address

(# and Description)

190 REEVES RD

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 11 JUN 12 / 1

Back Yard Sample Coord. _____

Sampler(s): NE

Additional Coord. (Explain) _____

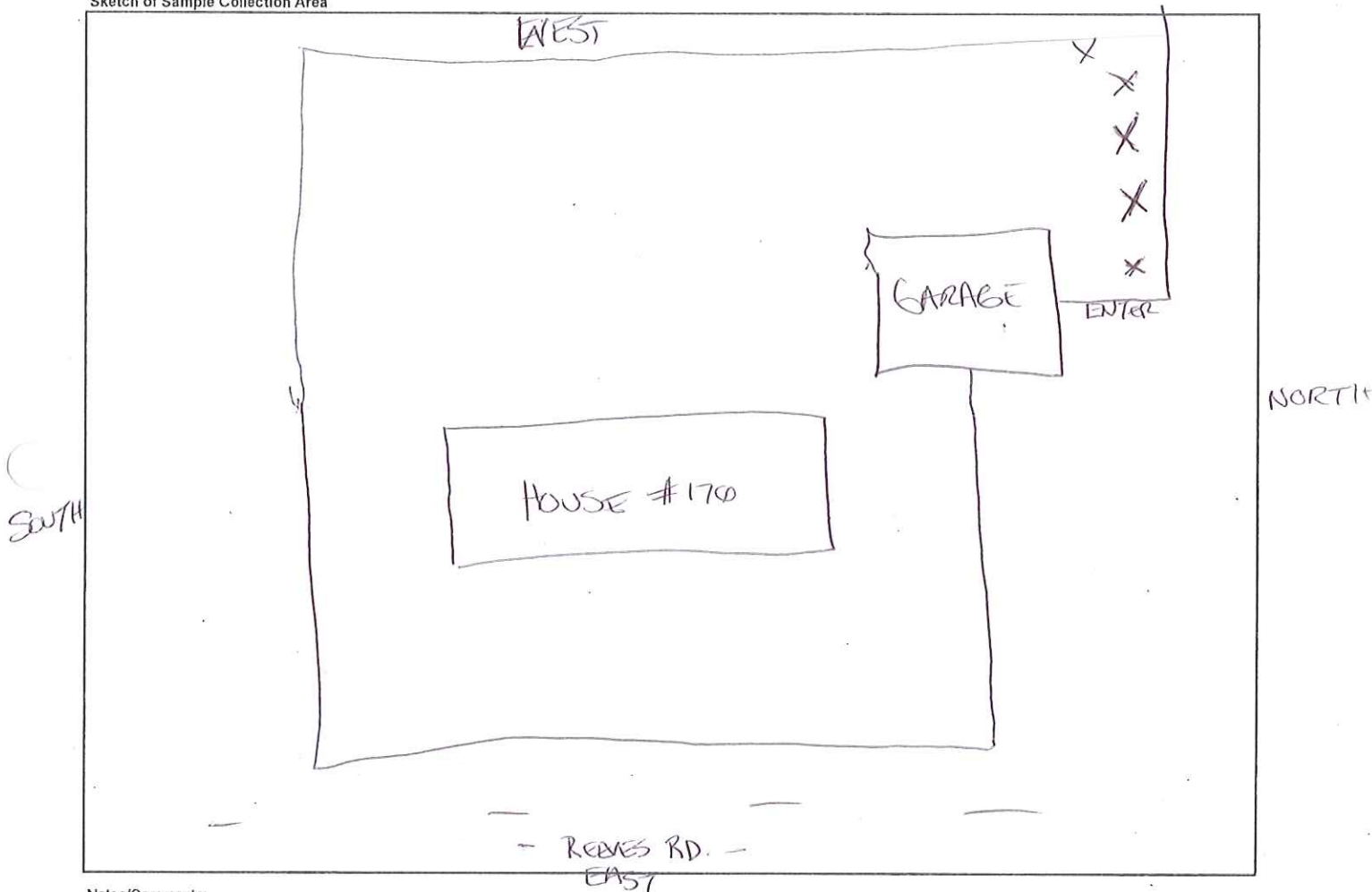
Photographs: 100-2376 - side of the house
NEAR NORTH

Sample Collection Address

170 REEVES RD

(# and Description)

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 13 JUN 12

Back Yard Sample Coord. _____

Sampler(s): _____

Additional Coord. (Explain) _____

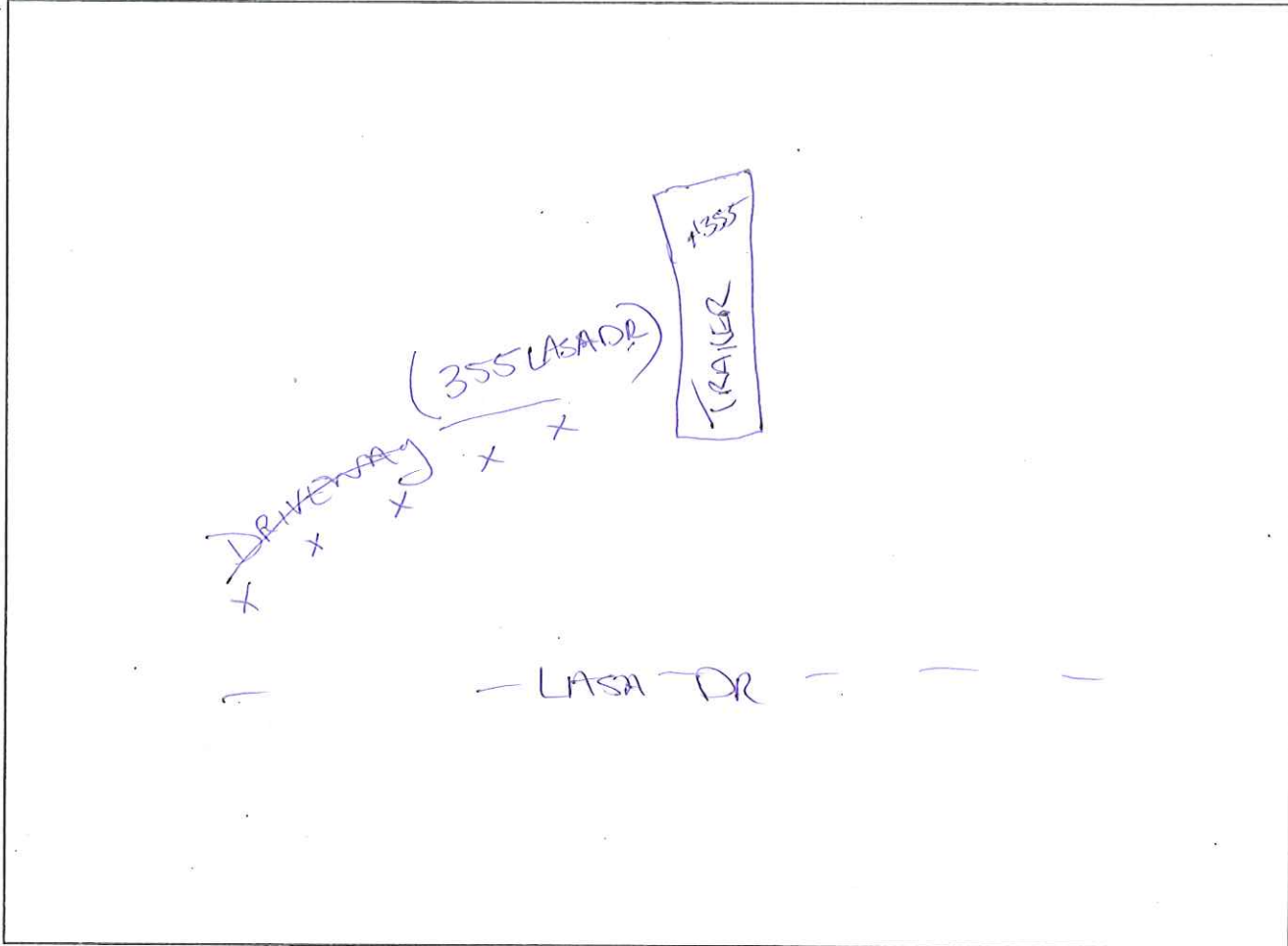
Sample Collection Address

355 LASA DR

Photographs: 100-2444 - DRIVEWAY of House/TRAILER

(# and Description)

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Date/Time: 13 JUN 12 / 0840

Sampler(s): NE

Front Yard Sample Coord. _____

Back Yard Sample Coord. _____

Additional Coord. (Explain) _____

Sample Collection Address

705 LASA

(Dragon Energy LLC)

Photographs: _____
(# and Description)

100-2415 - Full Picture of Property

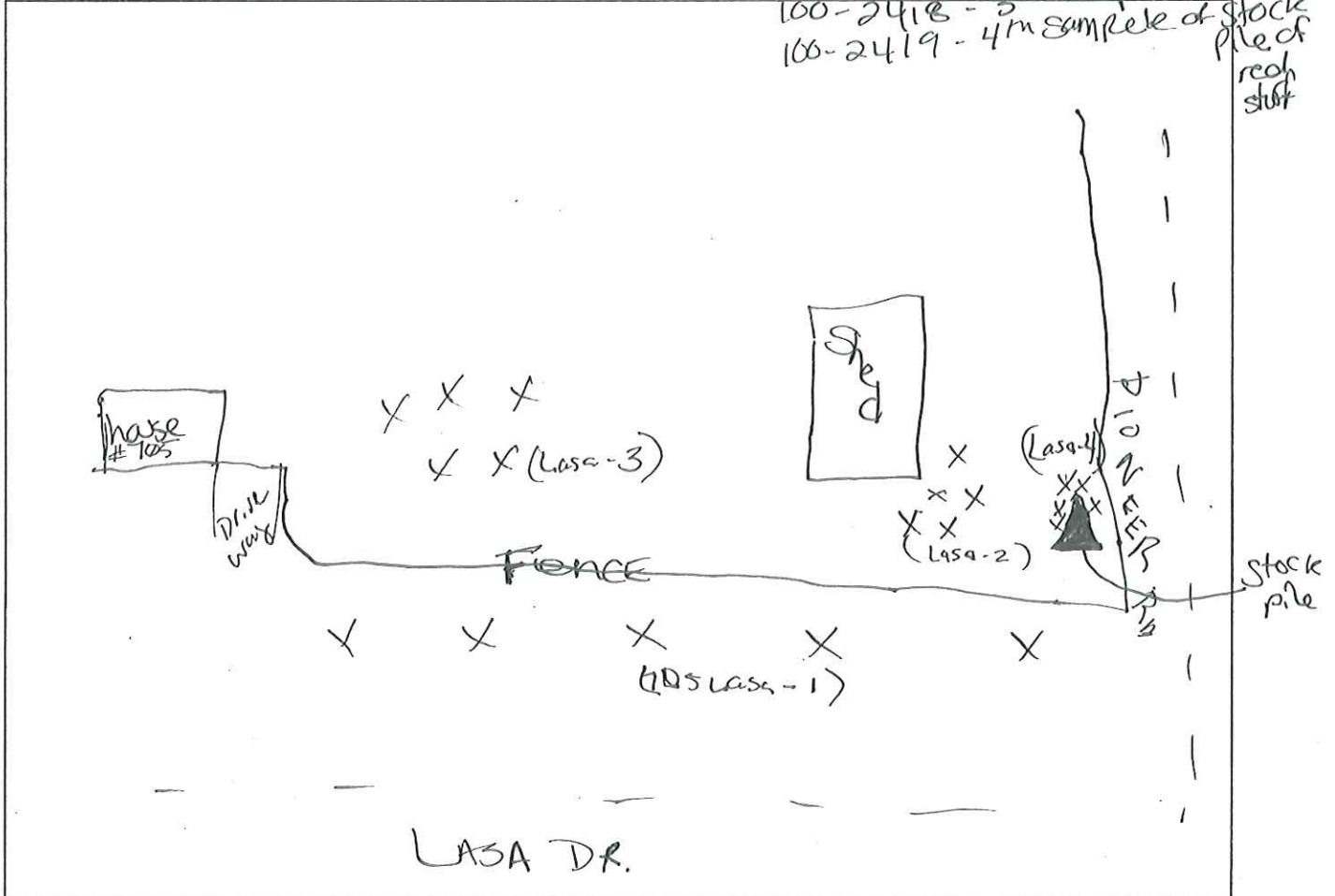
100-2416 - First Sample - 1

100-2417 - 2nd Sample

100-2418 - 3rd Sample

100-2419 - 4th Sample of stock pile of red stuff

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coor. _____

Date/Time: 13 JUN 12

Back Yard Sample Coor. _____

Sampler(s): NE

Additional Coor. (Explain) _____

Photographs: _____

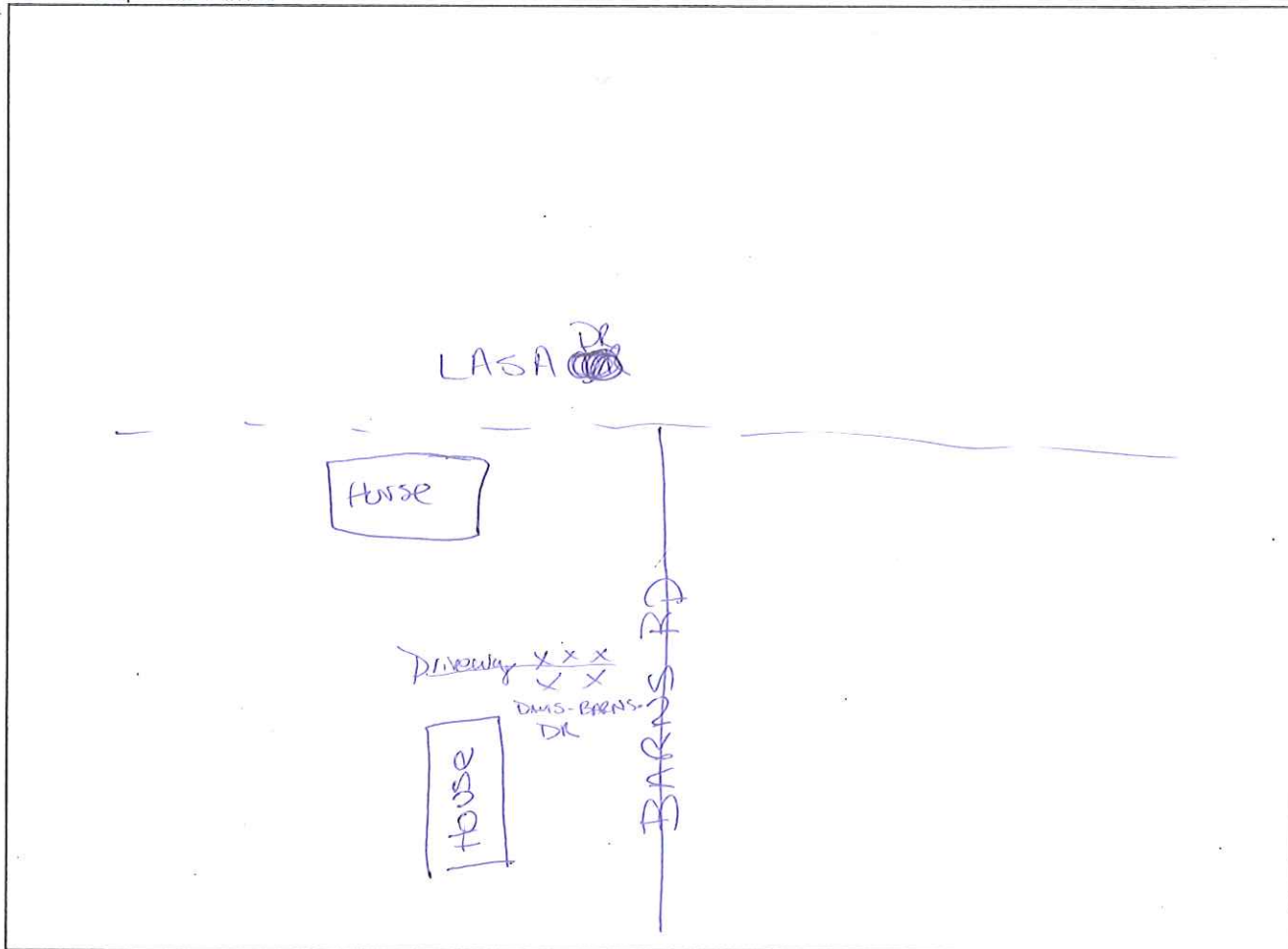
(# and Description)

100-2430 - Driveway in between
2 houses

Sample Collection Address

DAVIS - BARNES - DR

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coor. _____

Date/Time: 13 JUN 12 / 0944

Back Yard Sample Coor. _____

Sampler(s): NE

Additional Coor. (Explain) _____

Sample Collection Address

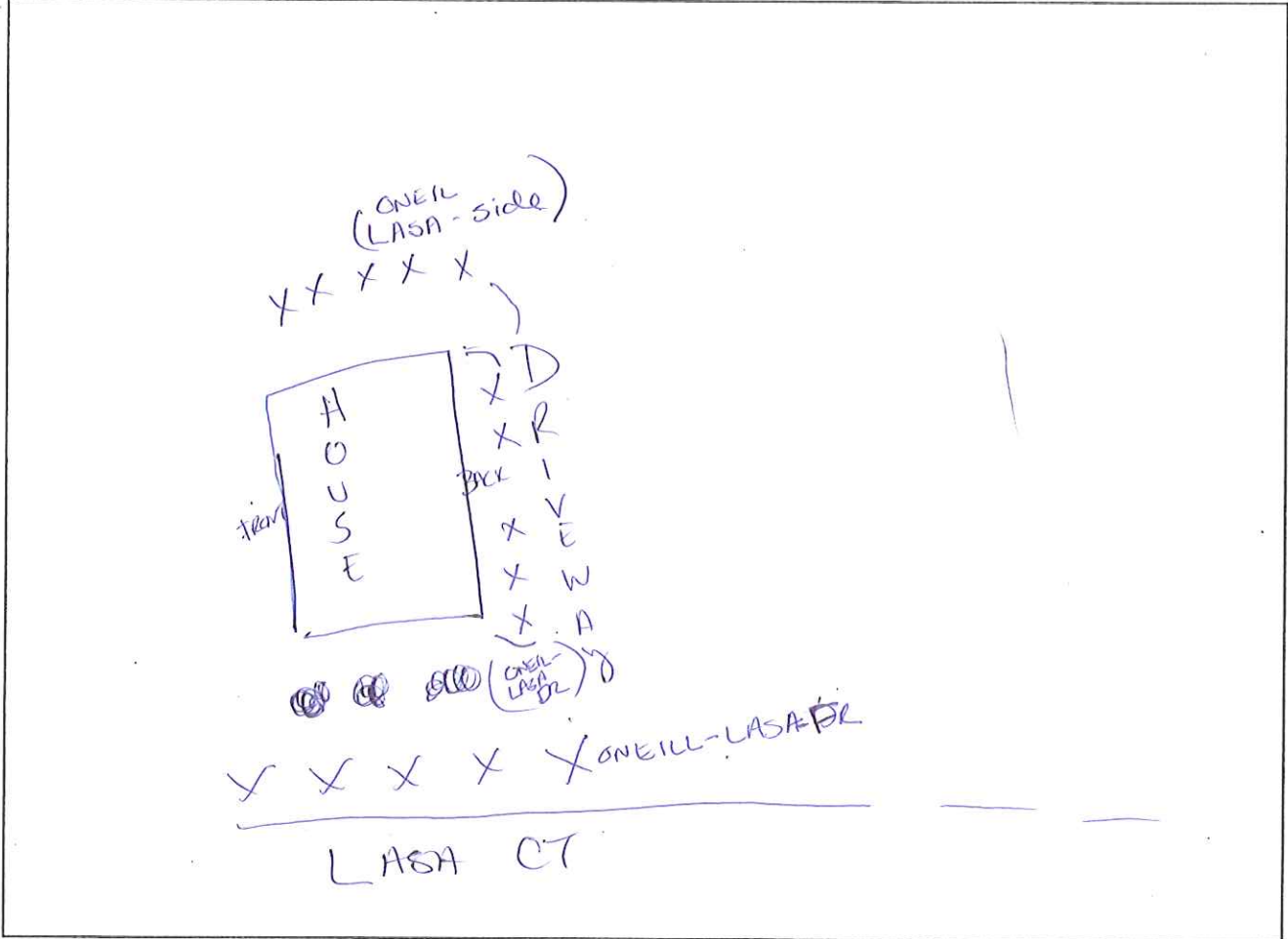
~~ONEILL~~ ONEILL - LASA DR

Photographs:

(# and Description)

100-2427 - NEAR ROAD
100-2428 - Back of house
100-2429 - Side of house

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 13 JUN 12 - 0924

Back Yard Sample Coord. _____

Sampler(s): _____

Additional Coord. (Explain) _____

Sample Collection Address

455 DORA CT

Photographs:

100-2420 - Front of House Driveway

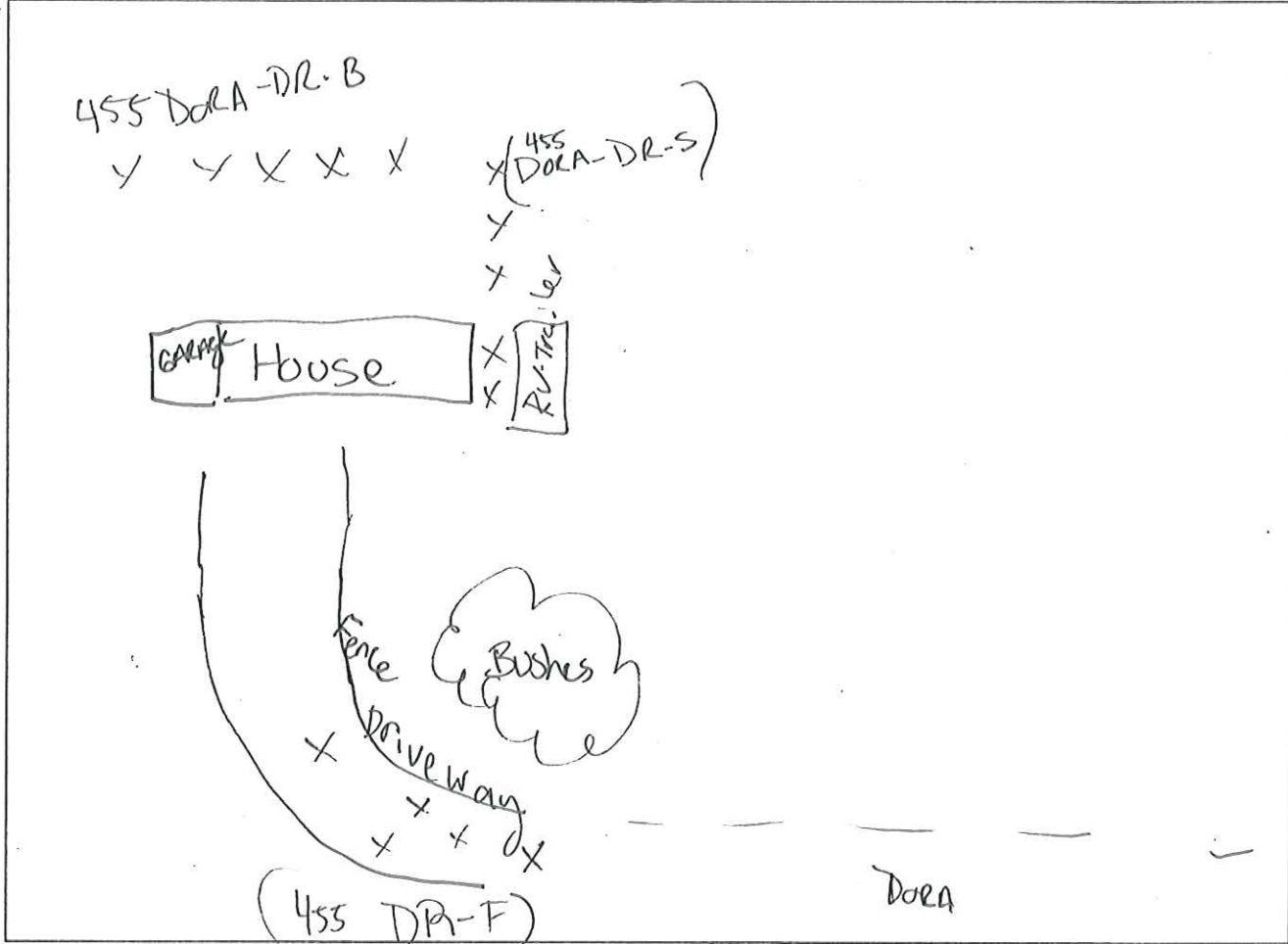
Location for (455 DORA-DR-F)

(# and Description)

100-2421 - Side of house (455 DORA-DR-S)

100-2422 - Back of house (455 DORA-DR-B)

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 13 JUN 12 / 0930

Back Yard Sample Coord. _____

Sampler(s): NE

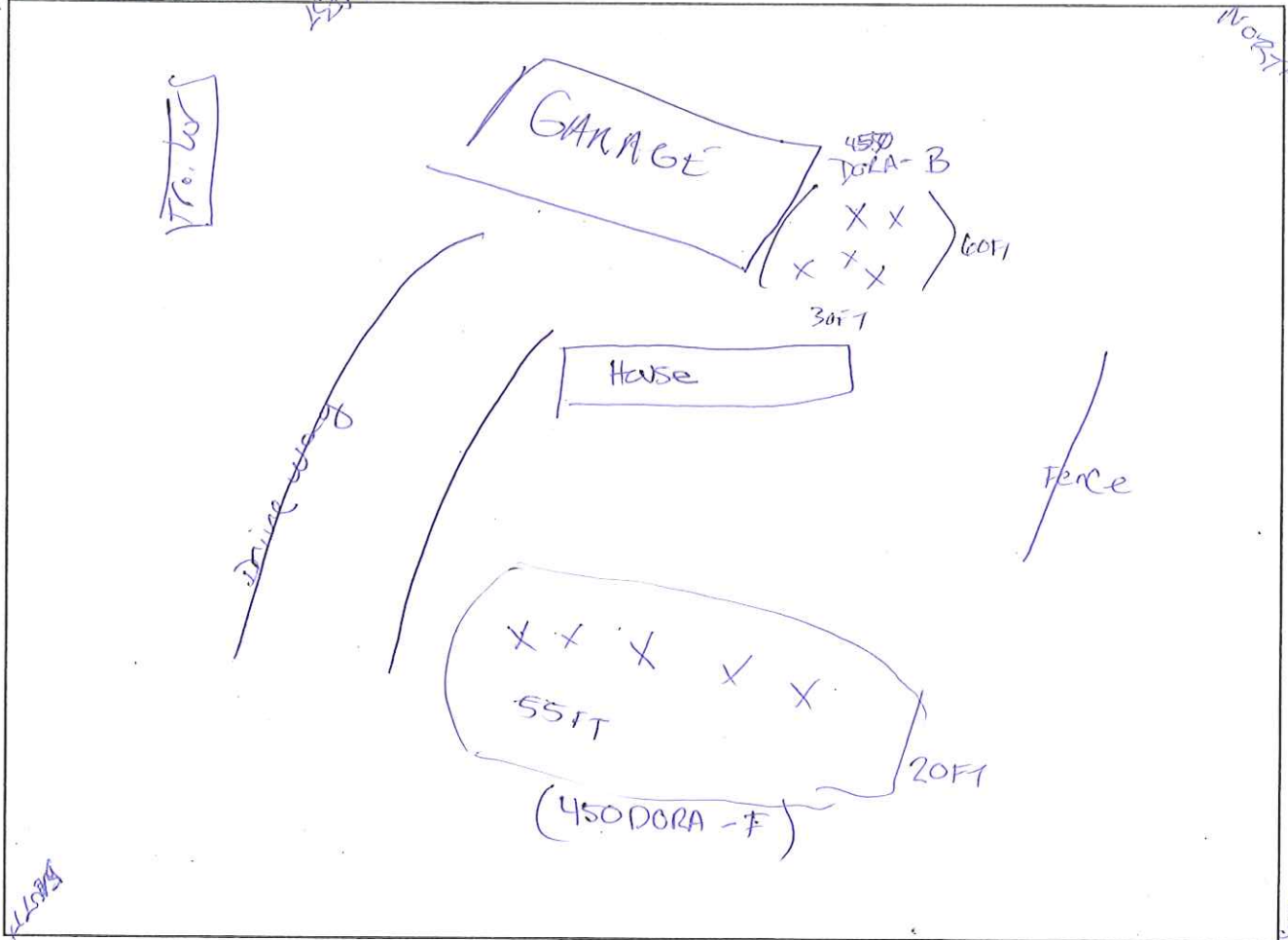
Additional Coord. (Explain) _____

Sample Collection Address

450 DORA CT

Photographs: 100-2423-FRONT YARD AREA DORA-F
(# and Description) 100-2424-BACKYARD-DORA-B

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 13 Jun 12 / 0938

Back Yard Sample Coord. _____

Sampler(s): NE

Additional Coord. (Explain) _____

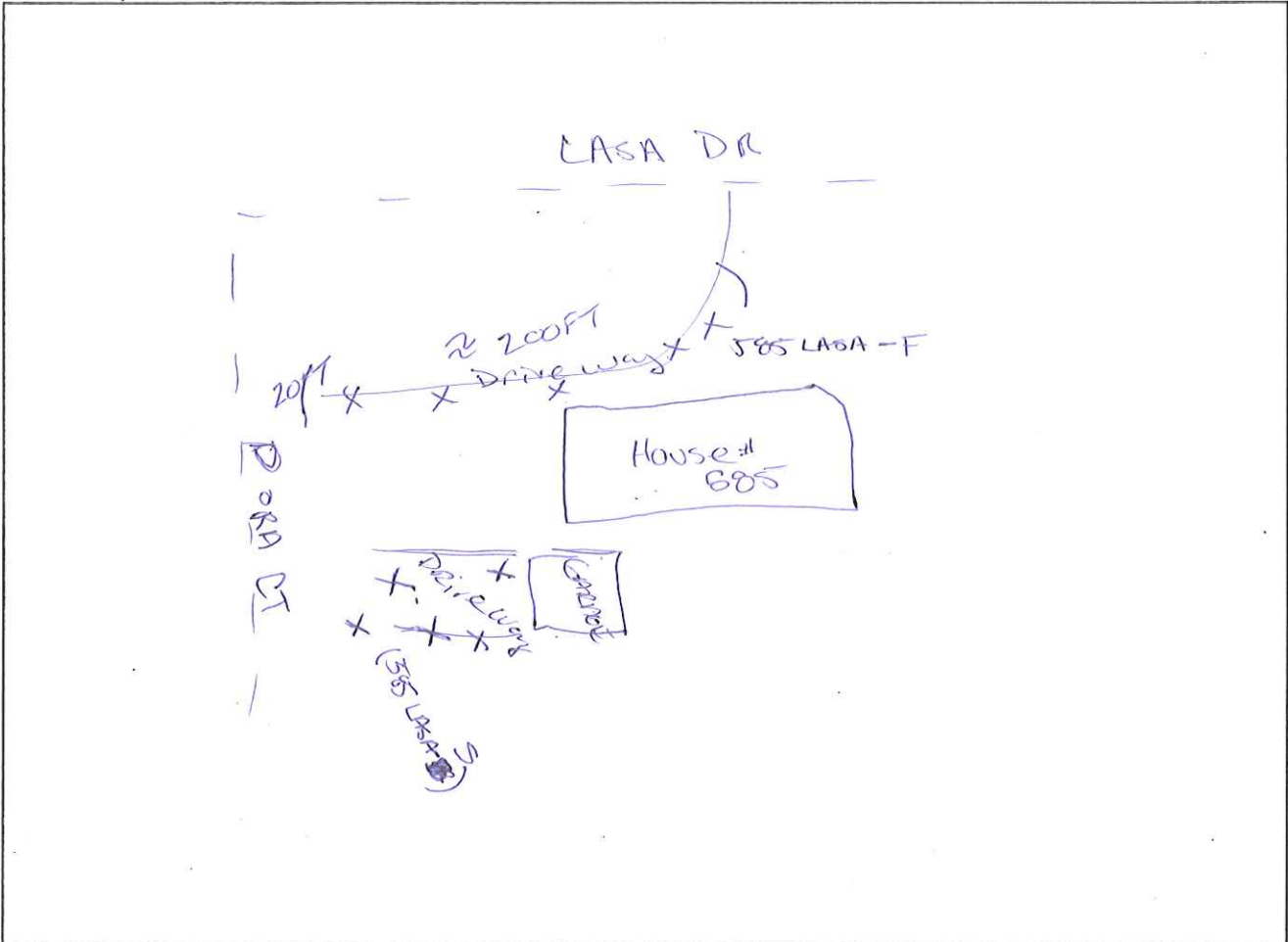
Sample Collection Address

585 LASHA DR

Photographs: 100-2425-585 LASHA-F

(# and Description) 100-2426-585 LASHA-SDE

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Date/Time: 13 JUN 12 / 0910

Sampler(s): NE

Front Yard Sample Coord. _____

Back Yard Sample Coord. _____

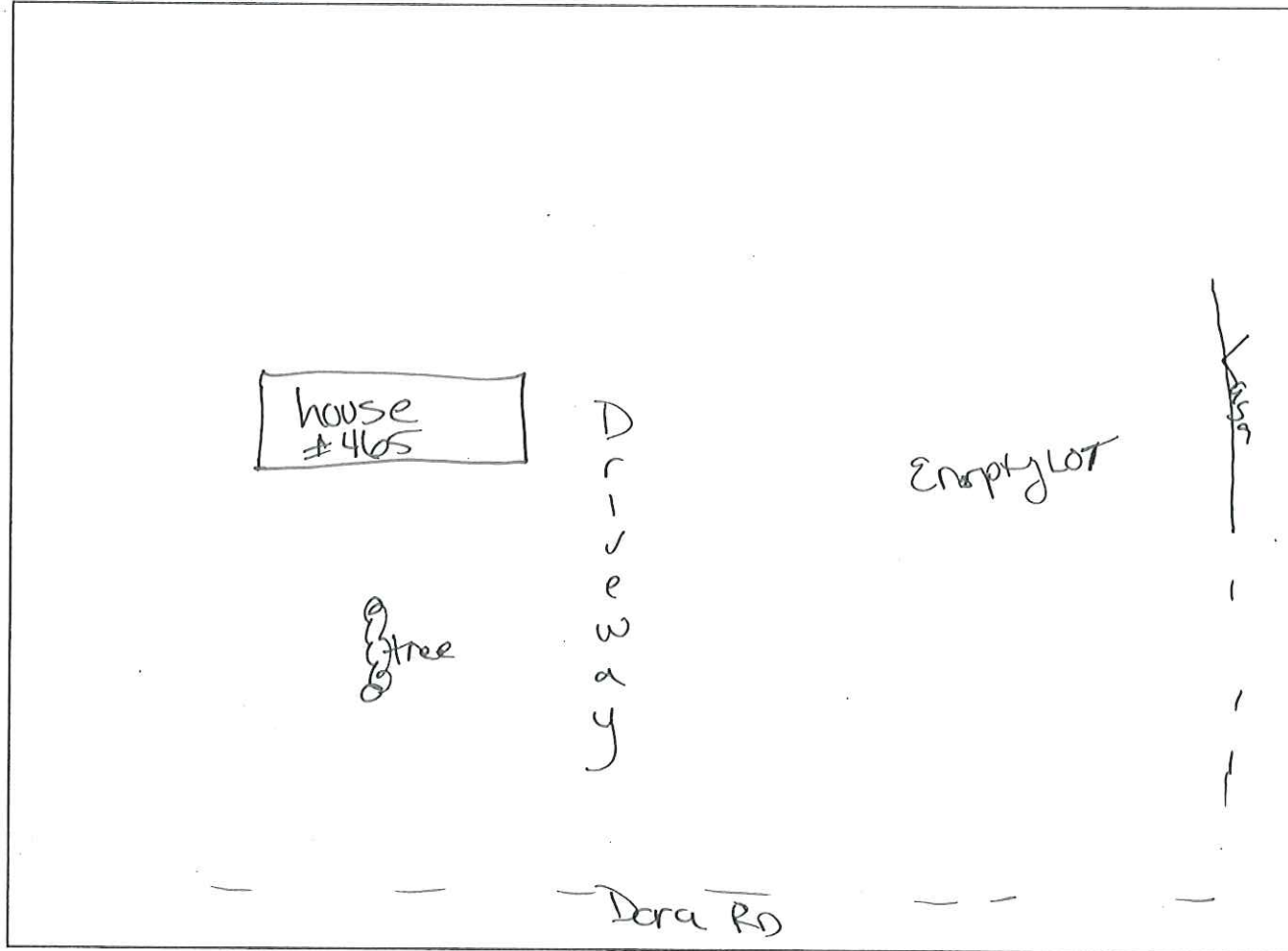
Additional Coord. (Explain) _____

Sample Collection Address

465 Dora CT

Photographs: ~~100-2420-0001~~ Sample from driveway
(# and Description)

Sketch of Sample Collection Area



Notes/Comments:

No consent NO samples
taken

Site Name: McDermitt Residential Sampling

Date/Time: BJJN12 1120

Sampler(s): NE

Front Yard Sample Coord. _____

Back Yard Sample Coord. _____

Additional Coord. (Explain) _____

Sample Collection Address

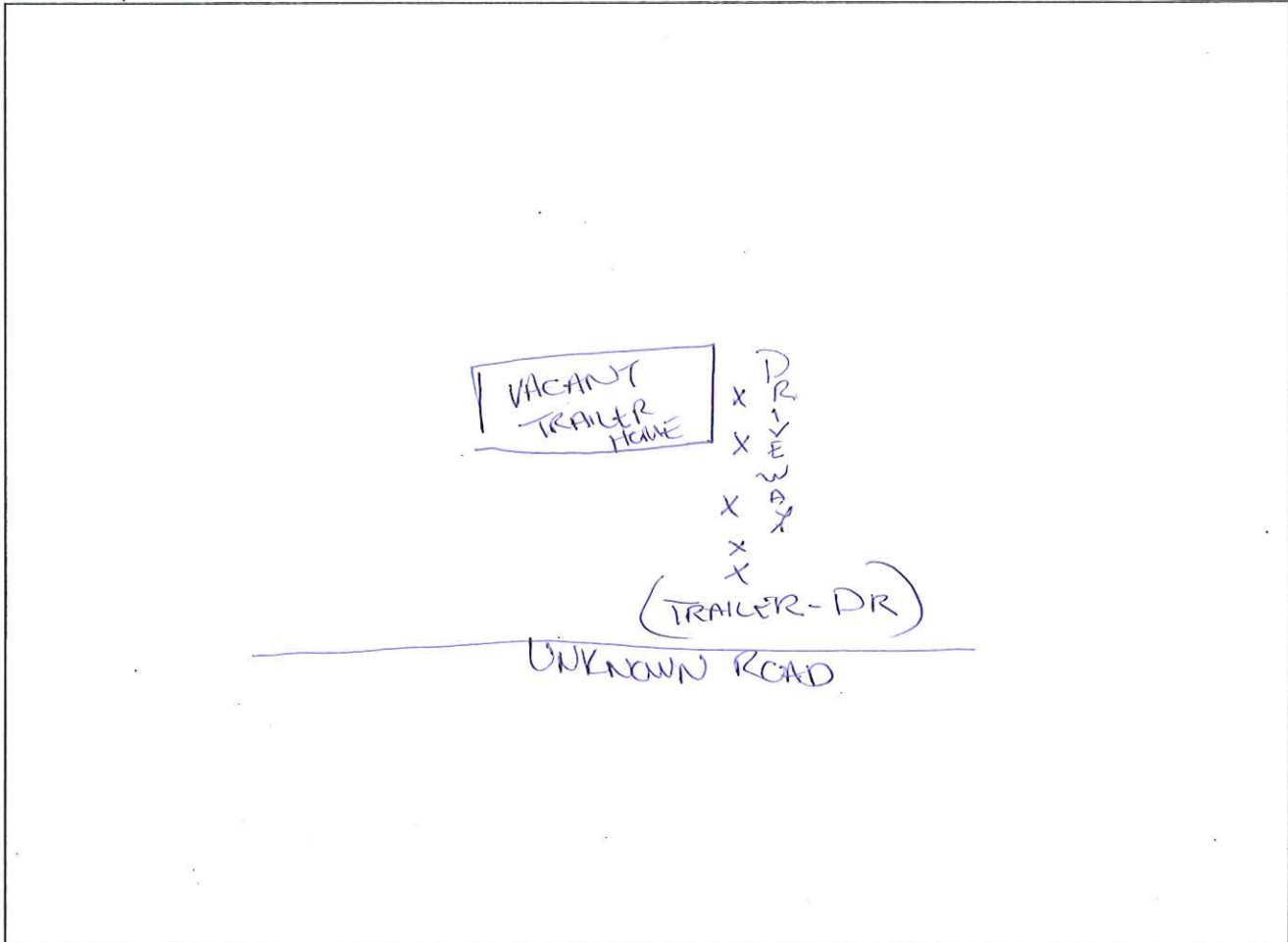
TRAILER-DR

Photographs:

(# and Description)

100-2441 - Picture of vacant
trailer and sample taken
on Driveway.

Sketch of Sample Collection Area



Notes/Comments:

Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 13 JUN 12 / 1105

Back Yard Sample Coord. _____

Sampler(s): NE

Additional Coord. (Explain) _____

Photographs: 100-2439 - IN FRONT OF House in Driveway

Sample Collection Address

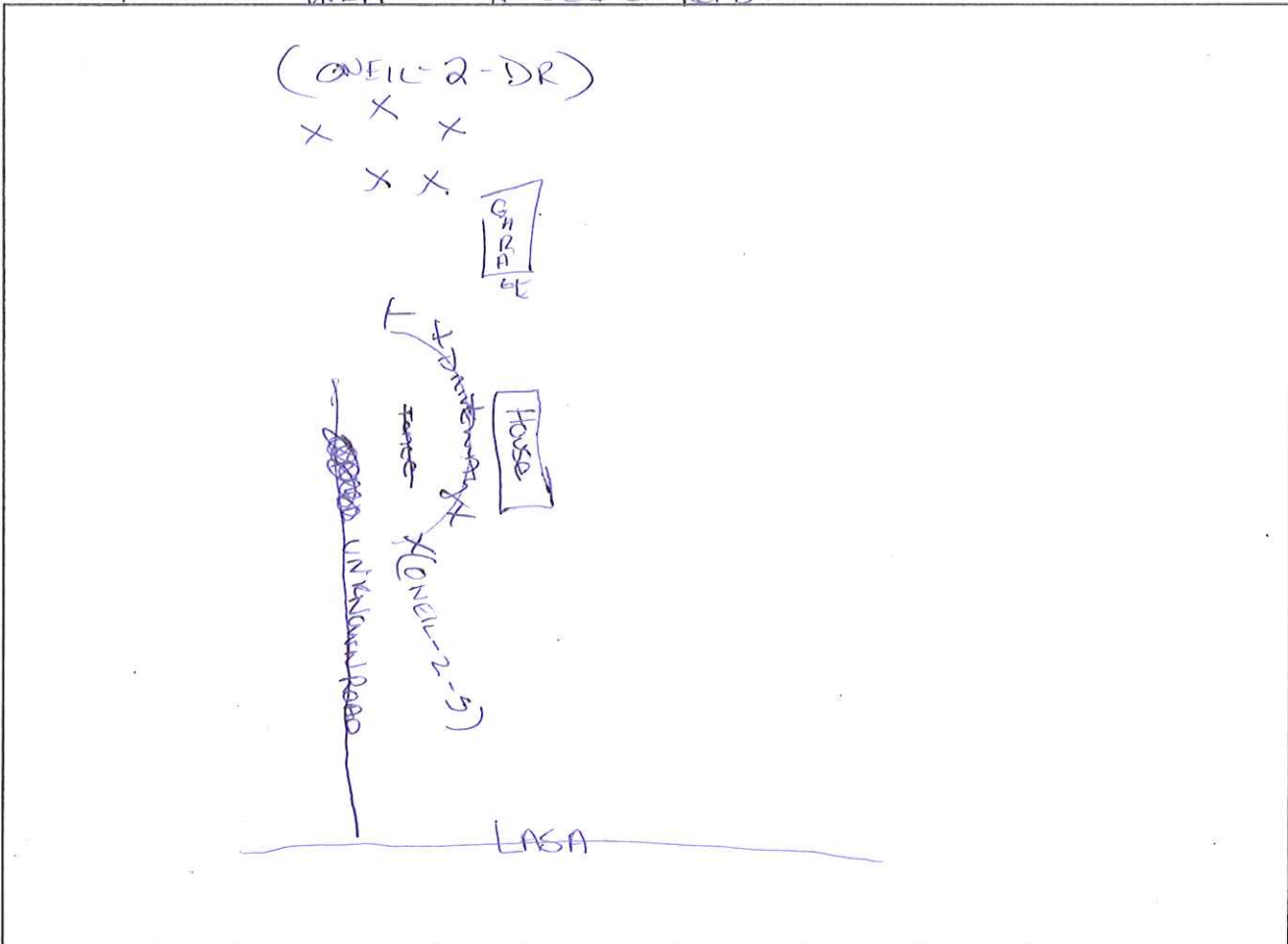
(# and Description)

ONEIL-S-2 + ONEIL-2 DR

100-2440 - IN FRONT of GARAGE

Sketch of Sample Collection Area

UNKNOWN HOUSE # & CR ROAD NAME



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 13JUN12/1101

Back Yard Sample Coord. _____

Sampler(s): NE

Additional Coord. (Explain) _____

Sample Collection Address

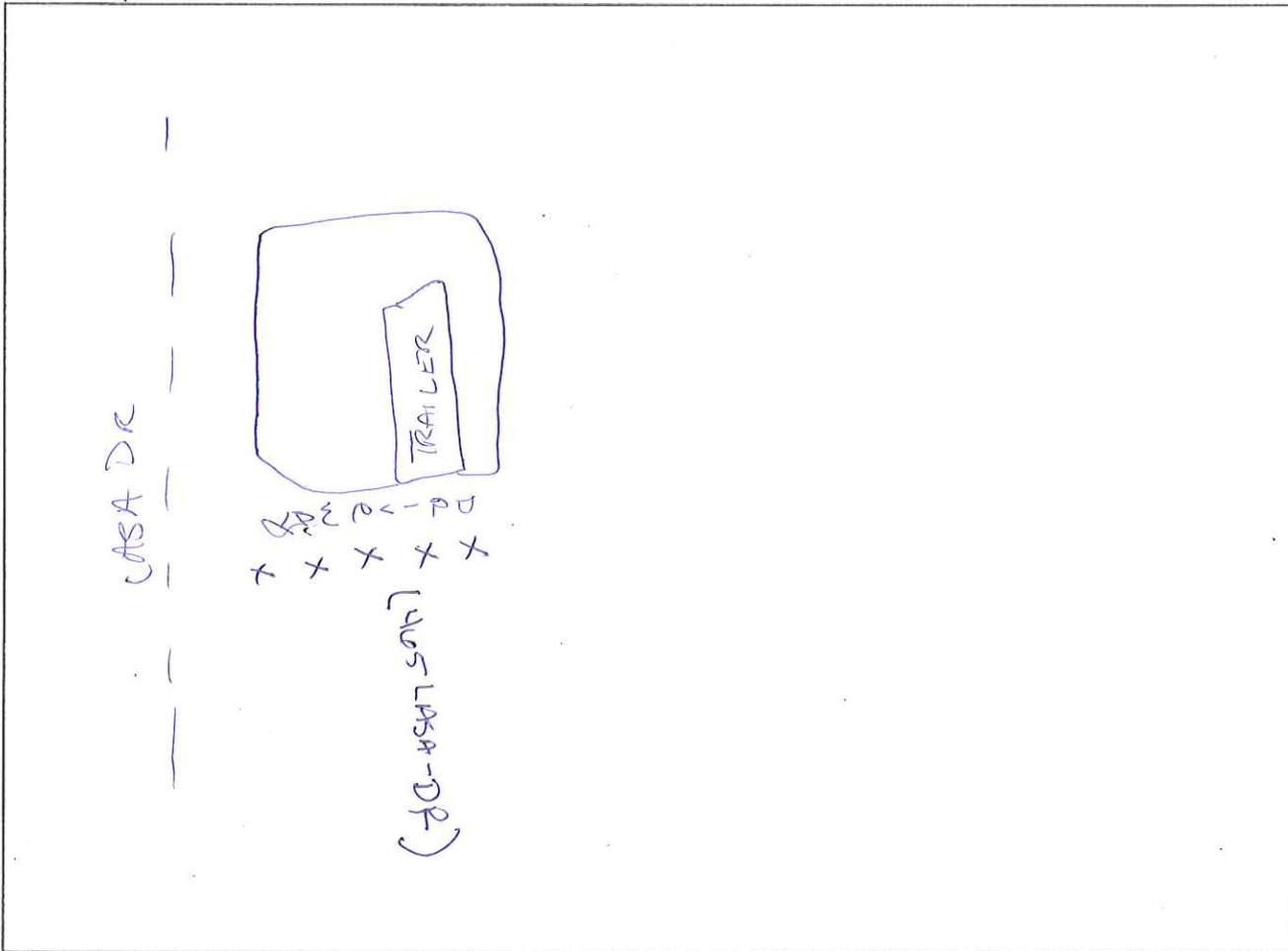
465 LASA DR

Photographs:

(# and Description)

100 - 2438 Driveway of
trailer sample
(465 LASA - DR)

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coor. _____

Date/Time: 12/25/12

Back Yard Sample Coor. _____

Sampler(s): NE

Additional Coor. (Explain) _____

Photographs: _____

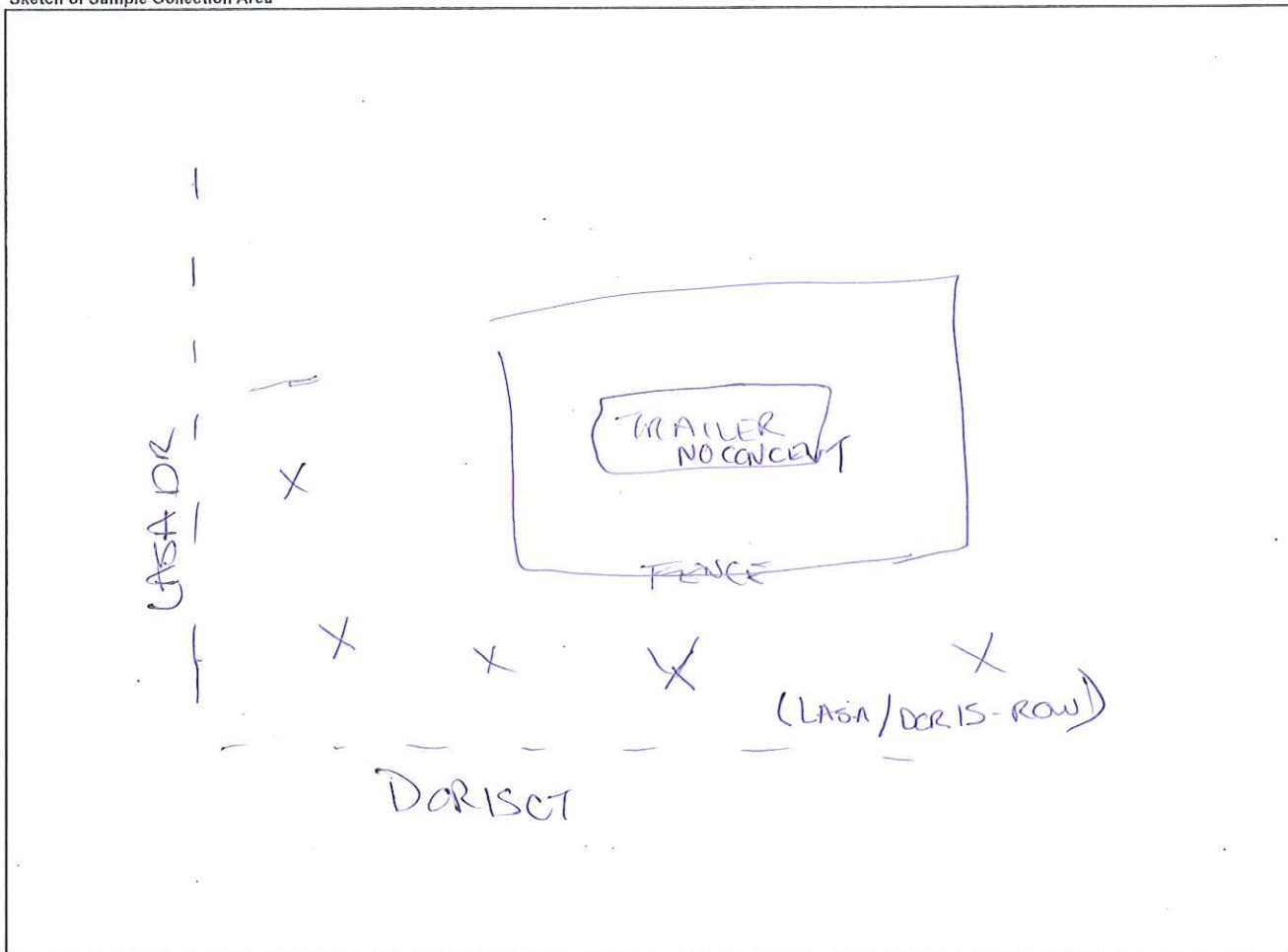
100-2347 - Right of way on Doris St

Sample Collection Address

LASA / DORIS - ROW

(# and Description)

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Date/Time: 13 JUN 12 / 1130

Sampler(s): NE

Front Yard Sample Coord. _____

Back Yard Sample Coord. _____

Additional Coord. (Explain) _____

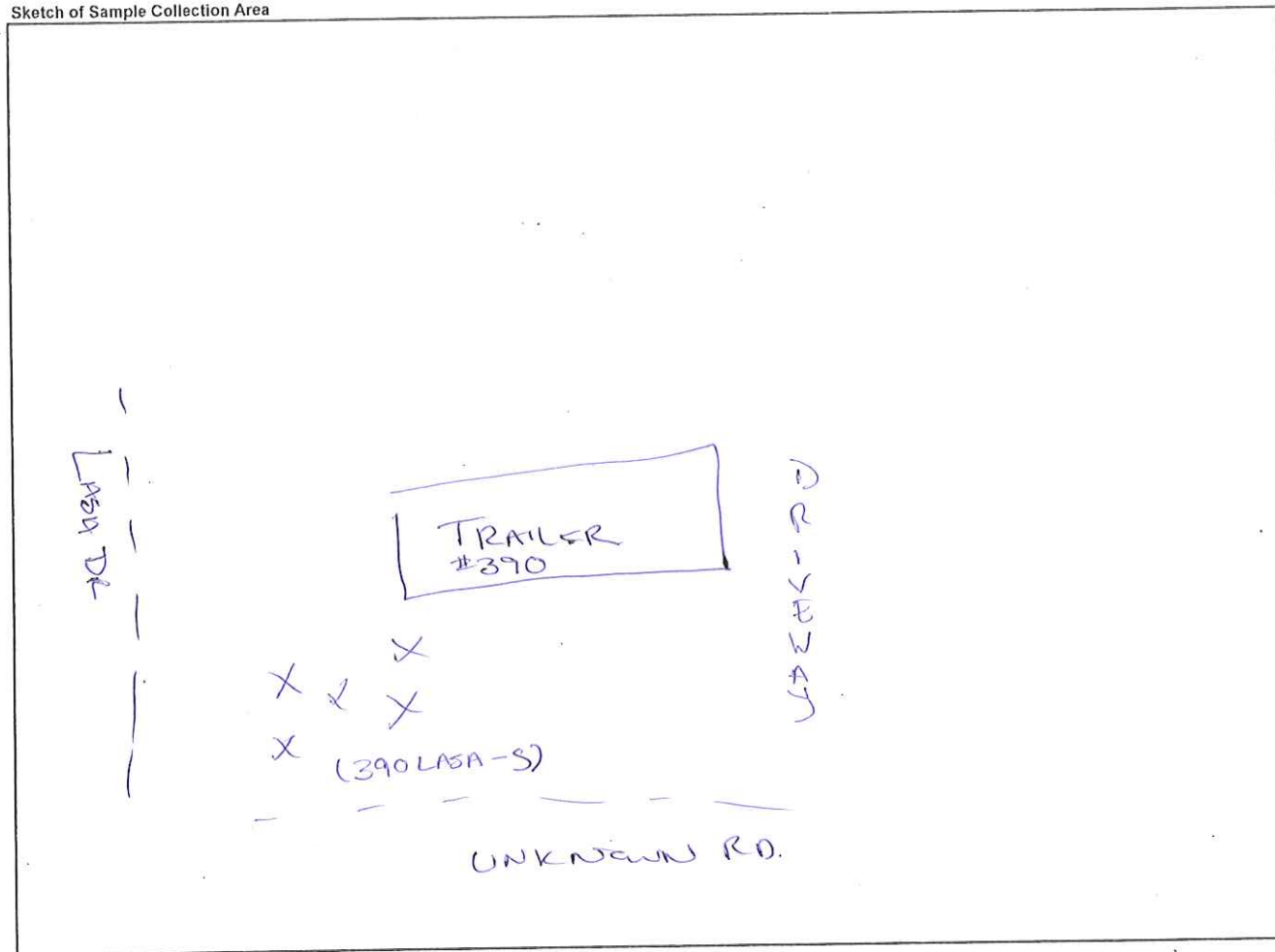
Photographs: '00-2443 - FRONT OF TRAILER

(# and Description)

Sample Collection Address

390 LASA DR

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coor. _____

Date/Time: 13 JUN 12 / 1014

Back Yard Sample Coor. _____

Sampler(s): NE

Additional Coor. (Explain) _____

Sample Collection Address

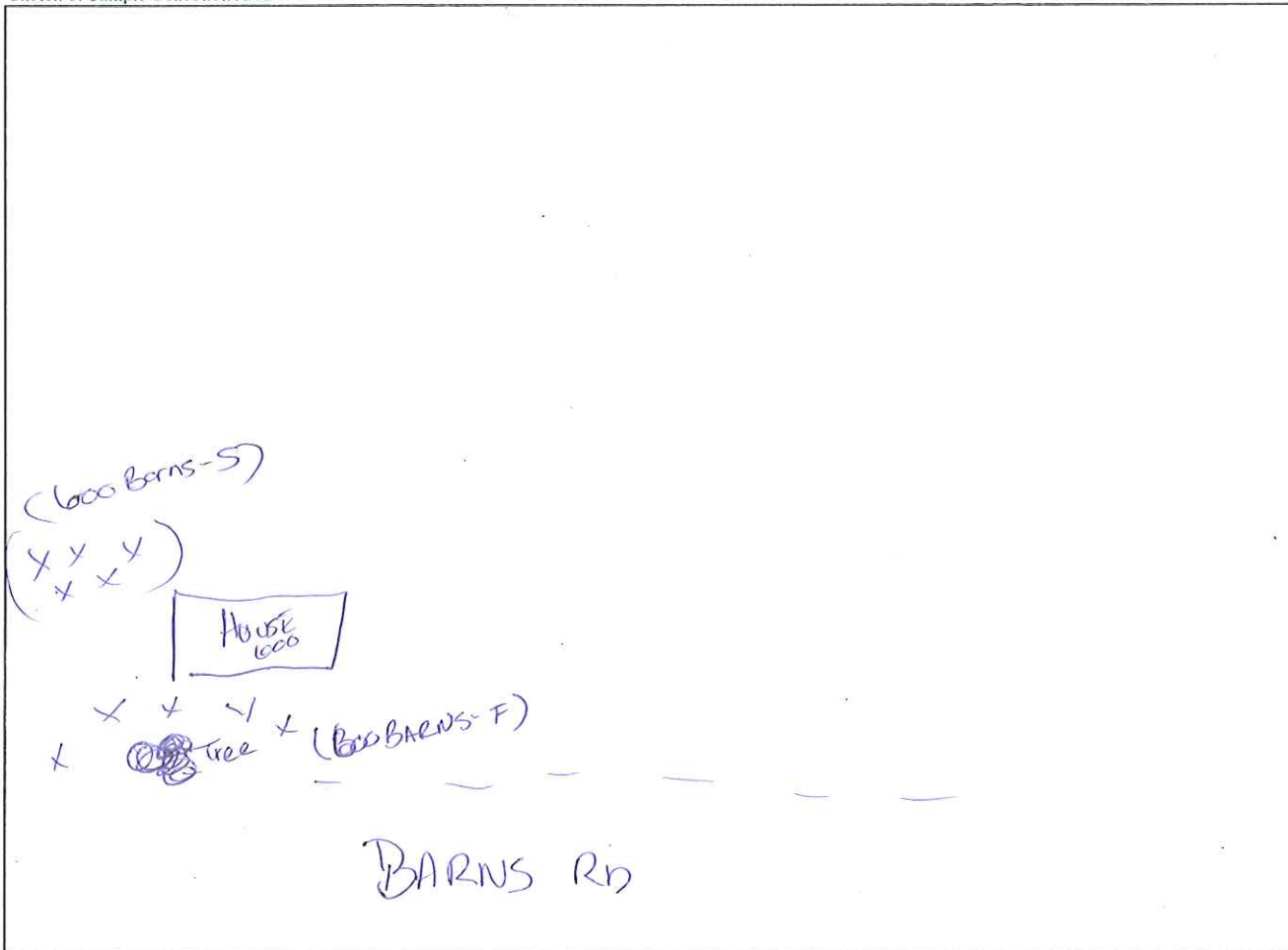
600 BARNES

Photographs: 100-2431- Front YARD, Driveway
of 600 Barnes.

(# and Description)

100-2432- Side yard (600 Barnes-S)

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coor. _____

Date/Time: 13 JUN 12

Back Yard Sample Coor. _____

Sampler(s): NE

Additional Coor. (Explain) _____

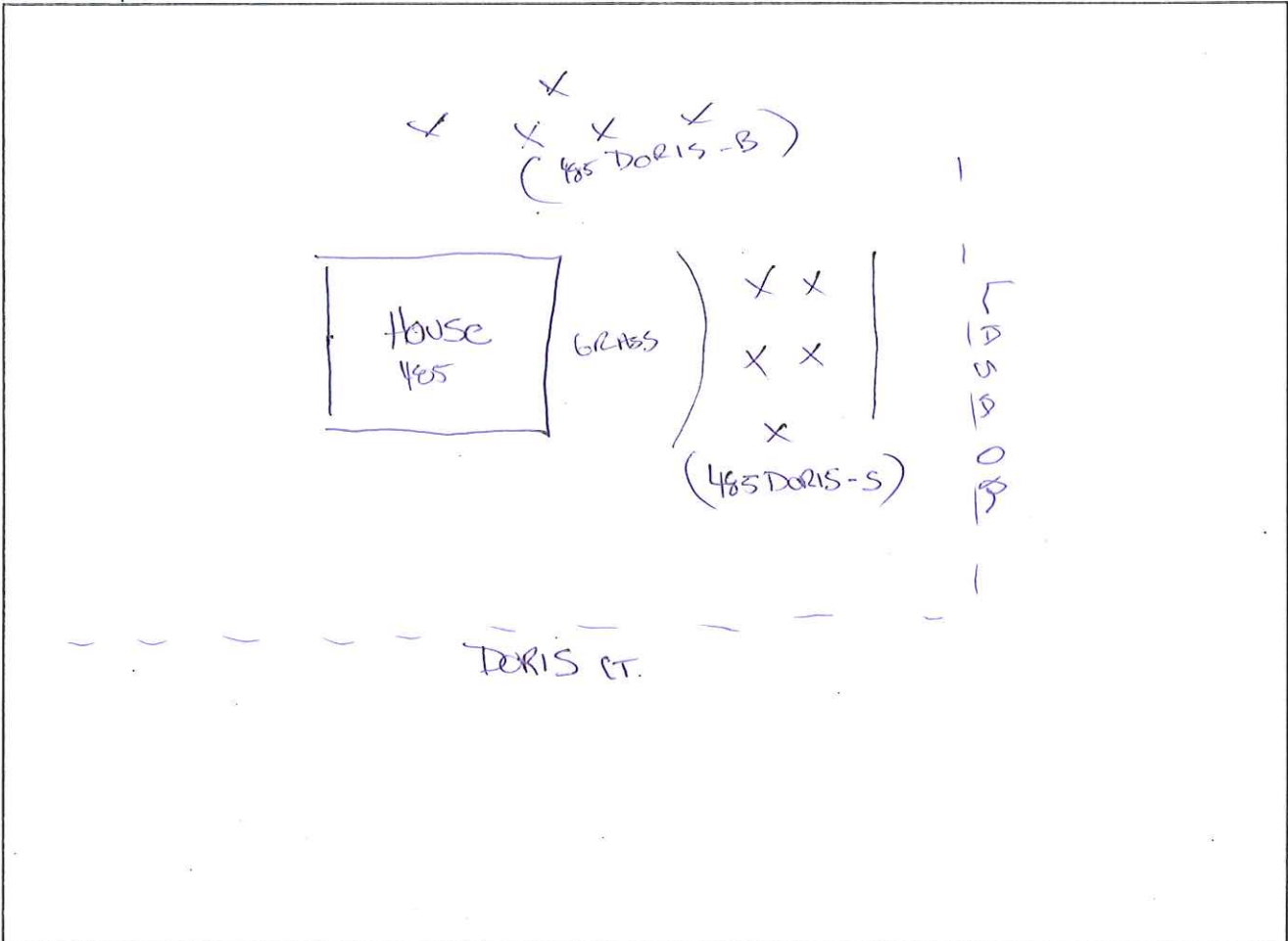
Sample Collection Address

485 DORIS CT

Photographs: ¹⁰⁰⁻2483- side of House

(# and Description) 100-2431 Back of House

Sketch of Sample Collection Area



Notes/Comments:

Site Name: McDermitt Residential Sampling

Front Yard Sample Coord. _____

Date/Time: 13 JUN 12 / 1043

Back Yard Sample Coord. _____

Sampler(s): NE

Additional Coord. (Explain) _____

Sample Collection Address

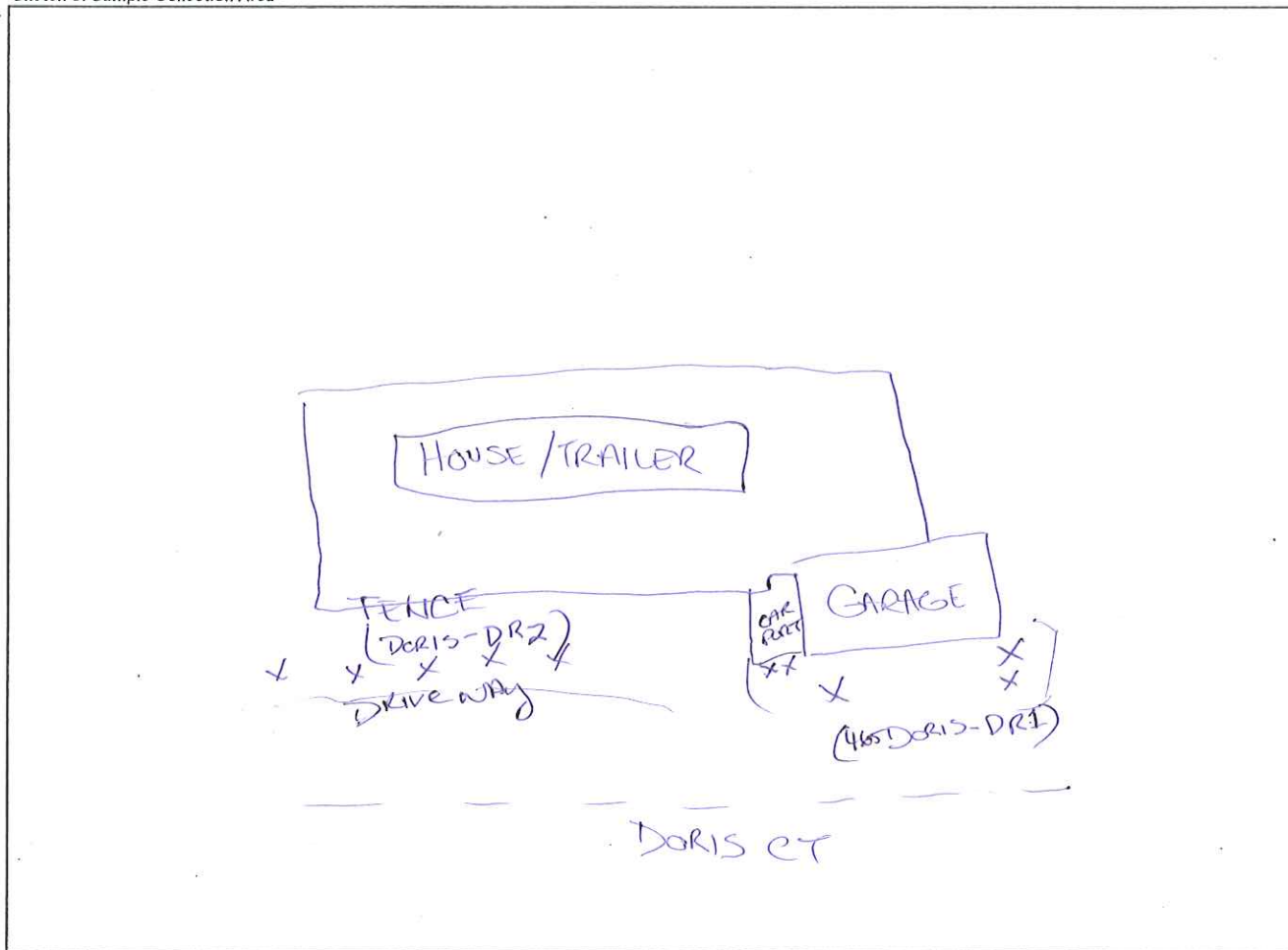
465 DORIS CT

Photographs: 100-2435 - IN FRONT OF GARAGE AND CARPORT
485 DORIS - DRI

(# and Description)

100-2436 - FRONT DRIVEWAY

Sketch of Sample Collection Area



Notes/Comments:

Appendix D: Tables

Table 1	Residential and Public Property Soil Sample Data Summary
Table 2	Public Access Roadway Soil Sample Data
Table 3	Field XRF and Laboratory Analysis Data Correlation Study
Table 4	Standard Reference Material (SRM) Analysis Results

**Table 1. Residential and Public Property Soil Sample Data Summary
McDermitt, Humboldt County, Nevada and Malheur County, Oregon
Mine Waste Removal Assessment at Properties of Release or Threatened Release**

					Total Arsenic (TAs)		Total Mercury (THg)	
U.S. EPA Site-Specific Action Level, Residential Soil					⁽¹⁾ 60 (mg/kg)		⁽²⁾ 80 (mg/kg)	
Sample Identification	Property Address/ Description	Street Name	⁽⁶⁾ Parcel Identification Number	5-Point Composite Soil Sample Location	⁽³⁾ XRF Result (mg/kg)	⁽⁴⁾ Lab Result (mg/kg)	⁽³⁾ XRF Result (mg/kg)	⁽⁵⁾ Lab Result (mg/kg)
BARNES ROAD								
600-BARNES-DR	600	Barnes Rd.	314403	Driveway, East of Residence	60	59	134	130
600-BARNES-S	600	Barnes Rd.	314403	Backyard, South of Residence	63	65	91	110
BUCKSKIN ROAD								
105-BUCKSKIN-B	105	Buckskin Rd.	307101	Backyard, East of Residence	8	--	<LOD	--
125-BUCKSKIN-F	125	Buckskin Rd.	307102	Frontyard, Buckskin Rd. right-of-way	58	58	65	230
125-BUCKSKIN-DR	125	Buckskin Rd.	307102	Driveway (North Side), South of Residence	9	--	18	--
145-BUCKSKIN-1	145	Buckskin Rd.	307103	Driveway (North Side)	64	61	123	140
145-BUCKSKIN-2	145	Buckskin Rd.	307103	Driveway (South Side)	492	--	131	--
165-BUCKSKIN-F	165	Buckskin Rd.	307104	Frontyard, Buckskin Rd. right-of-way	56	56	97	120
165-BUCKSKIN-DR	165	Buckskin Rd.	307104	Driveway, South of Residence	63	65	127	190
165-BUCKSKIN-B1	165	Buckskin Rd.	307104	Backyard (1), East of Residence	39	37	75	85
165-BUCKSKIN-B2	165	Buckskin Rd.	307104	Backyard (2), East of Residence	36	--	100	--
205-BUCKSKIN-F	205	Buckskin Rd.	307106	Frontyard, Buckskin Rd. right-of-way	42	44	73	83
205-BUCKSKIN-B	205	Buckskin Rd.	307106	Backyard, East of Residence	87	--	103	--
CORDERO MINE ROAD								
65-CORDERO-S1	65	Cordero Mine Rd.	361105	Sideyard, West of Residence/Casino (1)	56	62	86	120
65-CORDERO-S2	65	Cordero Mine Rd.	361105	Sideyard, West of Residence/Casino (2)	21	--	51	--
90-CORDERO-DR	90	Cordero Mine Rd.	344101	Driveway, West of Residence	14	--	51	--
90-CORDERO-B	90	Cordero Mine Rd.	344101	Backyard, South of Residence	30	27	75	77
DORA COURT								
450-DORA-F	450	Dora Ct.	362112	Frontyard, South of Residence	50	55	75	94
450-DORA-B	450	Dora Ct.	362112	Backyard, North of Residence	49	58	90	110
455-DORA-DR-F	455	Dora Ct.	362113	Driveway, West of Residence	47	97	81	83
455-DORA-DR-S	455	Dora Ct.	362114	Driveway, South of Residence	57	61	97	95
455-DORA-B	455	Dora Ct.	362114	Backyard, East of Residence	61	--	90	--
DORIS COURT								
465-DORIS-DR-1	465	Doris Ct.	362105	Driveway, West of Residence	48	39	112	170
465-DORIS-DR-2	465	Doris Ct.	362105	Driveway, West of Residence	46	47	88	87
485-DORIS-B	485	Doris Ct.	362107	Backyard, East of Residence	50	51	111	110
485-DORIS-S	485	Doris Ct.	362106	Sideyard, South of Residence	44	--	50	--
HIGHWAY 95								
9707-HWY 95-S	9707	Highway 95	41543E18D00900	Driveway, South of Structure	36	34	77	71
9689-HWY 95-F	9689	Highway 95	41543E18D00400	Driveway, East of Structure (Front)	<LOD	--	12	--
9689-HWY 95-S	9689	Highway 95	41543E18D00400	Driveway, South of Structure (Side)	38	37	79	91
JACA DRIVE								
275-JACA-F	275	Jaca Dr.	359147	Frontyard, West of Residence	38	--	111	--
275-JACA-S1	275	Jaca Dr.	359147	Sideyard, North of Residence	9	--	<LOD	--
275-JACA-S2	275	Jaca Dr.	359147	Sideyard, South of Residence	25	4.5	62	0.87
285-JACA-F	285	Jaca Dr.	359147	Frontyard, West of Residence	12	--	14	--
315-JACA-DR	315	Jaca Dr.	359148	Driveway, North of Residence	51	54	135	110

**Table 1. Residential and Public Property Soil Sample Data Summary
McDermitt, Humboldt County, Nevada and Malheur County, Oregon
Mine Waste Removal Assessment at Properties of Release or Threatened Release**

					Total Arsenic (TAs)		Total Mercury (THg)	
U.S. EPA Site-Specific Action Level, Residential Soil					⁽¹⁾ 60 (mg/kg)		⁽²⁾ 80 (mg/kg)	
Sample Identification	Property Address/ Description	Street Name	⁽⁶⁾ Parcel Identification Number	5-Point Composite Soil Sample Location	⁽³⁾ XRF Result (mg/kg)	⁽⁴⁾ Lab Result (mg/kg)	⁽³⁾ XRF Result (mg/kg)	⁽⁵⁾ Lab Result (mg/kg)
325-JACA-F	325	Jaca Dr.	359149	Frontyard, Jaca Dr. right-of-way	25	--	51	--
335-JACA-F	335	Jaca Dr.	359150	Frontyard, Jaca Dr. right-of-way	20	--	33	--
340-JACA-VL	340	Jaca Dr.	359551	Vacant Lot, West of Jaca Dr.	71	--	152	--
350-JACA-DR	350	Jaca Dr.	359552	Driveway, South of Residence	52	54	83	32
LASA DRIVE								
355-LASA-DR	355	Lasa Dr.	363101	Driveway, West of Residence	45	--	85	--
390-LASA-S	390	Lasa Dr.	314301	Sideyard, West of Residence	56	54	65	70
390-ONEILL-2-DR	390	Lasa Dr.	314301	Driveway, East of Residence	49	57	64	64
390-ONEILL-2-S	390	Lasa Dr.	314301	Sideyard Driveway, South of Residence	46	45	81	73
390-ONEILL-2-DR-2	390	Lasa Dr.	314301	Small Driveway, Immediately South of Lasa Dr.	31	--	953	--
390-TRAILER-DR	390	Lasa Dr.	314301	Driveway, Unknown Mobile Home	65	70	118	110
465-LASA-DR	465	Lasa Dr.	363112	Driveway, East and North of Residence	47	46	72	74
1375-RD-1	520	Lasa Dr. (CR 1375)	314202	Entrance Driveway/Road	51	57	158	140
1375-RD-2	520	Lasa Dr. (CR 1375)	314202	Entrance Driveway/Road	56	64	109	130
BARNES-DR	560	Lasa Dr.	314402	Residence Driveway, West of Barnes Rd.	23	--	39	--
585-LASA-F	585	Lasa Dr.	362109	Frontyard Driveway, South of Residence	59	63	123	92
585-LASA-S	585	Lasa Dr.	362109	Sideyard Driveway, East of Residence	58	60	132	160
ONEILL-LASA-F	650	Lasa Dr.	314508	Frontyard, Lasa Dr. right-of-way	57	65	91	93
ONEILL-LASA-DR	650	Lasa Dr.	314508	Driveway, West of Residence (Black Material)	29	--	252	--
ONEILL-LASA-B	650	Lasa Dr.	314508	Backyard, South of Residence	50	60	70	140
705-LASA-1	705	Lasa Dr. (Oregon Energy)	362118	Pioneer Rd. right-of-way	49	52	90	78
705-LASA-2	705	Lasa Dr. (Oregon Energy)	362118	Fenced Area North of Residence	51	54	110	110
705-LASA-3	705	Lasa Dr. (Oregon Energy)	362118	Fenced Area North of Residence	43	--	110	--
705-LASA-4	705	Lasa Dr. (Oregon Energy)	362118	Stockpile, North of Residence	51	53	76	93
Lasa/Doris-ROW	right-of-way	Lasa Dr./Doris Ct.	Right-of-Way Location	Lasa Dr. and Doris Ct. right-of-way	51	64	85	94
MARGARITA ROAD								
MARGARITA-RD-1	vacant lot	Margarita Rd.	41S43E18D01000	Margarita Rd. right-of-way	41	--	87	--
MARGARITA-FIELD-2	vacant lot	Margarita Rd.	41S43E18D01000	Vacant Lot East of Roadway	32	--	247	--
OLIVARRIA ROAD								
85-OLAV-VL	85	Olivarria Rd.	359248	Vacant Lot, West of Residence	26	--	24	--
95-OLAV-DR	95	Olivarria Rd.	359248	Driveway, Reeves Trailer Park	25	--	386	--
OLAV-PIONEER-1	right-of-way	Olivarria Rd./Pioneer Rd.	Right-of-Way Location	Olivarria Rd. and Pioneer Rd. right-of-way	37	--	103	--
PIONEER DRIVE								
265-JACA-VL-1	105	Pioneer Dr.	359157	Vacant Lot	13	--	35	--
265-JACA-VL-2	105	Pioneer Dr.	359157	Vacant Lot	22	--	32	--
265-JACA-VL-3	105	Pioneer Dr.	359157	Vacant Lot	42	--	51	--
115-PIONEER-1	115	Pioneer Dr. (Jaca Rd.)	352105	Field North of Residence	28	14	89	75
115-PIONEER-2	115	Pioneer Dr. (Jaca Rd.)	352105	Access Drive North of Residence	61	52	92	130
115-PIONEER-3	115	Pioneer Dr. (Jaca Rd.)	352105	Access Drive South of Residence	50	53	115	130
200-PIONEER-1	200	Pioneer Dr. (Library)	359432	Pioneer Dr. right-of-way	54	54	76	93
200-PIONEER-2	200	Pioneer Dr. (Library)	359433	Frontyard, West of Humbolt Co. Library	8	--	18	--

**Table 1. Residential and Public Property Soil Sample Data Summary
McDermitt, Humboldt County, Nevada and Malheur County, Oregon
Mine Waste Removal Assessment at Properties of Release or Threatened Release**

					Total Arsenic (TAs)		Total Mercury (THg)	
U.S. EPA Site-Specific Action Level, Residential Soil					⁽¹⁾ 60 (mg/kg)		⁽²⁾ 80 (mg/kg)	
Sample Identification	Property Address/ Description	Street Name	⁽⁶⁾ Parcel Identification Number	5-Point Composite Soil Sample Location	⁽³⁾ XRF Result (mg/kg)	⁽⁴⁾ Lab Result (mg/kg)	⁽³⁾ XRF Result (mg/kg)	⁽⁵⁾ Lab Result (mg/kg)
REEVES ROAD								
105-OPALITE-F1	105	Reeves Rd.	Right-of-Way Location	Reeves Rd. and Opalite Rd. right-of-way	57	--	120	--
125-REEVES-DR	125	Reeves Rd.	307302	Driveway, West of Residence	44	--	98	--
130-REEVES-F	130	Reeves Rd.	307202	Frontyard, Reeves Rd. right-of-way	62	49	130	92
130-REEVES-DR	130	Reeves Rd.	307202	Driveway, North of Residence	50	63	95	150
145-REEVES-F	145	Reeves Rd.	307303	Frontyard, Reeves Rd. right-of-way	53	60	82	140
145-REEVES-DR	145	Reeves Rd.	307303	Driveway, South of Residence	59	56	93	100
145-REEVES-B	145	Reeves Rd.	307303	Backyard, East of Residence	66	61	143	120
150-REEVES-F	150	Reeves Rd.	307203	Frontyard, Reeves Rd. right-of-way	83	--	191	--
150-REEVES-DR	150	Reeves Rd.	307203	Driveway, East of Residence	27	22	82	95
165-REEVES-F	165	Reeves Rd.	Right-of-Way Location	Reeves Rd. right-of-way	53	61	136	230
170-REEVES-S	170	Reeves Rd.	307204	Sidyard, North of Residence	<LOD	--	<LOD	--
190-REEVES-DR	190	Reeves Rd.	307205	Driveway	21	21	81	58
215-REEVES-F	215	Reeves Rd.	Right-of-Way Location	Reeves Rd. right-of-way	68	70	126	120
215-REEVES-S	215	Reeves Rd.	Right-of-Way Location	Pioneer Dr. right-of-way	59	56	115	93
220-REEVES-F	220	Reeves Rd.	Right-of-Way Location	Reeves Rd. right-of-way	67	70	105	110
220-REEVES-S	220	Reeves Rd.	Right-of-Way Location	Pioneer Dr. right-of-way	51	63	83	72
STATELINE ROAD								
MITCHELL-RV-LOT	RV Parking	Stateline Rd.	41S43E18D00600	Mitchell RV Parking	29	--	38	--
LUCKY 7 RANCH								
LUCKY-7-DR-1	Lucky 7 Ranch	Entrance Driveway	41S43E00803	Driveway, East of Residence	30	--	53	--
LUCKY-7-DR-2	Lucky 7 Ranch	Entrance Driveway	41S43E00803	Driveway, East of Residence	31	30	71	29
UNKNOWN STREET LOCATIONS								
J-REEVES-1	Reeves Family Trust Agreement Property		359247	Backyard, South of Residence	34	--	107	--
J-REEVES-2	Reeves Family Trust Agreement Property		359221	Vacant Fenced Area for Mobile Home	52	47	101	170

Notes:

- (1) U.S. EPA Site-Specific Action Level for Total Arsenic established under: *Soil Action Level for Arsenic (McDermitt, Nevada), U.S. EPA Region 9, 2012.*
- (2) U.S. EPA Site-Specific Action Level for Total Mercury established under: *Soil Action Level for Mercury (McDermitt, Nevada), U.S. EPA Region 9, 2012.*
- (3) Field XRF analysis performed by U.S. EPA method 6200 for total Arsenic and total Mercury
- (4) Laboratory analysis performed by U.S. EPA method 6010C for total Arsenic
- (5) Laboratory analysis performed by U.S. EPA method 7471B for total Mercury
- (6) Parcel Identification Numbers received from the Tax Assessor offices of Humboldt County, Nevada and Malheur County, Oregon

Highlight Indicates the sample concentration for total Arsenic and/or total Mercury exceeds the U.S. EPA Site Specific Action Level for residential soil

BOLD Indicates the sample concentration which exceeds the U.S. EPA Site-Specific Action Level for residential soil

<LOD = Less than Field XRF analysis detection limit for analyte.

mg/kg = milligrams per kilogram

XRF = X-Ray Fluorescence

Table 2. Public Access Roadway Soil Sample Data Summary
McDermitt, Humboldt County, Nevada and Malheur County, Oregon
Mine Waste Removal Assessment at Properties of Release or Threatened Release

			Total Arsenic (TAs)		Total Mercury (THg)	
U.S. EPA Region 9 Regional Screening Level, Non-Residential Soil			160 (mg/kg)		310 (mg/kg)	
Sample Identification	Roadway Description	Discrete Point Soil Sample Location	⁽¹⁾ XRF Result (mg/kg)	⁽²⁾ Lab Result (mg/kg)	⁽¹⁾ XRF Result (mg/kg)	⁽³⁾ Lab Result (mg/kg)
BUCKSKIN ROAD ALLEY						
BUCKSKIN-ALLEY-1	Buckskin Rd. Alley	Center of Alley	57	71	75	98
BUCKSKIN-ALLEY-2	Buckskin Rd. Alley	Center of Alley	48	53	82	84
BUCKSKIN-ALLEY-3	Buckskin Rd. Alley	Center of Alley	11	--	<LOD	--
BUCKSKIN-ALLEY-4	Buckskin Rd. Alley	Center of Alley	54	58	105	110
BUCKSKIN-ALLEY-5	Buckskin Rd. Alley	Center of Alley	30	--	52	--
BUCKSKIN-ALLEY-6	Buckskin Rd. Alley	Center of Alley	9	--	15	--
BUCKSKIN-ALLEY-7	Buckskin Rd. Alley	Center of Alley	33	34	68	97
BUCKSKIN-ALLEY-8	Buckskin Rd. Alley	Center of Alley	44	48	59	89
REEVES ROAD ALLEY						
REEVES-ALLEY-1	Reeves Rd. Alley	Center of Alley	25	--	27	--
REEVES-ALLEY-2	Reeves Rd. Alley	Center of Alley	37	36	61	68
REEVES-ALLEY-3	Reeves Rd. Alley	Center of Alley	25	--	52	--
REEVES-ALLEY-5	Reeves Rd. Alley	Center of Alley	58	58	84	71
REEVES-ALLEY-6	Reeves Rd. Alley	Center of Alley	63	60	247	320
REEVES-ALLEY-7	Reeves Rd. Alley	Center of Alley	46	53	<LOD	1.3

Notes:

(1) Field XRF analysis performed by U.S. EPA method 6200 for total Arsenic and total Mercury

(2) Laboratory analysis performed by U.S. EPA method 6010C for total Arsenic

(3) Laboratory analysis performed by U.S. EPA method 7471B for total Mercury

Highlight Sample concentration for total Arsenic and/or total Mercury exceeds the U.S. EPA Region 9 Regional Screening Level (RSL) for non-residential soil

BOLD Sample concentration which exceeds the U.S. EPA Region 9 Regional Screening Level (RSL) for non-residential soil

<LOD = Less than Field XRF analysis detection limit for analyte.

mg/kg = milligrams per kilogram

XRF = X-Ray Fluorescence

**Table 3. Field XRF and Laboratory Analysis Data Correlation Study
McDermitt, Humboldt County, Nevada and Malheur County, Oregon
Mine Waste Removal Assessment at Properties of Release or Threatened Release**

					Total Arsenic (TAs)		Total Mercury (THg)	
Sample Identification	Property Address/ Description	Street Name	⁽⁴⁾ Parcel Identification Number	Soil Sample Location	⁽¹⁾ XRF Result (mg/kg)	⁽²⁾ Lab Result (mg/kg)	⁽¹⁾ XRF Result (mg/kg)	⁽³⁾ Lab Result (mg/kg)
BARNES ROAD								
600-BARNES-DR	600	Barnes Rd.	314403	Driveway, East of Residence	60	59	134	130
600-BARNES-S	600	Barnes Rd.	314403	Backyard, South of Residence	63	65	91	110
BUCKSKIN ROAD								
125-BUCKSKIN-F	125	Buckskin Rd.	307102	Frontyard, Buckskin Rd. right-of-way	58	58	65	230
145-BUCKSKIN-1	145	Buckskin Rd.	307103	Driveway (North Side)	64	61	123	140
165-BUCKSKIN-F	165	Buckskin Rd.	307104	Frontyard, Buckskin Rd. right-of-way	56	58	97	120
165-BUCKSKIN-DR	165	Buckskin Rd.	307104	Driveway, South of Residence	63	65	127	190
165-BUCKSKIN-B1	165	Buckskin Rd.	307104	Backyard (1), East of Residence	39	37	75	85
205-BUCKSKIN-F	205	Buckskin Rd.	307106	Frontyard, Buckskin Rd. right-of-way	42	44	73	83
BUCKSKIN ROAD ALLEY								
BUCKSKIN-ALLEY-1	Alley	Buckskin Rd.	n/a	Center of Alley	57	71	75	98
BUCKSKIN-ALLEY-2	Alley	Buckskin Rd.	n/a	Center of Alley	48	53	82	84
BUCKSKIN-ALLEY-4	Alley	Buckskin Rd.	n/a	Center of Alley	54	58	105	110
BUCKSKIN-ALLEY-7	Alley	Buckskin Rd.	n/a	Center of Alley	33	34	68	97
BUCKSKIN-ALLEY-8	Alley	Buckskin Rd.	n/a	Center of Alley	44	48	59	89
CORDERO MINE ROAD								
65-CORDERO-S1	65	Cordero Mine Rd.	361105	Sideyard, West of Residence/Casino (1)	56	62	86	120
90-CORDERO-B	90	Cordero Mine Rd.	344101	Backyard, South of Residence	30	27	75	77
DORA COURT								
450-DORA-F	450	Dora Ct.	362112	Frontyard, South of Residence	50	55	75	94
450-DORA-B	450	Dora Ct.	362112	Backyard, North of Residence	49	58	90	110
455-DORA-DR-F	455	Dora Ct.	362113	Driveway, West of Residence	47	97	81	83
455-DORA-DR-S	455	Dora Ct.	362114	Driveway, South of Residence	57	61	97	95
DORIS COURT								
465-DORIS-DR-1	465	Doris Ct.	362105	Driveway, West of Residence	48	39	112	170
465-DORIS-DR-2	465	Doris Ct.	362105	Driveway, West of Residence	46	47	88	87
485-DORIS-B	485	Doris Ct.	362107	Backyard, East of Residence	50	51	111	110
HIGHWAY 95								
9707-HWY 95-S	9707	Highway 95	41S43E18D00900	Driveway, South of Structure	36	34	77	71
9689-HWY 95-S	9689	Highway 95	41S43E18D00400	Driveway, South of Structure (Side)	38	37	79	91
JACA DRIVE								
275-JACA-S2	275	Jaca Dr.	359147	Sideyard, South of Residence	25	4.5	62	0.87
315-JACA-DR	315	Jaca Dr.	359148	Driveway, North of Residence	51	54	135	110
350-JACA-DR	350	Jaca Dr.	359552	Driveway, South of Residence	52	54	83	32

**Table 3. Field XRF and Laboratory Analysis Data Correlation Study
McDermitt, Humboldt County, Nevada and Malheur County, Oregon
Mine Waste Removal Assessment at Properties of Release or Threatened Release**

					Total Arsenic (TAs)		Total Mercury (THg)	
Sample Identification	Property Address/ Description	Street Name	⁽⁴⁾ Parcel Identification Number	Soil Sample Location	⁽¹⁾ XRF Result (mg/kg)	⁽²⁾ Lab Result (mg/kg)	⁽¹⁾ XRF Result (mg/kg)	⁽³⁾ Lab Result (mg/kg)
LASA DRIVE								
390-LASA-S	390	Lasa Dr.	314301	Sideyard, West of Residence	56	54	65	70
390-ONEILL-2-DR	390	Lasa Dr.	314301	Driveway, East of Residence	49	57	64	64
390-ONEILL-2-S	390	Lasa Dr.	314301	Sideyard Driveway, South of Residence	46	45	81	73
390-TRAILER-DR	390	Lasa Dr.	314301	Driveway, Unknown Mobile Home	65	70	118	110
465-LASA-DR	465	Lasa Dr.	363112	Driveway, East and North of Residence	47	46	72	74
1375-RD-1	520	Lasa Dr. (CR 1375)	314202	Entrance Driveway/Road	51	57	158	140
1375-RD-2	520	Lasa Dr. (CR 1375)	314202	Entrance Driveway/Road	56	64	109	130
585-LASA-F	585	Lasa Dr.	362109	Frontyard Driveway, South of Residence	59	63	123	92
585-LASA-S	585	Lasa Dr.	362109	Sideyard Driveway, East of Residence	58	60	132	160
ONEILL-LASA-F	650	Lasa Dr.	314508	Frontyard, Lasa Dr. right-of-way	57	65	91	93
ONEILL-LASA-B	650	Lasa Dr.	314508	Backyard, South of Residence	50	60	70	140
705-LASA-1	705	Lasa Dr. (Oregon Energy)	362118	Pioneer Rd. right-of-way	49	52	90	78
705-LASA-2	705	Lasa Dr. (Oregon Energy)	362118	Fenced Area North of Residence	51	54	110	110
705-LASA-4	705	Lasa Dr. (Oregon Energy)	362118	Stockpile, North of Residence	51	53	76	93
Lasa/Doris-ROW	right-of-way	Lasa Dr./Doris Ct.	Right-of-Way Location	Lasa Dr. and Doris Ct. right-of-way	51	64	85	94
PIONEER DRIVE								
115-PIONEER-1	115	Pioneer Dr. (Jaca Rd.)	352105	Field North of Residence	28	14	89	75
115-PIONEER-2	115	Pioneer Dr. (Jaca Rd.)	352105	Access Drive North of Residence	61	52	92	130
115-PIONEER-3	115	Pioneer Dr. (Jaca Rd.)	352105	Access Drive South of Residence	50	53	115	130
200-PIONEER-1	200	Pioneer Dr. (Library)	359432	Pioneer Dr. right-of-way	54	54	76	93
REEVES ROAD								
130-REEVES-F	130	Reeves Rd.	307202	Frontyard, Reeves Rd. right-of-way	62	49	130	92
130-REEVES-DR	130	Reeves Rd.	307202	Driveway, North of Residence	50	63	95	150
145-REEVES-F	145	Reeves Rd.	307303	Frontyard, Reeves Rd. right-of-way	53	60	82	140
145-REEVES-DR	145	Reeves Rd.	307303	Driveway, South of Residence	59	56	93	100
145-REEVES-B	145	Reeves Rd.	307303	Backyard, East of Residence	66	61	143	120
150-REEVES-DR	150	Reeves Rd.	307203	Driveway, East of Residence	27	22	82	95
165-REEVES-F	165	Reeves Rd.	Right-of-Way Location	Reeves Rd. right-of-way	53	61	136	230
190-REEVES-DR	190	Reeves Rd.	307205	Driveway	21	21	81	58
215-REEVES-F	215	Reeves Rd.	Right-of-Way Location	Reeves Rd. right-of-way	68	70	126	120
215-REEVES-S	215	Reeves Rd.	Right-of-Way Location	Pioneer Dr. right-of-way	59	56	115	93
220-REEVES-F	220	Reeves Rd.	Right-of-Way Location	Reeves Rd. right-of-way	67	70	105	110
220-REEVES-S	220	Reeves Rd.	Right-of-Way Location	Pioneer Dr. right-of-way	51	63	83	72
REEVES ROAD ALLEY								
REEVES-ALLEY-2	Alley	Reeves Rd.	n/a	Center of Alley	37	36	61	68
REEVES-ALLEY-5	Alley	Reeves Rd.	n/a	Center of Alley	58	58	84	71
REEVES-ALLEY-6	Alley	Reeves Rd.	n/a	Center of Alley	63	60	247	320
REEVES-ALLEY-7	Alley	Reeves Rd.	n/a	Center of Alley	46	53	<LOD	1.3

**Table 3. Field XRF and Laboratory Analysis Data Correlation Study
McDermitt, Humboldt County, Nevada and Malheur County, Oregon
Mine Waste Removal Assessment at Properties of Release or Threatened Release**

					Total Arsenic (TAs)		Total Mercury (THg)	
Sample Identification	Property Address/ Description	Street Name	⁽⁴⁾ Parcel Identification Number	Soil Sample Location	⁽¹⁾ XRF Result (mg/kg)	⁽²⁾ Lab Result (mg/kg)	⁽¹⁾ XRF Result (mg/kg)	⁽³⁾ Lab Result (mg/kg)
LUCKY 7 RANCH								
LUCKY-7-DR-2	Lucky 7 Ranch	Entrance Driveway	41S43E00803	Driveway, East of Residence	31	30	71	29
UNKNOWN STREET LOCATIONS								
J-REEVES-2	Reeves Family Trust Agreement Property		359221	Vacant Fenced Area for Mobile Home	52	47	101	170

Notes:

(1) Field XRF analysis performed by U.S. EPA method 6200 for total Arsenic and total Mercury

(2) Laboratory analysis performed by U.S. EPA method 6010C for total Arsenic

(3) Laboratory analysis performed by U.S. EPA method 7471B for total Mercury

(4) Parcel Identification Numbers received from the Tax Assessor offices of Humboldt County, Nevada and Malheur County, Oregon

<LOD = Less than Field XRF analysis detection limit for analyte.

mg/kg = milligrams per kilogram

n/a = not applicable

XRF = X-Ray Fluorescence

**Table 4. Standard Reference Material (SRM) Analysis Results
McDermitt, Humboldt County, Nevada and Malheur County, Oregon
Mine Waste Removal Assessment at Properties of Release or Threatened Release**

⁽¹⁾ XRF Analysis			
Sample ID	Analysis Date	XRF Result Arsenic (mg/kg)	XRF Result Mercury (mg/kg)
Hg 56	12-Jun-2012	30	57
Hg 56	12-Jun-2012	32	69
Hg 56	12-Jun-2012	33	53
Hg 56	12-Jun-2012	32	60
Hg 56	13-Jun-2012	28	60
Hg 56	13-Jun-2012	26	54
Hg 56	13-Jun-2012	29	53
Hg 56	13-Jun-2012	28	55
Hg 56	13-Jun-2012	33	59
Average =		30	58
Standard Deviation =		3	5

⁽²⁾ Laboratory Analysis			
Sample ID	Analysis Date	Lab Result As (mg/kg)	Lab Result Hg (mg/kg)
Hg 56	07-Aug-2012	52	61

Notes:

(1) XRF analysis performed by U.S. EPA method 6200 for arsenic and mercury

(2) Laboratory analysis performed by U.S. EPA method 6010B for arsenic and U.S. EPA method 7471C for mercury

mg/kg = milligram per kilogram

XRF = X-Ray Fluorescence

Appendix E:
Laboratory Analysis and Data Validation Reports

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

Laboratory: EPA Region 9 Laboratory	Lab Project No: 1206037 SDG 12170E
Sampling Dates: 6/12/2012 & 6/13/2012	Sample Matrix: Soil
Analytical Method: As by 6010B & Hg by 7471B	Data Reviewer: M. Song

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song 
Technical QA Reviewer: Howard Edwards
Project Manager: David Neil Ellis

Date: 9/7/12
Date: _____
Date: _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	350-Jaca-Dr	1206037-01
2	J-Reeves-2	1206037-02
3	115-Pioneer-3	1206037-03
4	145-Buck-1	1206037-04
5	165-Buck-S	1206037-05
6	220-Reeve-F	1206037-06
7	190-Reeve-Dr	1206037-07
8	130 Reeve-S1	1206037-08
9	150-Reeve-Dr	1206037-09
10	145-Reeve-B	1206037-10
11	145-Reeve-B-DUP	1206037-11
12	Reeves Alley-6	1206037-12
13	215-Reeves-F	1206037-13
14	115-Pioneer-1	1206037-14
15	115-Pioneer-2	1206037-15
16	9707-HWY95-S	1206037-16
17	Buckskin Alley-7	1206037-17
18	Oneill-Lasa-B	1206037-18
19	MCD-HOTEL-1	1206037-19
20	Buckskin Alley-1	1206037-20

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- ☒ Included: no problems
- ☐ * Included: problems noted in review
- ☐ O Not Included and/or Not Available
- ☐ NR Not Required
- ☐ RS Provided As Re-submission

Case Narrative:

- ☒ Case Narrative present

Quality Control Summary Package:

- ☒ Data Summary sheets
- ☒ Initial and Continuing Calibration results
- ☒ CRDL Standard results
- ☒ Preparation Blank and Calibration Blank results
- ☒ ICP Interference Check Sample results
- ☐ * Matrix Spike recoveries
- ☐ NR Matrix Duplicate results
- ☒ Laboratory Control Sample recoveries
- ☐ NR Method of Standard Additions results
- ☒ ICP Serial Dilution results
- ☐ NR Instrument Detection Limits
- ☐ NR ICP Interelement Correction Factors
- ☐ NR ICP Linear Ranges
- ☒ Preparation Log
- ☒ Analysis Run Log

Raw QC Data Package Section

- ☒ Chain-of-Custody Records
- ☒ Instrument Printouts
- ☒ Sample Preparation Notebook Pages
- ☒ Logbook and Worksheet Pages
- ☒ Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	NO
2	Initial and Continuing Calibrations	YES
3	Laboratory Control Sample	YES
4	Matrix Spike	YES
5	Blanks and Background Samples	YES
6	Duplicate Analyses	YES
7	Interference Check Samples and Serial Dilution Analysis	YES
8	Post Digestion Spike and Standard Addition Analysis	N/A
9	Analyte Quantitation	YES
10	Overall Assessment of Data	YES
11	Usability of Data	NO

Comments: N/A: Not Applicable.

All samples were received dry in XRF cups. Results were reported on an as received basis with no percent moisture correction.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

1. HOLDING TIMES

☐ Acceptable
☒ Acceptable with qualification
☐ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:

Mercury: 28 days (from collection) for analysis.

Hexavalent chromium: 24 hours (from collection) for analysis.

All other metals: 180 days (from collection) for analysis.

Comments: The analytical holding times were met but the samples were received at 21 degree C, which is above the recommended temperature (0 to 6 degree C). The detected Hg results were qualified as estimated (J).

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

3. LABORATORY CONTROL SAMPLE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%.

For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample 145-Reeve-B was used for arsenic matrix spike analysis and the recovery was within the control limits. Sample 190-Reeve-Dr was used for mercury matrix spike analysis and the recovery was outside of control limits. Qualification was not required since the amount of mercury present in the parent sample was greater than 4X the amount spiked.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

5. BLANKS AND BACKGROUND SAMPLES

☒ Acceptable
☐ Detection Limits Adjusted

The following blanks were analyzed:

☒ Method (preparation) Blanks
☐ Field Blanks
☐ Calibration Blanks
☐ Rinsate Blanks
☐ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at method blank reporting limit level.

6. DUPLICATE ANALYSES

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Duplicates Analyzed

Type of duplicates analyzed:

☒ Field Duplicates
☐ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

Analyte (mg/kg)	145-Reeve-B	145-Reeve-B-DUP	RPD (%)
Arsenic	61	61	0
Mercury	120	140	15

Comments: The RPDs were within the control limit (<35%).

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Serial Dilution Analysis: Not analyzed

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

☐ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☒ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

$$\text{ug/L} = \frac{(\text{Instrument printout concentration, mg/L})(1000 \text{ ug/mg})(\text{final volume of extract, mL})}{(\text{Initial volume of extract, mL})}$$

Soil samples:

$$\text{mg/kg} = \frac{(\text{Instrument printout concentration, mg/L})(\text{final volume of extract, mL})(0.001 \text{ L/mL})}{(\text{weight of sample extracted, g})(0.001 \text{ kg/g})(\text{fraction solids})}$$

Comments: Analyte quantitation was acceptable.

Sample Reeves Alley-6

As: (0.609 mg/L) (0.05 L/1.0 g) (2) = 0.0609 ug/g= 60.9 mg/kg. Lab reported 60 mg/kg.

Hg: (22.4 ug/L) (0.03 L/0.2079 g) (100) = 323.23 ug/g= 323.23 mg/kg. Lab reported 320 mg/kg.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

☐ Acceptable
☒ Acceptable with Qualification
☐ Rejected

Accepted data meet the minimum requirements for the following EPA data category:

☐ ERS Screening
☐ Non-definitive with 10 % Confirmation by Definitive Methodology
☐ Definitive, Comprehensive Statistical Error Determination was performed.
☒ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the SAMPLING AND ANALYSIS PLAN MINE WASTE REMOVAL ASSESSMENT AT SITES OF RELEASE OR THREATENED RELEASE OF HAZARDOUS SUBSTANCES MCDERMITT, HUMBOLDT COUNTY, NEVADA AND MALHEUR COUNTY, OREGON, APRIL 2012 (SAP).

The following data use objective was indicated in the SAP:

TO BE USED TO EVALUATE ARSENIC AND MERCURY CONCENTRATIONS AT TARGETED PROPERTIES AND ROADWAYS WITHIN MCDERMITT IN ORDER TO DETERMINE AREAS THAT MAY REQUIRE REMEDIATION.

TO BE REVIEWED BY THE U.S. EPA AND START TO IDENTIFY SPECIFIC PROPERTIES AND ROADWAYS WHERE ARSENIC AND MERCURY CONCENTRATIONS EXCEED THEIR RESPECTIVE ACTION LEVELS.

TO BE USED AS DEFINITIVE DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVES.

B. These data meet quality objectives stated in the SAP.

AS INDICATED IN SECTION 3 OF THE SAP, THE INVESTIGATION WILL GENERATE BOTH DEFINITIVE AND NON-DEFINITIVE (SCREENING) DATA AND TABLE 3-1 & 3-2 OF THE SAP OUTLINE THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE AND NON-DEFINITIVE DATA QUALITY LEVELS. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.



United States Environmental Protection Agency Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone: (510) 412-2300 Fax: (510) 412-2302

Project Manager: Thomas Dunkelman
Project Number: R12S65
Project: McDermitt / Ft. McDermitt Removal
Assessment

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 121708
Reported: 07/20/12 16:38

Sample Results

Analyte	Reanalysis/ Extract	Result	Qualifiers/ Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1206037-01							Solid - Sampled: 06/12/12 14:22	
Sample ID: 350-Juca-Dr							Metals by EPA 6000/7000 Series Methods	
Mercury		32	A2, J J	7.5	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		54		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-02							Solid - Sampled: 06/12/12 16:29	
Sample ID: J-Reeves-2							Metals by EPA 6000/7000 Series Methods	
Mercury		170	A2, J J	7.1	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		47		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-03							Solid - Sampled: 06/12/12 16:44	
Sample ID: 115-Pioneer-3							Metals by EPA 6000/7000 Series Methods	
Mercury		130	A2, J J	6.9	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		53		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-04							Solid - Sampled: 06/12/12 09:18	
Sample ID: 145-Buck-1							Metals by EPA 6000/7000 Series Methods	
Mercury		140	A2, J J	7.5	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		61		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-05							Solid - Sampled: 06/12/12 09:21	
Sample ID: 165-Buck-S							Metals by EPA 6000/7000 Series Methods	
Mercury		190	A2, J J	7.5	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		65		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-06							Solid - Sampled: 06/12/12 10:24	
Sample ID: 220-Reeve-F							Metals by EPA 6000/7000 Series Methods	
Mercury		110	A2, J J	7.5	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		70		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-07							Solid - Sampled: 06/12/12 10:30	
Sample ID: 190-Reeve-Dr							Metals by EPA 6000/7000 Series Methods	
Mercury		58	A2, J J	7.5	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		21		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-08							Solid - Sampled: 06/12/12 10:46	
Sample ID: 130-Reeve-S1							Metals by EPA 6000/7000 Series Methods	
Mercury		150	A2, J J	7.5	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		63		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-09							Solid - Sampled: 06/12/12 10:58	
Sample ID: 150-Reeve-Dr							Metals by EPA 6000/7000 Series Methods	
Mercury		95	A2, J J	7.1	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		22		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-10							Solid - Sampled: 06/12/12 12:54	
Sample ID: 145-Reeve-B							Metals by EPA 6000/7000 Series Methods	
Mercury		120	A2, J J	7.5	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		61		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-11							Solid - Sampled: 06/12/12 12:58	



United States Environmental Protection Agency Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone:(510) 412-2300 Fax:(510) 412-2302

Project Manager: Thomas Dunkelman
Project Number: R12S65
Project: McDermitt / Ft. McDermitt Removal
Assessment

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 12170E
Reported: 07/20/12 16:38

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1206037-11							Solid - Sampled: 06/12/12 12:58	
Sample ID: 145-Reeve-B-DUP							Metals by EPA 6000/7000 Series Methods	
Mercury		140	A2, J J	7.5	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		61		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-12							Solid - Sampled: 06/12/12 13:05	
Sample ID: Reeves Alley-6							Metals by EPA 6000/7000 Series Methods	
Mercury		320	A2, J J	15	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		60		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-13							Solid - Sampled: 06/12/12 13:14	
Sample ID: 215-Reeves-F							Metals by EPA 6000/7000 Series Methods	
Mercury		120	A2, J J	7	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		70		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-14							Solid - Sampled: 06/12/12 16:34	
Sample ID: 115-Pioneer-1							Metals by EPA 6000/7000 Series Methods	
Mercury		75	A2, J J	6.9	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		14		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-15							Solid - Sampled: 06/12/12 16:36	
Sample ID: 115-Pioneer-2							Metals by EPA 6000/7000 Series Methods	
Mercury		130	A2, J J	7.5	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		52		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-16							Solid - Sampled: 06/13/12 15:39	
Sample ID: 9707-HIWIY95-S							Metals by EPA 6000/7000 Series Methods	
Mercury		71	A2, J J	7.5	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		34		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-17							Solid - Sampled: 06/13/12 15:18	
Sample ID: Buckskin Alley-7							Metals by EPA 6000/7000 Series Methods	
Mercury		97	A2, J J	7.5	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		34		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-18							Solid - Sampled: 06/13/12 10:50	
Sample ID: O'Neill-Lasa-B							Metals by EPA 6000/7000 Series Methods	
Mercury		140	A2, J J	6.5	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		60		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-19							Solid - Sampled: 06/13/12 08:57	
Sample ID: MCD-HOTEL-1							Metals by EPA 6000/7000 Series Methods	
Mercury		79	A2, J J	7	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		18		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503
Lab ID: 1206037-20							Solid - Sampled: 06/13/12 14:43	
Sample ID: Buckskin Alley-1							Metals by EPA 6000/7000 Series Methods	
Mercury		98	A2, J J	6.9	mg/kg wet	B2F0097	06/29/12	06/29/12 7471B/SOP517
Arsenic		71		2	"	B2F0087	06/26/12	07/13/12 6010C/SOP503



United States Environmental Protection Agency
Region 9 Laboratory

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Phone: (510) 412-2300 Fax: (510) 412-2302

Project Manager: Thomas Dunkelman	Emergency Response Section	SDG: 12170E
Project Number: R12S65	75 Hawthorne Street	Reported: 07/20/12 16:38
Project: McDermitt / Ft. McDermitt Removal Assessment	San Francisco CA, 94105	

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B2F0087 - 3050B Sld Acid Dig - Metals by 6010					Prepared: 06/26/12 Analyzed: 07/13/12 Metals by EPA 6000/7000 Series Methods - Quality Control					
Blank (B2F0087-BLK1)										
Arsenic	ND	U		2 mg/kg wet						
Matrix Spike (B2F0087-MS1)			Source: 1206037-10							
Arsenic	451			2 mg/kg wet	392	60.8	100	75-125		20
Matrix Spike Dup (B2F0087-MSD1)			Source: 1206037-10							
Arsenic	468			2 mg/kg wet	400	60.8	102	75-125	4	20
Reference (B2F0087-SRM1)										
Arsenic	260			2 mg/kg wet	254		102	60.9-139		
Batch B2F0097 - 7471B Hg Digest - Mercury, High Level					Prepared & Analyzed: 06/29/12 Metals by EPA 6000/7000 Series Methods - Quality Control					
Blank (B2F0097-BLK1)										
Mercury	ND	U		0.15 mg/kg wet						
Duplicate (B2F0097-DUP1)			Source: 1206037-07							
Mercury	49.8			6.8 mg/kg wet		58			15	20
Matrix Spike (B2F0097-MS1)			Source: 1206037-07							
Mercury	56.4	Q10		7.5 mg/kg wet	1.46	58	NR	80-120		200
Reference (B2F0097-SRM1)										
Mercury	3.96			0.15 mg/kg wet	3.59		110	80-120		

m 8/14/12

CHAIN OF CUSTODY RECORD

PROJ. NO. 002683 2094.0/RA		PROJECT NAME McDermitt Removal Assessment		NO. OF CONTAINERS		REMARKS Page 2 of 6	
SAMPLERS: (Signature)							
DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION		
6/12/12	1123	soil	X		H5-Reeve-Dr	1	X
	1247		X		105-Reeve-F1	1	X
	1301		X	X	Reeve Alley-S	1	X
	1317		X		215-Reeves-S	1	X
	1401		X		315-Java-Dr	1	X
	1412		X		359-Java-Dr	1	X
	1629		X		7-Reeves-2	1	X
✓	1644	✓	X		115-Pioneer-3	1	X
	0918		X		145-Buck-1	1	X
	0921		X		165-Buck-S	1	X
	1024		X		220-Reeve-F	1	X
	1030		X		190-Reeve-Dr	1	X
	1046		X		30-Reeve-S1	1	X
	1058		X		150-Reeve-Dr	1	X
✓	1254	✓	X		145-Reeve-B	1	X
Relinquished by: (Signature) SD 8/1		Date / Time 6/18/12 1045		Received by: (Signature)		Relinquished by: (Signature)	
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)	
Received for Laboratory by: (Signature)		Date / Time 06/18/12 1050		Temp. 21°		Seals Intact (Y/N) N/A	
Conditions / Remarks Hand Delivered.							

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

9-2287

000002

1337 S. 46th St., Bldg. 201
Richmond, CA 94804-4698

[illegible]

9-2865

CHAIN OF CUSTODY RECORD

PROJ. NO. 002633 2094. CIRA		PROJECT NAME McDermitt Removal Assessment		NO. OF CONTAINERS		REMARKS	
DATE	TIME	MATRIX	COMP.	GPAS	SAMPLE IDENTIFICATION		
6/13/12	1537	Soil	X		907-HWY 95-S	1	X X
	1518		X		Buckskin-Alley-7	1	X X
	1050		X		O'Neill-Lava-B	1	X X
	0857		X		MCD-HOTEL-1	1	X X
	1443		X		Buckskin-Alley-1	1	X X
	0942		X		705-Lava-4	1	X X
	1344		X		465-Lava-Dr.	1	X X
	1153		X		O'Neill-2-Dr.	1	X X
	1158		X		O'Neill-2-Dr-DWP	1	X X
	1257		X		390-Lava-S	1	X X
	1433		X		90-Corduroy-B	1	X X
	0959		X		450-Dam-F	1	X X
	1003		X		450-Dam-F-DWP	1	X X
	1645		X		Lucy-7-Dr-2	1	X X
✓	1651	✓	+		9684-HWY 95-S	1	X X
Relinquished by: (Signature) S.D. [Signature]		Date / Time 6/18/12 1015		Received by: (Signature)		Relinquished by: (Signature)	
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)	
Received for Laboratory by: (Signature) [Signature]		Date / Time 06/18/12 1050		Temp. 212	Seals Intact (Y/N) N/A	Conditions / Remarks Hand delivered	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

110000

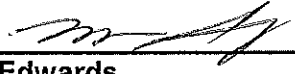
ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

Laboratory: EPA Region 9 Laboratory	Lab Project No: 1206038 SDG 12170F
Sampling Dates: 6/13/2012	Sample Matrix: Soil
Analytical Method: As by 6010B & Hg by 7471B	Data Reviewer: M. Song

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song 
Technical QA Reviewer: Howard Edwards
Project Manager: David Neil Ellis

Date: 9/7/12
Date: _____
Date: _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	705-Lasa-4	1206038-01
2	465-Lasa-Dr	1206038-02
3	Oneill-2-Dr	1206038-03
4	Oneill-2-Dr-DUP	1206038-04
5	390-Lasa-S	1206038-05
6	90-Grdero-B	1206038-06
7	450-Dora-F	1206038-07
8	450-Dora-F-DUP	1206038-08
9	Lucky-7-Dr-2	1206038-09
10	9689-HWY95-S	1206038-10
11	705-Lasa-1	1206038-11
12	705-Lasa-2	1206038-12
13	450-Dora-B	1206038-13
14	455-Dora-Dr-S	1206038-14
15	455-Dora-Dr-F	1206038-15
16	585-Lasa-F	1206038-16
17	585-Lasa-S	1206038-17
18	Oneill-Lasa-F	1206038-18
19	Oneill-2-S	1206038-19
20	465-Doris-Dr-2	1206038-20

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

☒ Included: no problems
☐ Included: problems noted in review
☐ Not Included and/or Not Available
☐ NR Not Required
☐ RS Provided As Re-submission

Case Narrative:

☒ Case Narrative present

Quality Control Summary Package:

☒ Data Summary sheets
☒ Initial and Continuing Calibration results
☒ CRDL Standard results
☒ Preparation Blank and Calibration Blank results
☒ ICP Interference Check Sample results
☐ * Matrix Spike recoveries
☐ NR Matrix Duplicate results
☒ Laboratory Control Sample recoveries
☐ NR Method of Standard Additions results
☒ ICP Serial Dilution results
☐ NR Instrument Detection Limits
☐ NR ICP Interelement Correction Factors
☐ NR ICP Linear Ranges
☒ Preparation Log
☒ Analysis Run Log

Raw QC Data Package Section

☒ Chain-of-Custody Records
☒ Instrument Printouts
☒ Sample Preparation Notebook Pages
☒ Logbook and Worksheet Pages
☒ Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	NO
2	Initial and Continuing Calibrations	YES
3	Laboratory Control Sample	YES
4	Matrix Spike	YES
5	Blanks and Background Samples	YES
6	Duplicate Analyses	YES
7	Interference Check Samples and Serial Dilution Analysis	YES
8	Post Digestion Spike and Standard Addition Analysis	N/A
9	Analyte Quantitation	YES
10	Overall Assessment of Data	YES
11	Usability of Data	NO

Comments: N/A: Not Applicable.

All samples were received dry in XRF cups. Results were reported on an as received basis with no percent moisture correction.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

1. HOLDING TIMES

☐ Acceptable
☒ Acceptable with qualification
☐ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:

Mercury: 28 days (from collection) for analysis.

Hexavalent chromium: 24 hours (from collection) for analysis.

All other metals: 180 days (from collection) for analysis.

Comments: The analytical holding times were met but the samples were received at 21 degree C, which is above the recommended temperature (0 to 6 degree C). The detected Hg results were qualified as estimated (J).

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

3. LABORATORY CONTROL SAMPLE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%.

For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample 9689-HWY95-S was used for arsenic matrix spike analysis and the recovery was within the control limits. Sample 705-Lasa-4 was used for mercury matrix spike analysis and the recovery was outside of control limits. Qualification was not required since the amount of mercury present in the parent sample was greater than 4X the amount spiked.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

5. BLANKS AND BACKGROUND SAMPLES

☒ Acceptable
☐ Detection Limits Adjusted

The following blanks were analyzed:

☒ Method (preparation) Blanks
☐ Field Blanks
☐ Calibration Blanks
☐ Rinsate Blanks
☐ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at method blank reporting limit level.

6. DUPLICATE ANALYSES

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Duplicates Analyzed

Type of duplicates analyzed:

☒ Field Duplicates
☐ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Analyte (mg/kg)	Oneill-2-Dr	Oneill-2-Dr-DUP	RPD (%)
Arsenic	57	56	2
Mercury	64	68	6

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

Analyte (mg/kg)	450-Dora-F	450-Dora-F-DUP	RPD (%)
Arsenic	55	55	0
Mercury	94	87	8

Comments: The RPDs were within the control limit (<35%).

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Serial Dilution Analysis: Not analyzed

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

☐ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☒ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

estimated (J).

Comments:

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

$$\text{ug/L} = \frac{(\text{Instrument printout concentration, mg/L})(1000 \text{ ug/mg})(\text{final volume of extract, mL})}{(\text{Initial volume of extract, mL})}$$

Soil samples:

$$\text{mg/kg} = \frac{(\text{Instrument printout concentration, mg/L})(\text{final volume of extract, mL})(0.001 \text{ L/mL})}{(\text{weight of sample extracted, g})(0.001 \text{ kg/g})(\text{fraction solids})}$$

Comments: Analyte quantitation was acceptable.

Sample 705-Lasa-2

As: (0.5468 mg/L) (0.05 L/1.01 g) (2) = 0.0541 ug/g= 54.1 mg/kg. Lab reported 54 mg/kg.

Hg: (16 ug/L) (0.03 L/0.2177 g) (50) = 110.24 ug/g= 110.24 mg/kg. Lab reported 110 mg/kg.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

☐ Acceptable
☒ Acceptable with Qualification
☐ Rejected

Accepted data meet the minimum requirements for the following EPA data category:

☐ ERS Screening
☐ Non-definitive with 10 % Confirmation by Definitive Methodology
☐ Definitive, Comprehensive Statistical Error Determination was performed.
☒ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the SAMPLING AND ANALYSIS PLAN MINE WASTE REMOVAL ASSESSMENT AT SITES OF RELEASE OR THREATENED RELEASE OF HAZARDOUS SUBSTANCES MCDERMITT, HUMBOLDT COUNTY, NEVADA AND MALHEUR COUNTY, OREGON, APRIL 2012 (SAP).

The following data use objective was indicated in the SAP:

TO BE USED TO EVALUATE ARSENIC AND MERCURY CONCENTRATIONS AT TARGETED PROPERTIES AND ROADWAYS WITHIN MCDERMITT IN ORDER TO DETERMINE AREAS THAT MAY REQUIRE REMEDIATION.

TO BE REVIEWED BY THE U.S. EPA AND START TO IDENTIFY SPECIFIC PROPERTIES AND ROADWAYS WHERE ARSENIC AND MERCURY CONCENTRATIONS EXCEED THEIR RESPECTIVE ACTION LEVELS.

TO BE USED AS DEFINITIVE DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVES.

B. These data meet quality objectives stated in the SAP.

AS INDICATED IN SECTION 3 OF THE SAP, THE INVESTIGATION WILL GENERATE BOTH DEFINITIVE AND NON-DEFINITIVE (SCREENING) DATA AND TABLE 3-1 & 3-2 OF THE SAP OUTLINE THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE AND NON-DEFINITIVE DATA QUALITY LEVELS. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.



United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone: (510) 412-2300 Fax: (510) 412-2302

Project Manager: Thomas Dunkelman
Project Number: R12S65
Project: McDermitt / Ft. McDermitt Removal
Assessment

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 12170F
Reported: 07/20/12 16:42

Sample Results

Analyte	Reanalysis/ Extract	Result	Qualifiers/ Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1206038-01							Solid - Sampled: 06/13/12 09:42	
Sample ID: 705-Lasa-4							Metals by EPA 6000/7000 Series Methods	
Mercury		93	A2, J J	7.5	mg/kg wet	B2F0099	07/02/12	07/02/12 7471B/SOP517
Arsenic		53		2	"	B2G0002	07/05/12	07/13/12 6010C/SOP503
Lab ID: 1206038-02							Solid - Sampled: 06/13/12 13:44	
Sample ID: 465-Lasa-Dr							Metals by EPA 6000/7000 Series Methods	
Mercury		74	A2, J J	7.5	mg/kg wet	B2F0099	07/02/12	07/02/12 7471B/SOP517
Arsenic		46		2	"	B2G0002	07/05/12	07/13/12 6010C/SOP503
Lab ID: 1206038-03							Solid - Sampled: 06/13/12 11:53	
Sample ID: O'Neill-2-Dr							Metals by EPA 6000/7000 Series Methods	
Mercury		64	A2, J J	7.5	mg/kg wet	B2F0099	07/02/12	07/02/12 7471B/SOP517
Arsenic		57		2	"	B2G0002	07/05/12	07/13/12 6010C/SOP503
Lab ID: 1206038-04							Solid - Sampled: 06/13/12 11:58	
Sample ID: O'Neill-2-Dr-DUP							Metals by EPA 6000/7000 Series Methods	
Mercury		68	A2, J J	7.5	mg/kg wet	B2F0099	07/02/12	07/02/12 7471B/SOP517
Arsenic		56		2	"	B2G0002	07/05/12	07/13/12 6010C/SOP503
Lab ID: 1206038-05							Solid - Sampled: 06/13/12 12:57	
Sample ID: 390-Lasa-S							Metals by EPA 6000/7000 Series Methods	
Mercury		70	A2, J J	6.8	mg/kg wet	B2F0099	07/02/12	07/02/12 7471B/SOP517
Arsenic		54		2	"	B2G0002	07/05/12	07/13/12 6010C/SOP503
Lab ID: 1206038-06							Solid - Sampled: 06/13/12 14:33	
Sample ID: 90-Grdero-B							Metals by EPA 6000/7000 Series Methods	
Mercury		77	A2, J J	7.5	mg/kg wet	B2F0099	07/02/12	07/02/12 7471B/SOP517
Arsenic		27		2	"	B2G0002	07/05/12	07/13/12 6010C/SOP503
Lab ID: 1206038-07							Solid - Sampled: 06/13/12 09:59	
Sample ID: 450-Dora-F							Metals by EPA 6000/7000 Series Methods	
Mercury		94	A2, J J	6.7	mg/kg wet	B2F0099	07/02/12	07/02/12 7471B/SOP517
Arsenic		55		2	"	B2G0002	07/05/12	07/13/12 6010C/SOP503
Lab ID: 1206038-08							Solid - Sampled: 06/13/12 10:03	
Sample ID: 450-Dora-F-DUP							Metals by EPA 6000/7000 Series Methods	
Mercury		87	A2, J J	7.5	mg/kg wet	B2F0099	07/02/12	07/02/12 7471B/SOP517
Arsenic		55		2	"	B2G0002	07/05/12	07/13/12 6010C/SOP503
Lab ID: 1206038-09							Solid - Sampled: 06/13/12 16:45	
Sample ID: Lucky-7-Dr-2							Metals by EPA 6000/7000 Series Methods	
Mercury		29	A2, J J	7.1	mg/kg wet	B2F0099	07/02/12	07/02/12 7471B/SOP517
Arsenic		30		2	"	B2G0002	07/05/12	07/13/12 6010C/SOP503
Lab ID: 1206038-10							Solid - Sampled: 06/13/12 16:51	
Sample ID: 9689-HWY95-S							Metals by EPA 6000/7000 Series Methods	
Mercury		91	A2, J J	7	mg/kg wet	B2F0099	07/02/12	07/02/12 7471B/SOP517
Arsenic		37		2	"	B2G0002	07/05/12	07/13/12 6010C/SOP503
Lab ID: 1206038-11							Solid - Sampled: 06/13/12 09:33	



United States Environmental Protection Agency
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Phone: (510) 412-2300 Fax: (510) 412-2302

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Project Number: R12S65

Project: McDermitt / Ft. McDermitt Removal
Assessment

Emergency Response Section

75 Hawthorne Street

San Francisco CA, 94105

SDG: 12170F

Reported: 07/20/12 16:42

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1206038-11								Solid - Sampled: 06/13/12 09:33
Sample ID: 705-Lasa-1								Metals by EPA 6000/7000 Series Methods
Mercury		78	A2, J J	6.4	mg/kg wet	B2F0099	07/02/12 07/02/12	7471B/SOP517
Arsenic		52		2	"	B2G0002	07/05/12 07/13/12	6010C/SOP503
Lab ID: 1206038-12								Solid - Sampled: 06/13/12 09:35
Sample ID: 705-Lasa-2								Metals by EPA 6000/7000 Series Methods
Mercury		110	A2, J J	6.9	mg/kg wet	B2F0099	07/02/12 07/02/12	7471B/SOP517
Arsenic		54		2	"	B2G0002	07/05/12 07/13/12	6010C/SOP503
Lab ID: 1206038-13								Solid - Sampled: 06/13/12 10:06
Sample ID: 450-Dora-B								Metals by EPA 6000/7000 Series Methods
Mercury		110	A2, J J	7	mg/kg wet	B2F0099	07/02/12 07/02/12	7471B/SOP517
Arsenic		58		2	"	B2G0002	07/05/12 07/13/12	6010C/SOP503
Lab ID: 1206038-14								Solid - Sampled: 06/13/12 10:16
Sample ID: 455-Dora-Dr-S								Metals by EPA 6000/7000 Series Methods
Mercury		95	A2, J J	6.9	mg/kg wet	B2F0099	07/02/12 07/02/12	7471B/SOP517
Arsenic		61		2	"	B2G0002	07/05/12 07/14/12	6010C/SOP503
Lab ID: 1206038-15								Solid - Sampled: 06/13/12 10:27
Sample ID: 455-Dora-Dr-F								Metals by EPA 6000/7000 Series Methods
Mercury		83	A2, J J	7.5	mg/kg wet	B2F0099	07/02/12 07/02/12	7471B/SOP517
Arsenic		97		2	"	B2G0002	07/05/12 07/14/12	6010C/SOP503
Lab ID: 1206038-16								Solid - Sampled: 06/13/12 10:34
Sample ID: 585-Lasa-F								Metals by EPA 6000/7000 Series Methods
Mercury		92	A2, J J	7	mg/kg wet	B2F0099	07/02/12 07/02/12	7471B/SOP517
Arsenic		63		2	"	B2G0002	07/05/12 07/14/12	6010C/SOP503
Lab ID: 1206038-17								Solid - Sampled: 06/13/12 10:40
Sample ID: 585-Lasa-S								Metals by EPA 6000/7000 Series Methods
Mercury		160	A2, J J	7	mg/kg wet	B2F0099	07/02/12 07/02/12	7471B/SOP517
Arsenic		60		2	"	B2G0002	07/05/12 07/14/12	6010C/SOP503
Lab ID: 1206038-18								Solid - Sampled: 06/13/12 10:45
Sample ID: Onelli-Lasa-F								Metals by EPA 6000/7000 Series Methods
Mercury		93	A2, J J	7.5	mg/kg wet	B2F0099	07/02/12 07/02/12	7471B/SOP517
Arsenic		65		2	"	B2G0002	07/05/12 07/14/12	6010C/SOP503
Lab ID: 1206038-19								Solid - Sampled: 06/13/12 12:16
Sample ID: Onelli-2-S								Metals by EPA 6000/7000 Series Methods
Mercury		73	A2, J J	6.7	mg/kg wet	B2F0099	07/02/12 07/02/12	7471B/SOP517
Arsenic		45		2	"	B2G0002	07/05/12 07/14/12	6010C/SOP503
Lab ID: 1206038-20								Solid - Sampled: 06/13/12 13:11
Sample ID: 465-Doris-Dr-2								Metals by EPA 6000/7000 Series Methods
Mercury		87	A2, J J	7.5	mg/kg wet	B2F0099	07/02/12 07/02/12	7471B/SOP517
Arsenic		47		2	"	B2G0002	07/05/12 07/14/12	6010C/SOP503



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Assessment

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 12170F
Reported: 07/20/12 16:42

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B2F0099 - 7471B Hg Digest - Mercury, High Level										
Prepared & Analyzed: 07/02/12										
Metals by EPA 6000/7000 Series Methods - Quality Control										
Blank (B2F0099-BLK1)										
Mercury	ND	U		0.15 mg/kg wet						
Duplicate (B2F0099-DUP1)										
Source: 1206038-01										
Mercury	98.9			7.5 mg/kg wet		93			6	20
Matrix Spike (B2F0099-MS1)										
Source: 1206038-01										
Mercury	115	Q10		7.5 mg/kg wet	1.44	93	NR	80-120		200
Reference (B2F0099-SRM1)										
Mercury	3.02			0.14 mg/kg wet	3.59		84	80-120		
Batch B2G0002 - 3050B Sld Acid Dig - Metals by 6010										
Prepared: 07/05/12 Analyzed: 07/13/12										
Metals by EPA 6000/7000 Series Methods - Quality Control										
Blank (B2G0002-BLK1)										
Arsenic	ND	U		2 mg/kg wet						
Matrix Spike (B2G0002-MS1)										
Source: 1206038-10										
Arsenic	419			2 mg/kg wet	400	37.3	95	75-125		20
Matrix Spike Dup (B2G0002-MSD1)										
Source: 1206038-10										
Arsenic	416			2 mg/kg wet	396	37.3	96	75-125	0.6	20
Reference (B2G0002-SRM1)										
Arsenic	255			2 mg/kg wet	256		100	60.9-139		

m j 8/14/12

CHAIN OF CUSTODY RECORD

PROJ. NO. 002633 2099, QRA		PROJECT NAME McDermitt Removal Assessment				NO. OF CON- TAINERS	EPA 60108 EPA 74710				REMARKS Page 4 of 6
SAMPLERS: (Signature)											
DATE	TIME	MATRIX	COMP	GRAB	SAMPLE IDENTIFICATION						
6/13/12	1537	Soil	X		9707-HWY 95-S	1	X	X			
	1518			X	Buckskin-Alley-7	1	X	X			
	1050		X		O'Neill-Lava-S	1	X	X			
	0857		X		MCD-HOTEL-1	1	X	X			
	1443		X		Buckskin-Alley-1	1	X	X			
	0942		X		705-Lava-4	1	X	X			
	1344		X		465-Lava-Dr.	1	X	X			
	1153		X		O'Neill-2-Dr	1	X	X			
	1158		X		O'Neill-2-Dr-DUP	1	X	X			
	1257		X		390-Lava-S	1	X	X			
	1133		X		90-Corduroy-B	1	X	X			
	0959		X		450-Dock-F	1	X	X			
	1003		X		450-Dock-F-DUP	1	X	X			
	1645		X		Lucy-7-Dr-2	1	X	X			
✓	1651	✓	+		9684-HWY 95-S	1	X	X			
Relinquished by: (Signature) SD		Date / Time 6/18/12 1015		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)	
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)	
Received for Laboratory by: (Signature) [Signature]		Date / Time 06/18/12 1050		Temp. 21°C	Seals Intact (Y/N) N/A	Conditions / Remarks Hand delivered					

HS000:

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

CHAIN OF CUSTODY RECORD

PROJ. NO. 002693 2014-0124		PROJECT NAME McDermitt Removal Assessment		NO. OF CONTAINERS		REMARKS	
DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION		
6/13/12	0933	soil	X		705-Lasa-1	X	X
	0935		X		705-Lasa-2	X	X
	1006		X		450-Dora-B	X	X
	1016		X		455-Dora-Dr-S	X	X
	1027		X		455-Dora-Dr-F	X	X
	1034		X		585-Lasa-F	X	X
	1040		X		585-Lasa-S	X	X
	1045		X		O'Neill-Lasa-F	X	X
	1216		X		O'Neill-2-S	X	X
	1311		X		465-Doris-Dr-2	X	X
	1315		X		465-Doris-Dr-1	X	X
	1319		X		Lasa-Doris-BW	X	X
	1329		X		485-Doris-B	X	X
	1336		X		600-Barns-F	X	X
	1339		X		600-Barns-F-Dup	X	X
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)	
[Signature]		6/18/12 1045		[Signature]		[Signature]	
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)	
[Signature]				[Signature]		[Signature]	
Received for Laboratory by: (Signature)		Date / Time		Temp.		Seal's Intact (Y/N)	
[Signature]		06/18/12 1050		21°C		N/A	
Conditions / Remarks							
Hand delivered.							

Page 5 of 6

REMARKS

000005

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

9-2867

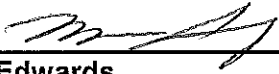
ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

Laboratory: EPA Region 9 Laboratory	Lab Project No: 1206039 SDG 12170G
Sampling Dates: 6/13/2012	Sample Matrix: Soil
Analytical Method: As by 6010B & Hg by 7471B	Data Reviewer: M. Song

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song 
Technical QA Reviewer: Howard Edwards
Project Manager: David Neil Ellis

Date: 9/7/12
Date: _____
Date: _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	465-Doris-Dr-1	1206039-01
2	Lasa-Doris-Row	1206039-02
3	485-Doris-B	1206039-03
4	600-Barns-F	1206039-04
5	600-Barns-F-DUP	1206038-05
6	Trailer-Dr	1206039-06
7	600-Barns-S	1206039-07
8	1375-RD-2	1206039-08
9	1375-RD-1	1206039-09
10	Buckskin-Alley-4	1206039-10
11	Buckskin-Alley-2	1206039-11
12	Buckskin-Alley-8	1206039-12
13	Buckskin-Alley-8-DUP	1206039-13
14	65-Grdero-S1	1206039-14
15	120-Grdero-S	1206039-15
16		
17		
18		
19		
20		

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- ☒ Included: no problems
- ☐ * Included: problems noted in review
- ☐ O Not Included and/or Not Available
- ☐ NR Not Required
- ☐ RS Provided As Re-submission

Case Narrative:

- ☒ Case Narrative present

Quality Control Summary Package:

- ☒ Data Summary sheets
- ☒ Initial and Continuing Calibration results
- ☒ CRDL Standard results
- ☒ Preparation Blank and Calibration Blank results
- ☒ ICP Interference Check Sample results
- ☐ * Matrix Spike recoveries
- ☐ NR Matrix Duplicate results
- ☒ Laboratory Control Sample recoveries
- ☐ NR Method of Standard Additions results
- ☒ ICP Serial Dilution results
- ☐ NR Instrument Detection Limits
- ☐ NR ICP Interelement Correction Factors
- ☐ NR ICP Linear Ranges
- ☒ Preparation Log
- ☒ Analysis Run Log

Raw QC Data Package Section

- ☒ Chain-of-Custody Records
- ☒ Instrument Printouts
- ☒ Sample Preparation Notebook Pages
- ☒ Logbook and Worksheet Pages
- ☒ Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	NO
2	Initial and Continuing Calibrations	YES
3	Laboratory Control Sample	YES
4	Matrix Spike	YES
5	Blanks and Background Samples	YES
6	Duplicate Analyses	YES
7	Interference Check Samples and Serial Dilution Analysis	YES
8	Post Digestion Spike and Standard Addition Analysis	N/A
9	Analyte Quantitation	YES
10	Overall Assessment of Data	YES
11	Usability of Data	NO

Comments: N/A: Not Applicable.

All samples were received dry in XRF cups. Results were reported on an as received basis with no percent moisture correction.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

1. HOLDING TIMES

☐ Acceptable
☒ Acceptable with qualification
☐ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:

Mercury: 28 days (from collection) for analysis.

Hexavalent chromium: 24 hours (from collection) for analysis.

All other metals: 180 days (from collection) for analysis.

Comments: The analytical holding times were met but the samples were received at 21 degree C, which is above the recommended temperature (0 to 6 degree C). The detected Hg results were qualified as estimated (J).

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

3. LABORATORY CONTROL SAMPLE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%.

For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample 600-Barns-F-Dup was used for arsenic matrix spike analysis and the recovery was within the control limits. Sample 465-Doris-Dr-1 was used for mercury matrix spike analysis and the recovery was outside of control limits. Qualification was not required since the amount of mercury present in the parent sample was greater than 4X the amount spiked.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

5. BLANKS AND BACKGROUND SAMPLES

☒ Acceptable
☐ Detection Limits Adjusted

The following blanks were analyzed:

☒ Method (preparation) Blanks
☐ Field Blanks
☐ Calibration Blanks
☐ Rinsate Blanks
☐ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at method blank reporting limit level.

6. DUPLICATE ANALYSES

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Duplicates Analyzed

Type of duplicates analyzed:

☒ Field Duplicates
☐ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Analyte (mg/kg)	600-Barns-F	600-Barns-F-DUP	RPD (%)
Arsenic	57	56	2
Mercury	64	68	6

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

Analyte (mg/kg)	Buckskin-Alley-8	Buckskin-Alley-8-DUP	RPD (%)
Arsenic	59	59	0
Mercury	130	140	7

Comments: The RPDs were within the control limit (<35%).

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Serial Dilution Analysis: Not analyzed

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

☐ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☒ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

estimated (J).

Comments:

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

$$\text{ug/L} = \frac{(\text{Instrument printout concentration, mg/L})(1000 \text{ ug/mg})(\text{final volume of extract, mL})}{(\text{Initial volume of extract, mL})}$$

Soil samples:

$$\text{mg/kg} = \frac{(\text{Instrument printout concentration, mg/L})(\text{final volume of extract, mL})(0.001 \text{ L/mL})}{(\text{weight of sample extracted, g})(0.001 \text{ kg/g})(\text{fraction solids})}$$

Comments: Analyte quantitation was acceptable.

Sample 600-Barns-F

As: $(0.6039 \text{ mg/L})(0.05 \text{ L}/1.03 \text{ g})(2) = 0.0586 \text{ ug/g} = 58.6 \text{ mg/kg}$. Lab reported 59 mg/kg.

Hg: $(17.2 \text{ ug/L})(0.03 \text{ L}/0.2024 \text{ g})(50) = 127.47 \text{ ug/g} = 127.47 \text{ mg/kg}$. Lab reported 130 mg/kg.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

☐ Acceptable
☒ Acceptable with Qualification
☐ Rejected

Accepted data meet the minimum requirements for the following EPA data category:

☐ ERS Screening
☐ Non-definitive with 10 % Confirmation by Definitive Methodology
☐ Definitive, Comprehensive Statistical Error Determination was performed.
☒ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the SAMPLING AND ANALYSIS PLAN MINE WASTE REMOVAL ASSESSMENT AT SITES OF RELEASE OR THREATENED RELEASE OF HAZARDOUS SUBSTANCES MCDERMITT, HUMBOLDT COUNTY, NEVADA AND MALHEUR COUNTY, OREGON, APRIL 2012 (SAP).

The following data use objective was indicated in the SAP:

TO BE USED TO EVALUATE ARSENIC AND MERCURY CONCENTRATIONS AT TARGETED PROPERTIES AND ROADWAYS WITHIN MCDERMITT IN ORDER TO DETERMINE AREAS THAT MAY REQUIRE REMEDIATION.

TO BE REVIEWED BY THE U.S. EPA AND START TO IDENTIFY SPECIFIC PROPERTIES AND ROADWAYS WHERE ARSENIC AND MERCURY CONCENTRATIONS EXCEED THEIR RESPECTIVE ACTION LEVELS.

TO BE USED AS DEFINITIVE DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVES.

B. These data meet quality objectives stated in the SAP.

AS INDICATED IN SECTION 3 OF THE SAP, THE INVESTIGATION WILL GENERATE BOTH DEFINITIVE AND NON-DEFINITIVE (SCREENING) DATA AND TABLE 3-1 & 3-2 OF THE SAP OUTLINE THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE AND NON-DEFINITIVE DATA QUALITY LEVELS. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.



United States Environmental Protection Agency Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone: (510) 412-2300 Fax: (510) 412-2302

Project Manager: Thomas Dunkelman
Project Number: R12S65
Project: McDermitt / Ft. McDermitt Removal
Assessment

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 121703
Reported: 07/20/12 16:45

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1206039-01								Solid - Sampled: 06/13/12 13:15
Sample ID: 465-Doris-Dr-1								Metals by EPA 6000/7000 Series Methods
Mercury		170	A2, J, Q5 J	6.9	mg/kg wet	B2F0104	07/10/12	07/11/12 7471B/SOP517
Arsenic		39		2	"	B2G0017	07/10/12	07/14/12 6010C/SOP503
Lab ID: 1206039-02								Solid - Sampled: 06/13/12 13:19
Sample ID: Lasa-Doris-Row								Metals by EPA 6000/7000 Series Methods
Mercury		94	A2, J J	7.5	mg/kg wet	B2F0104	07/10/12	07/11/12 7471B/SOP517
Arsenic		64		2	"	B2G0017	07/10/12	07/14/12 6010C/SOP503
Lab ID: 1206039-03								Solid - Sampled: 06/13/12 13:29
Sample ID: 485-Doris-B								Metals by EPA 6000/7000 Series Methods
Mercury		110	A2, J J	6.3	mg/kg wet	B2F0104	07/10/12	07/11/12 7471B/SOP517
Arsenic		51		2	"	B2G0017	07/10/12	07/14/12 6010C/SOP503
Lab ID: 1206039-04								Solid - Sampled: 06/13/12 13:36
Sample ID: 600-Barns-F								Metals by EPA 6000/7000 Series Methods
Mercury		130	A2, J J	7.5	mg/kg wet	B2F0104	07/10/12	07/11/12 7471B/SOP517
Arsenic		59		2	"	B2G0017	07/10/12	07/14/12 6010C/SOP503
Lab ID: 1206039-05								Solid - Sampled: 06/13/12 13:39
Sample ID: 600-Barns-F-DUP								Metals by EPA 6000/7000 Series Methods
Mercury		140	A2, J J	7.5	mg/kg wet	B2F0104	07/10/12	07/11/12 7471B/SOP517
Arsenic		59		2	"	B2G0017	07/10/12	07/14/12 6010C/SOP503
Lab ID: 1206039-06								Solid - Sampled: 06/13/12 13:49
Sample ID: Trailer-Dr								Metals by EPA 6000/7000 Series Methods
Mercury		110	A2, J J	7.5	mg/kg wet	B2F0104	07/10/12	07/11/12 7471B/SOP517
Arsenic		70		2	"	B2G0017	07/10/12	07/14/12 6010C/SOP503
Lab ID: 1206039-07								Solid - Sampled: 06/13/12 13:53
Sample ID: 600-Barns-S								Metals by EPA 6000/7000 Series Methods
Mercury		110	A2, J J	7.5	mg/kg wet	B2F0104	07/10/12	07/11/12 7471B/SOP517
Arsenic		65		2	"	B2G0017	07/10/12	07/14/12 6010C/SOP503
Lab ID: 1206039-08								Solid - Sampled: 06/13/12 14:37
Sample ID: 1375-RD-2								Metals by EPA 6000/7000 Series Methods
Mercury		130	A2, J J	6.9	mg/kg wet	B2F0104	07/10/12	07/11/12 7471B/SOP517
Arsenic		64		2	"	B2G0017	07/10/12	07/14/12 6010C/SOP503
Lab ID: 1206039-09								Solid - Sampled: 06/13/12 14:40
Sample ID: 1375-RD-1								Metals by EPA 6000/7000 Series Methods
Mercury		140	A2, J J	7.5	mg/kg wet	B2F0104	07/10/12	07/11/12 7471B/SOP517
Arsenic		57		2	"	B2G0017	07/10/12	07/14/12 6010C/SOP503
Lab ID: 1206039-10								Solid - Sampled: 06/13/12 15:07
Sample ID: Bucksdn-Alley-4								Metals by EPA 6000/7000 Series Methods
Mercury		110	A2, J J	7.5	mg/kg wet	B2F0104	07/10/12	07/11/12 7471B/SOP517
Arsenic		58		2	"	B2G0017	07/10/12	07/14/12 6010C/SOP503
Lab ID: 1206039-11								Solid - Sampled: 06/13/12 15:15

[Signature] 8/14/12



United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone:(510) 412-2300 Fax:(510) 412-2302

Project Manager: Thomas Dunkelman	Emergency Response Section	SDG: 12170G
Project Number: R12S65	75 Hawthorne Street	Reported: 07/20/12 16:45
Project: McDermitt / Ft. McDermitt Removal Assessment	San Francisco CA, 94105	

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1206039-11								Solid - Sampled: 06/13/12 15:15
Sample ID: Buckskin-Alley-2								Metals by EPA 6000/7000 Series Methods
Mercury		84	A2, J J	7.5	mg/kg wet	B2F0104	07/10/12 07/11/12	7471B/SOP517
Arsenic		53		2	"	B2G0017	07/10/12 07/14/12	6010C/SOP503
Lab ID: 1206039-12								Solid - Sampled: 06/13/12 15:07
Sample ID: Buckskin-Alley-8								Metals by EPA 6000/7000 Series Methods
Mercury		89	A2, J J	7	mg/kg wet	B2F0104	07/10/12 07/11/12	7471B/SOP517
Arsenic		48		2	"	B2G0017	07/10/12 07/14/12	6010C/SOP503
Lab ID: 1206039-13								Solid - Sampled: 06/13/12 15:10
Sample ID: Buckskin-Alley-8-DUP								Metals by EPA 6000/7000 Series Methods
Mercury		110	A2, J J	6.6	mg/kg wet	B2F0104	07/10/12 07/11/12	7471B/SOP517
Arsenic		50		2	"	B2G0017	07/10/12 07/16/12	6010C/SOP503
Lab ID: 1206039-14								Solid - Sampled: 06/13/12 15:25
Sample ID: 65-Grdero-S1								Metals by EPA 6000/7000 Series Methods
Mercury		120	A2, J J	7.5	mg/kg wet	B2F0104	07/10/12 07/11/12	7471B/SOP517
Arsenic		62		2	"	B2G0017	07/10/12 07/16/12	6010C/SOP503
Lab ID: 1206039-15								Solid - Sampled: 06/13/12 15:30
Sample ID: 120-Grdero-S								Metals by EPA 6000/7000 Series Methods
Mercury		64	A2, J J	6.9	mg/kg wet	B2F0104	07/10/12 07/11/12	7471B/SOP517
Arsenic		65		2	"	B2G0017	07/10/12 07/16/12	6010C/SOP503

See 8/14/12



United States Environmental Protection Agency
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1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone: (510) 412-2300 Fax: (510) 412-2302

Project Manager: Thomas Dunkelman	Emergency Response Section	SDG: 121703
Project Number: R12S65	75 Hawthorne Street	Reported: 07/20/12 16:45
Project: McDermitt / Ft. McDermitt Removal Assessment	San Francisco CA, 94105	

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B2F0104 - 7471B Hg Digest - Mercury, High Level					Prepared: 07/10/12 Analyzed: 07/11/12					
Metals by EPA 6000/7000 Series Methods - Quality Control										
Blank (B2F0104-BLK1)										
Mercury	ND	U		0.15 mg/kg wet						
Duplicate (B2F0104-DUP1)										
Mercury	81.1			7.5 mg/kg wet		174			73	20
Matrix Spike (B2F0104-MS1)										
Mercury	94.2	Q10		7 mg/kg wet	1.41	174	NR	80-120		200
Reference (B2F0104-SRM1)										
Mercury	4.25			0.15 mg/kg wet	3.59		119	80-120		
Batch B2G0017 - 3050B Sid Acid Dig - Metals by 6010					Prepared: 07/10/12 Analyzed: 07/13/12					
Metals by EPA 6000/7000 Series Methods - Quality Control										
Blank (B2G0017-BLK1)										
Arsenic	ND	U		2 mg/kg wet						
Matrix Spike (B2G0017-MS1)										
Arsenic	445			2 mg/kg wet	396	58.7	97	75-125		20
Matrix Spike Dup (B2G0017-MSD1)										
Arsenic	445			2 mg/kg wet	396	58.7	98	75-125	0.02	20
Reference (B2G0017-SRM1)										
Arsenic	261			2 mg/kg wet	252		103	60.9-139		

mm 8/14/12

CHAIN OF CUSTODY RECORD

PROJ. NO. 002693 2014-0120		PROJECT NAME McDermitt Removal Assessment				NO. OF CON- TAINERS	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">EPA 600B</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">EPA 747HA</div> </div>				Page 5 of 6	
SAMPLERS: (Signature)											REMARKS	
DATE	TIME	MATRIX	COMP	GRAB	SAMPLE IDENTIFICATION							
6/13/12	0933	soil	X		705-Lasa-1	1	X	X				
	0935		X		705-Lasa-2		X	X				
	1006		X		450-Dora-B		X	X				
	1016		X		455-Dora-Dr-S		X	X				
	1027		X		455-Dora-Dr-F		X	X				
	1034		X		585-Lasa-F		X	X				
	1040		X		585-Lasa-S		X	X				
	1045		X		O'Neill-Lasa-F		X	X				
	1216		X		O'Neill-2-S		X	X				
	1311		X		465-Doris-Dr-2		X	X				
	1315		X		465-Doris-Dr-1		X	X				
	1319		X		Lasa-Doris-Raw		X	X				
	1329		X		485-Doris-B		X	X				
	1336		X		600-Barns-F		X	X				
	1339		X		600-Barns-F-Dup		X	X				
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)		
[Signature]		6/18/12 1045										
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)		
Received for Laboratory by: (Signature)		Date / Time		Temp.		Seals Intact (Y/N)		Conditions / Remarks				
[Signature]		06/18/12 1050		21°C		N/A		Hand delivered.				

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

9-2867

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CHAIN OF CUSTODY RECORD

PROJ. NO. 002683 29A.91A		PROJECT NAME McDemitt Revamp Assessment				NO. OF CON- TAINERS	<div style="border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">EPA 60106</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">EPA 774-D</div> </div> </div>				<div style="border: 1px solid black; padding: 5px;"> Page 6 of 6 REMARKS </div>	
SAMPLERS: (Signature)												
DATE	TIME	MATRIX	CONF.	GRAB	SAMPLE IDENTIFICATION							
6/13/12	1349	soil	X		Trailer - DY	1	X	X				
	1353		X		600 - Barns - S	1	X	X				
	1437		X		1375 - RD - 2	1	X	X				
	1440		X		1375 - RD - 1	1	X	X				
	1507		X		Buckskin - Alley - 4	1	X	X				
	1515		X		Buckskin - Alley - 2	1	X	X				
	1507		X		Buckskin - Alley - 8	1	X	X				
	1510		X		Buckskin - Alley - 8 - Dup	1	X	X				
	1525		X		65 - Gordero - S1	1	X	X				
	1530		X		120 - Gordero - S	1	X	X				
Relinquished by: (Signature) <i>[Signature]</i>						Date / Time 6/13/12 1045		Received by: (Signature)		Relinquished by: (Signature)		
Relinquished by: (Signature)						Date / Time		Received by: (Signature)		Relinquished by: (Signature)		
Received for Laboratory by: (Signature) <i>[Signature]</i>						Date / Time 06/13/12 1040		Temp. 21°C		Seals Intact (Y/N) N/A		
Conditions / Remarks Hand delivered												

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

9-2868

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ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

Laboratory: EPA Region 9 Laboratory	Lab Project No: 1207024 SDG 12201A
Sampling Dates: 6/11/2012	Sample Matrix: Soil
Analytical Method: As by 6010B & Hg by 7471B	Data Reviewer: M. Song

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song
Technical QA Reviewer: Howard Edwards
Project Manager: David Neil Ellis

Date: 9/7/12
Date: _____
Date: _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	Hg 56	1207024-01
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- ☒ X Included: no problems
- ☐ * Included: problems noted in review
- ☐ O Not Included and/or Not Available
- ☐ NR Not Required
- ☐ RS Provided As Re-submission

Case Narrative:

- ☒ X Case Narrative present

Quality Control Summary Package:

- ☒ X Data Summary sheets
- ☒ X Initial and Continuing Calibration results
- ☒ X CRDL Standard results
- ☒ X Preparation Blank and Calibration Blank results
- ☒ X ICP Interference Check Sample results
- ☐ * Matrix Spike recoveries
- ☐ NR Matrix Duplicate results
- ☒ X Laboratory Control Sample recoveries
- ☐ NR Method of Standard Additions results
- ☒ X ICP Serial Dilution results
- ☐ NR Instrument Detection Limits
- ☐ NR ICP Interelement Correction Factors
- ☐ NR ICP Linear Ranges
- ☒ X Preparation Log
- ☒ X Analysis Run Log

Raw QC Data Package Section

- ☒ X Chain-of-Custody Records
- ☒ X Instrument Printouts
- ☒ X Sample Preparation Notebook Pages
- ☒ X Logbook and Worksheet Pages
- ☒ X Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	NO
2	Initial and Continuing Calibrations	YES
3	Laboratory Control Sample	YES
4	Matrix Spike	YES
5	Blanks and Background Samples	YES
6	Duplicate Analyses	YES
7	Interference Check Samples and Serial Dilution Analysis	YES
8	Post Digestion Spike and Standard Addition Analysis	N/A
9	Analyte Quantitation	YES
10	Overall Assessment of Data	YES
11	Usability of Data	NO

Comments: N/A: Not Applicable.

The sample was received dry in XRF cup. Results were reported on an as received basis with no percent moisture correction.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

1. HOLDING TIMES

☐ Acceptable
☒ Acceptable with qualification
☐ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:

Mercury: 28 days (from collection) for analysis.

Hexavalent chromium: 24 hours (from collection) for analysis.

All other metals: 180 days (from collection) for analysis.

Comments: The sample was received at 22 degree C, which is above the recommended temperature (0 to 6 degree C). Also, the sample was prepared and analyzed past the holding time (Hg analysis). The detected results were qualified as estimated (J).

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

3. LABORATORY CONTROL SAMPLE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%.

For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample Hg 56 was used for MS/MSD analysis. The recovery of Hg was outside of control limits. Qualification was not necessary since the amount of mercury present in the parent sample was greater than 4X the amount spiked.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

5. BLANKS AND BACKGROUND SAMPLES

☒ Acceptable
☐ Detection Limits Adjusted

The following blanks were analyzed:

☒ Method (preparation) Blanks
☐ Field Blanks
☐ Calibration Blanks
☐ Rinsate Blanks
☐ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at method blank reporting limit level.

6. DUPLICATE ANALYSES

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Duplicates Analyzed

Type of duplicates analyzed:

☐ Field Duplicates
☒ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

Comments: The RPD of MS&MSD was within the control limit (<35%).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Serial Dilution Analysis: Not analyzed

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

☐ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☒ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

$$\text{ug/L} = \frac{(\text{Instrument printout concentration, mg/L})(1000 \text{ ug/mg})(\text{final volume of extract, mL})}{(\text{Initial volume of extract, mL})}$$

Soil samples:

$$\text{mg/kg} = \frac{(\text{Instrument printout concentration, mg/L})(\text{final volume of extract, mL})(0.001 \text{ L/mL})}{(\text{weight of sample extracted, g})(0.001 \text{ kg/g})(\text{fraction solids})}$$

Comments: Analyte quantitation was acceptable.

Sample Hg 56

As: (0.5239 mg/L) (0.05 L/1.01 g) (2) = 0.05187 ug/g = 51.87 mg/kg. Lab reported 52 mg/kg.

Hg: (21.1 ug/L) (0.03 L/0.2092 g) (20) = 60.516 ug/g = 60.516 mg/kg. Lab reported 61 mg/kg.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

☐ Acceptable
☒ Acceptable with Qualification
☐ Rejected

Accepted data meet the minimum requirements for the following EPA data category:

☐ ERS Screening
☐ Non-definitive with 10 % Conformation by Definitive Methodology
☐ Definitive, Comprehensive Statistical Error Determination was performed.
☒ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the SAMPLING AND ANALYSIS PLAN MINE WASTE REMOVAL ASSESSMENT AT SITES OF RELEASE OR THREATENED RELEASE OF HAZARDOUS SUBSTANCES MCDERMITT, HUMBOLDT COUNTY, NEVADA AND MALHEUR COUNTY, OREGON, APRIL 2012 (SAP).

The following data use objective was indicated in the SAP:

TO BE USED TO EVALUATE ARSENIC AND MERCURY CONCENTRATIONS AT TARGETED PROPERTIES AND ROADWAYS WITHIN MCDERMITT IN ORDER TO DETERMINE AREAS THAT MAY REQUIRE REMEDIATION.

TO BE REVIEWED BY THE U.S. EPA AND START TO IDENTIFY SPECIFIC PROPERTIES AND ROADWAYS WHERE ARSENIC AND MERCURY CONCENTRATIONS EXCEED THEIR RESPECTIVE ACTION LEVELS.

TO BE USED AS DEFINITIVE DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVES.

B. These data meet quality objectives stated in the SAP.

AS INDICATED IN SECTION 3 OF THE SAP, THE INVESTIGATION WILL GENERATE BOTH DEFINITIVE AND NON-DEFINITIVE (SCREENING) DATA AND TABLE 3-1 & 3-2 OF THE SAP OUTLINE THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE AND NON-DEFINITIVE DATA QUALITY LEVELS. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.



United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone: (510) 412-2300 Fax: (510) 412-2302

Project Manager: Thomas Dunkelman	Emergency Response Section	SDG: 12201A
Project Number: R12S65	75 Hawthorne Street	Reported: 08/17/12 14:00
Project: McDermitt / Ft. McDermitt Removal Assessment	San Francisco CA, 94105	

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1207024-01							Solid - Sampled: 06/11/12 08:00	
Sample ID: Hg 56								Metals by EPA 6000/7000 Series Methods
Mercury		61	A2, A3, J	3	mg/kg wet	B2H0021	08/07/12	08/07/12 7471B/SOP517
Arsenic		52		2	"	B2H0016	08/06/12	08/08/12 6010C/SOP503

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B2H0016 - 3050B Std Acid Dig - Metals by 6010										
Prepared: 08/06/12 Analyzed: 08/08/12										
Metals by EPA 6000/7000 Series Methods - Quality Control										
Blank (B2H0016-BLK1)										
Arsenic	ND	U		2 mg/kg wet						
Matrix Spike (B2H0016-MS1)		Source: 1207024-01								
Arsenic	458			2 mg/kg wet	388	51.9	104	75-125	20	
Matrix Spike Dup (B2H0016-MSD1)		Source: 1207024-01								
Arsenic	466			2 mg/kg wet	396	51.9	105	75-125	2	20
Reference (B2H0016-SRM1)										
Arsenic	250			2 mg/kg wet	253		99	60.9-139		
Lead	50.6			3 "	56.9		89	72.8-127		
Batch B2H0021 - 7471B Hg Digest - Mercury, High Level										
Prepared & Analyzed: 08/07/12										
Metals by EPA 6000/7000 Series Methods - Quality Control										
Blank (B2H0021-BLK1)										
Mercury	ND	U		0.15 mg/kg wet						
Duplicate (B2H0021-DUP1)		Source: 1207024-01								
Mercury	59			3 mg/kg wet		60.5			2	20
Matrix Spike (B2H0021-MS1)		Source: 1207024-01								
Mercury	67.6	Q10		2.8 mg/kg wet	1.42	60.5	502	80-120		200
Reference (B2H0021-SRM1)										
Mercury	3.91			0.14 mg/kg wet	3.59		109	80-120		

**1337 S. 46th St., Bldg. 201
Richmond, CA 94804-4698**

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

9-3809

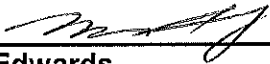
ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

Laboratory: EPA Region 9 Laboratory	Lab Project No: 1206036 SDG 12170D
Sampling Dates: 6/12/2012	Sample Matrix: Soil
Analytical Method: As by 6010B & Hg by 7471B	Data Reviewer: M. Song

REVIEW AND APPROVAL:

Data Reviewer: Mindy Song 
Technical QA Reviewer: Howard Edwards
Project Manager: David Neil Ellis

Date: 9/7/12
Date: _____
Date: _____

SAMPLE IDENTIFICATION:

Sample No.	Sample I.D.	Laboratory I.D.
1	125-Buck-F1R	1206036-01
2	165-Buck-B1	1206036-02
3	205-Buck-F	1206036-03
4	Reeves Alley-2	1206036-04
5	220-Reeve-S	1206036-05
6	165-Buck-F	1206036-06
7	Reeves Alley-7	1206036-07
8	275-Jaca-S2	1206036-08
9	CHRH-OLAV-F	1206036-09
10	CHRH-OLAV-S2	1206036-10
11	200-Pioneer-1	1206036-11
12	130-Reeves-F2	1206036-12
13	165-Reeve-F	1206036-13
14	165-Reeve-F-DUP	1206036-14
15	145-Reeve-F	1206036-15
16	145-Reeve-Dr	1206036-16
17	105-Reeve-F1	1206036-17
18	Reeve Alley-5	1206036-18
19	215-Reeves-S	1206036-19
20	315-Jaca-Dr	1206036-20

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

DATA PACKAGE COMPLETENESS CHECKLIST:

Checklist Code:

- ☒ Included: no problems
- ☐ * Included: problems noted in review
- ☐ O Not Included and/or Not Available
- ☐ NR Not Required
- ☐ RS Provided As Re-submission

Case Narrative:

- ☒ Case Narrative present

Quality Control Summary Package:

- ☒ Data Summary sheets
- ☒ Initial and Continuing Calibration results
- ☒ CRDL Standard results
- ☒ Preparation Blank and Calibration Blank results
- ☒ ICP Interference Check Sample results
- ☐ * Matrix Spike recoveries
- ☐ NR Matrix Duplicate results
- ☒ Laboratory Control Sample recoveries
- ☐ NR Method of Standard Additions results
- ☒ ICP Serial Dilution results
- ☐ NR Instrument Detection Limits
- ☐ NR ICP Interelement Correction Factors
- ☐ NR ICP Linear Ranges
- ☒ Preparation Log
- ☒ Analysis Run Log

Raw QC Data Package Section

- ☒ Chain-of-Custody Records
- ☒ Instrument Printouts
- ☒ Sample Preparation Notebook Pages
- ☒ Logbook and Worksheet Pages
- ☒ Percent Solids Determination

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

DATA VALIDATION SUMMARY

The data were reviewed following procedures and limits specified in the EPA OSWER directive, *Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures* (EPA/540/G-90/004, OSWER Directive 9360.4-01, dated April 1990).

Indicate with a YES or NO whether each item is acceptable without qualification:

1	Holding Times	NO
2	Initial and Continuing Calibrations	YES
3	Laboratory Control Sample	YES
4	Matrix Spike	NO
5	Blanks and Background Samples	YES
6	Duplicate Analyses	YES
7	Interference Check Samples and Serial Dilution Analysis	YES
8	Post Digestion Spike and Standard Addition Analysis	N/A
9	Analyte Quantitation	YES
10	Overall Assessment of Data	YES
11	Usability of Data	NO

Comments: N/A: Not Applicable.

All samples were received dry in XRF cups. Results were reported on an as received basis with no percent moisture correction.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

1. HOLDING TIMES

☐ Acceptable
☒ Acceptable with qualification
☐ Unacceptable

Samples were extracted and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those samples analyzed outside holding time requirements, the detected results have been qualified as estimated (J), and the nondetected results have been qualified either as estimated (UJ) or rejected (R) based on the reviewer's judgement.

All Sample Matrices:

Mercury: 28 days (from collection) for analysis.

Hexavalent chromium: 24 hours (from collection) for analysis.

All other metals: 180 days (from collection) for analysis.

Comments: The analytical holding times were met but the samples were received at 21 degree C, which is above the recommended temperature (0 to 6 degree C). The detected Hg results were qualified as estimated (J).

2. INITIAL AND CONTINUING CALIBRATION VERIFICATION

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable

Unless flagged below, an initial calibration verification (ICV) and a calibration blank were analyzed at the beginning of the run, and a continuing calibration verification (CCV) and a calibration blank were analyzed after every ten samples, and at the end of the run. ICV and CCV recoveries were within a range of 80-120% for mercury and tin, and 90-110% for all other metals. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 65% or above 135% (for mercury and tin) or below 75% or above 125% (for all other metals), all associated data are rejected (R).

Comments: All recoveries of metals in initial and continuing calibration verifications were within the control limits.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

3. LABORATORY CONTROL SAMPLE

- ☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Laboratory Control Samples Analyzed

Laboratory control sample recoveries are used for a qualitative indication of accuracy (bias) independent of matrix effects. LCS recovery limits should either be specified in the Sampling and Analysis Plan or can be established by the laboratory. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Percent recoveries of LCS were within the control limits.

4. MATRIX SPIKE

- ☐ Acceptable
☒ Acceptable with qualification
☐ Unacceptable
☐ No Matrix Spikes Analyzed

Matrix spike recoveries are used for a qualitative indication of accuracy (bias) due to matrix effects. Unless flagged below, one laboratory control sample was analyzed at a rate of one per batch or one per 20 samples. Recoveries were within a range of 75-125%.

For analytes which exceeded these control limits, associated detected results are qualified as estimated (J). In cases where the recovery was below 30%, all associated nondetected results are rejected (R) and detected results are qualified as estimated (J).

Comments: Sample CHRH-OLAV-S2 was used for arsenic matrix spike analysis and the recovery was within the control limit. Sample Reeves Alley-7 was used for mercury matrix spike analysis and the recovery was outside of control limits (64%). The detected mercury results were qualified as estimated (J).

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

5. BLANKS AND BACKGROUND SAMPLES

☒ Acceptable
☐ Detection Limits Adjusted

The following blanks were analyzed:

☒ Method (preparation) Blanks
☐ Field Blanks
☐ Calibration Blanks
☐ Rinsate Blanks
☐ Background Samples

Preparation (method) blanks were prepared for each batch of samples extracted. A preparation blank was analyzed after every continuing calibration standard, prior to sample analysis unless noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5x the blank concentration.

Comments: No contamination was found in the method blank at method blank reporting limit level.

6. DUPLICATE ANALYSES

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ No Duplicates Analyzed

Type of duplicates analyzed:

☒ Field Duplicates
☐ Laboratory Duplicates

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the equation indicated below. Qualify the detected results as estimated (J) for any analyte whose RPD in a laboratory duplicate exceeds 20% for water samples or 35% for soil samples.

$$RPD = \frac{2(\text{Value 1} - \text{Value 2})}{\text{Value 1} + \text{Value 2}} \times 100\%$$

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

Analyte (mg/kg)	165-Reeve-F	165-Reeve-F-DUP	RPD (%)
Arsenic	61	61	0
Mercury	230	180	24

Comments: The RPDs were within the control limit (<35%).

7. INTERFERENCE CHECK SAMPLES AND SERIAL DILUTION ANALYSIS

☒ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☐ Not required

Interference Check Samples (ICS) - Unless flagged below, an ICS was analyzed at the beginning and end of each run and at least twice every eight hours. Recoveries were within a range of 80-120%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J) if the concentrations of Al, Ca, Fe, or Mg are higher in the sample than in the ICS.

Serial Dilution Analysis - Unless flagged below, a serial dilution analysis was performed at a rate of one per 20 samples on a sample having analyte concentrations greater than 50 times the IDL. Percent differences were within a range of 0-10%. For analytes which exceeded these control limits, associated detected results are qualified as estimated (J).

Comments: ICS recoveries were within the control limit.
Serial Dilution Analysis: Not analyzed

8. POST DIGESTION SPIKE AND STANDARD ADDITIONS

☐ Acceptable
☐ Acceptable with qualification
☐ Unacceptable
☒ Not required

Post-digestion spikes - If a furnace AA result was flagged by the laboratory with an E to indicate interference, and the associated post-digestion spike recovery was less than 10%, the associated results are rejected (R).

Method of Standard Additions - If the method of standard additions was required and the correlation coefficient was less than 0.995, the associated results were qualified as estimated (J).

Comments:

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

9. ANALYTE QUANTITATION

Confirm that analyte quantitation was performed correctly using the following formulas:

Water samples:

$$\text{ug/L} = \frac{(\text{Instrument printout concentration, mg/L})(1000 \text{ ug/mg})(\text{final volume of extract, mL})}{(\text{Initial volume of extract, mL})}$$

Soil samples:

$$\text{mg/kg} = \frac{(\text{Instrument printout concentration, mg/L})(\text{final volume of extract, mL})(0.001 \text{ L/mL})}{(\text{weight of sample extracted, g})(0.001 \text{ kg/g})(\text{fraction solids})}$$

Comments: Analyte quantitation was acceptable.

Sample 105-Reeve-F1

As: (0.6128 mg/L) (0.05 L/1.03 g) (2) = 0.059495 ug/g = 59.495 mg/kg. Lab reported 59 mg/kg.

Hg: (12.3 ug/L) (0.03 L/0.2107 g) (100) = 175.13 ug/g = 175.13 mg/kg. Lab reported 180 mg/kg.

10. OVERALL ASSESSMENT OF DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

☐ Acceptable
☒ Acceptable with Qualification
☐ Rejected

Accepted data meet the minimum requirements for the following EPA data category:

☐ ERS Screening
☐ Non-definitive with 10 % Confirmation by Definitive Methodology
☐ Definitive, Comprehensive Statistical Error Determination was performed.
☒ Definitive, Comprehensive Statistical Error Determination was not performed.

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments: Data as reported are valid.

ANALYTICAL DATA REVIEW SUMMARY

Tier 2 Validation

Site Name: McDermitt Reservation Mercury	Location: McDermitt, Nevada
TDD Number: 09-10-06-0002	Project Number: 002693.2094.01RA

11. USABILITY OF DATA

A. These data are considered usable for the data use objectives stated in the SAMPLING AND ANALYSIS PLAN MINE WASTE REMOVAL ASSESSMENT AT SITES OF RELEASE OR THREATENED RELEASE OF HAZARDOUS SUBSTANCES MCDERMITT, HUMBOLDT COUNTY, NEVADA AND MALHEUR COUNTY, OREGON, APRIL 2012 (SAP).

The following data use objective was indicated in the SAP:

TO BE USED TO EVALUATE ARSENIC AND MERCURY CONCENTRATIONS AT TARGETED PROPERTIES AND ROADWAYS WITHIN MCDERMITT IN ORDER TO DETERMINE AREAS THAT MAY REQUIRE REMEDIATION.

TO BE REVIEWED BY THE U.S. EPA AND START TO IDENTIFY SPECIFIC PROPERTIES AND ROADWAYS WHERE ARSENIC AND MERCURY CONCENTRATIONS EXCEED THEIR RESPECTIVE ACTION LEVELS.

TO BE USED AS DEFINITIVE DATA FOR CONFIRMATION OF NON-DEFINITIVE (SCREENING) DATA.

THE DATA ARE USABLE FOR THE ABOVE OBJECTIVES.

B. These data meet quality objectives stated in the SAP.

AS INDICATED IN SECTION 3 OF THE SAP, THE INVESTIGATION WILL GENERATE BOTH DEFINITIVE AND NON-DEFINITIVE (SCREENING) DATA AND TABLE 3-1 & 3-2 OF THE SAP OUTLINE THE DATA QUALITY INDICATOR GOALS APPLICABLE TO THE DEFINITIVE AND NON-DEFINITIVE DATA QUALITY LEVELS. THE DATA IN THIS PACKAGE MEET THESE REQUIREMENTS.

12. DOCUMENTATION OF LABORATORY CORRECTIVE ACTION

Problem: No problems requiring corrective action were found.

Resolution: Not required.

Attached are copies of all data summary sheets, with data qualifiers indicated, and a copy of the chain of custody for the samples.



United States Environmental Protection Agency
Region 9 Laboratory

1937 S. 46th Street, Building 201, Richmond, CA 94804

Phone: (510) 412-2300 Fax: (510) 412-2302

Project Manager: Thomas Dunkelman

Project Number: R12S65

Project: McDermitt / Ft. McDermitt Removal
Assessment

Emergency Response Section

75 Hawthorne Street

San Francisco CA, 94105

SDG: 12170D

Reported: 07/20/12 16:33

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1206036-01							Solid - Sampled: 06/12/12 09:14	
Sample ID: 125-Buck-F1R							Metals by EPA 6000/7000 Series Methods	
Mercury		230	A2, J J	30	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		58		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-02							Solid - Sampled: 06/12/12 09:29	
Sample ID: 165-Buck-B1							Metals by EPA 6000/7000 Series Methods	
Mercury		85	A2, J J	7.5	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		37		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-03							Solid - Sampled: 06/12/12 09:42	
Sample ID: 205-Buck-F							Metals by EPA 6000/7000 Series Methods	
Mercury		83	A2, J J	7.5	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		44		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-04							Solid - Sampled: 06/12/12 11:30	
Sample ID: Reeves Alley-2							Metals by EPA 6000/7000 Series Methods	
Mercury		68	A2, J J	7.5	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		36		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-05							Solid - Sampled: 06/12/12 09:00	
Sample ID: 220-Reeve-S							Metals by EPA 6000/7000 Series Methods	
Mercury		72	A2, J J	7.1	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		63		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-06							Solid - Sampled: 06/12/12 09:24	
Sample ID: 165-Buck-F							Metals by EPA 6000/7000 Series Methods	
Mercury		120	A2, J J	7.5	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		58		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-07							Solid - Sampled: 06/12/12 13:10	
Sample ID: Reeves Alley-7							Metals by EPA 6000/7000 Series Methods	
Mercury		1.3	A2, J, Q4 J	0.15	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		53		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-08							Solid - Sampled: 06/12/12 13:45	
Sample ID: 275-Jaca-S2							Metals by EPA 6000/7000 Series Methods	
Mercury		0.87	A2, J J	0.15	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		4.5		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-09							Solid - Sampled: 06/12/12 15:10	
Sample ID: CHRH-OLAV-F							Metals by EPA 6000/7000 Series Methods	
Mercury		70	A2, J J	14	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		38		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-10							Solid - Sampled: 06/12/12 15:28	
Sample ID: CHRH-OLAV-S2							Metals by EPA 6000/7000 Series Methods	
Mercury		120	A2, J J	14	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		50		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-11							Solid - Sampled: 06/12/12 16:48	



United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone:(510) 412-2300 Fax:(510) 412-2302

Project Manager: Thomas Dunkelman
Project Number: R12S65
Project: McDermitt / Ft. McDermitt Removal
Assessment

Emergency Response Section
75 Hawthorne Street
San Francisco CA, 94105

SDG: 12170D
Reported: 07/20/12 16:33

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed Method
Lab ID: 1206036-11							Solid - Sampled: 06/12/12 16:48	
Sample ID: 200-Pioneer-1							Metals by EPA 6000/7000 Series Methods	
Mercury		93	A2, J J	14	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		54		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-12							Solid - Sampled: 06/12/12 11:04	
Sample ID: 130-Reeves-F2							Metals by EPA 6000/7000 Series Methods	
Mercury		92	A2, J J	14	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		49		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-13							Solid - Sampled: 06/12/12 11:09	
Sample ID: 165-Reeve-F							Metals by EPA 6000/7000 Series Methods	
Mercury		230	A2, J J	15	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		61		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-14							Solid - Sampled: 06/12/12 11:14	
Sample ID: 165-Reeve-F-DUP							Metals by EPA 6000/7000 Series Methods	
Mercury		180	A2, J J	15	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		61		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-15							Solid - Sampled: 06/12/12 11:19	
Sample ID: 145-Reeve-F							Metals by EPA 6000/7000 Series Methods	
Mercury		140	A2, J J	14	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		60		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-16							Solid - Sampled: 06/12/12 11:23	
Sample ID: 145-Reeve-Dr							Metals by EPA 6000/7000 Series Methods	
Mercury		100	A2, J J	15	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		56		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-17							Solid - Sampled: 06/12/12 12:47	
Sample ID: 105-Reeve-F1							Metals by EPA 6000/7000 Series Methods	
Mercury		180	A2, J J	14	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		59		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-18							Solid - Sampled: 06/12/12 13:01	
Sample ID: Reeve Alley-5							Metals by EPA 6000/7000 Series Methods	
Mercury		71	A2, J J	14	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		58		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-19							Solid - Sampled: 06/12/12 13:17	
Sample ID: 215-Reeves-S							Metals by EPA 6000/7000 Series Methods	
Mercury		93	A2, J J	14	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		56		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503
Lab ID: 1206036-20							Solid - Sampled: 06/12/12 14:01	
Sample ID: 315-Jaca-Dr							Metals by EPA 6000/7000 Series Methods	
Mercury		110	A2, J J	14	mg/kg wet	B2F0094	06/28/12	06/28/12 7471B/SOP517
Arsenic		54		2	"	B2F0064	06/20/12	07/13/12 6010C/SOP503



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Phone:(510) 412-2300 Fax:(510) 412-2302

Project Manager: Thomas Dunkelman	Emergency Response Section	SDG: 12170D
Project Number: R12S65	75 Hawthorne Street	Reported: 07/20/12 16:33
Project: McDermitt / Ft. McDermitt Removal Assessment	San Francisco CA, 94105	

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B2F0064 - 3050B Sld Acid Dig - Metals by 6010					Prepared: 06/20/12 Analyzed: 07/13/12 Metals by EPA 6000/7000 Series Methods - Quality Control					
Blank (B2F0064-BLK1)										
Arsenic	ND	U		2 mg/kg wet						
Matrix Spike (B2F0064-MS1)										
Arsenic	447		Source: 1206036-10	2 mg/kg wet	400	50.1	99	75-125		20
Matrix Spike Dup (B2F0064-MSD1)										
Arsenic	451		Source: 1206036-10	2 mg/kg wet	400	50.1	100	75-125	1	20
Reference (B2F0064-SRM1)										
Arsenic	280			2 mg/kg wet	253		111	60.9-139		
Batch B2F0094 - 7471B Hg Digest - Mercury, High Level					Prepared & Analyzed: 06/28/12 Metals by EPA 6000/7000 Series Methods - Quality Control					
Blank (B2F0094-BLK1)										
Mercury	ND	U		0.15 mg/kg wet						
Duplicate (B2F0094-DUP1)										
Mercury	1.27		Source: 1206036-07	0.14 mg/kg wet		1.29			2	20
Matrix Spike (B2F0094-MS1)										
Mercury	2.17		Source: 1206036-07	0.14 mg/kg wet	1.37	1.29	64	80-120		200
Reference (B2F0094-SRM1)										
Mercury	3.12			0.14 mg/kg wet	3.59		87	80-120		

ms 8/14/12

CHAIN OF CUSTODY RECORD

PROJ. NO. 002693 209A.01RA		PROJECT NAME McDermitt Removal Assessment				NO. OF CON- TAINERS	<div style="text-align: center;"> <p>Page 1 of 6</p> <p>REMARKS</p> </div>				
SAMPLERS: (Signature)											
DATE	TIME	MATRIX	COMP	GRAB	SAMPLE IDENTIFICATION						
6/12/12	0919	soil	X		125-Buck-F1R	1	X	X			
	0929		X		165-Buck-B1	1	X	X			
	0942		X		205-Buck-F	1	X	X			
	1130		X		Reaves Alley-2	1	X	X			
	0900		X		220-Reeve-S	1	X	X			
	0924		X		165-Buck-F	1	X	X			
	1310		X		Reaves Alley-7	1	X	X			
	1345		X		275-Jaca-S2	1	X	X			
	1510		X		CHRH-OLAV-F	1	X	X			
	1528		X		CHRH-OLAV-S2	1	X	X			
	1648		X		200-Pioneer-1	1	X	X			
	1104		X		130-Reeves-F2	1	X	X			
	1109		X		165-Reeve-F	1	X	X			
	1114		X		165-Reeve-F-DUP	1	X	X			
	1119		X		145-Reeve-F	1	X	X			
Relinquished by: (Signature) <i>SDight</i>		Date / Time 6/18/12 1015		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)	
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)	
Received for Laboratory by: (Signature) <i>SDight</i>		Date / Time 6/18/12 1050		Temp. 21°C	Seals Intact (Y/N) N/A	Conditions / Remarks Hand delivered					

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

9-2286

150001

CHAIN OF CUSTODY RECORD

PROJ. NO. 002693 2094.01RA		PROJECT NAME McDermitt Removal Assessment		NO. OF CONTAINERS		REMARKS	
DATE	TIME	MATRIX	CONF.	GRAB	SAMPLE IDENTIFICATION		
6/12/12	1123	soil	X		45-Reeve-Dr	1	
	1247		X		105-Reeve-F	1	
	1301		X		Reeve Alley-S	1	
	1317		X		215-Reeves-S	1	
	1401		X		315-Jara-Dr	1	
	1422		X		350-Jara-Dr	1	
	1629		X		7-Reeves-2	1	
✓	1644	✓	X		115-Pioneer-3	1	
	0918		X		145-Buck-1	1	
	0921		X		165-Buck-S	1	
	1024		X		220-Reeve-F	1	
	1030		X		190-Reeve-Dr	1	
	1046		X		30-Reeve-S1	1	
	1058		X		150-Reeve-Dr	1	
✓	1254	✓	X		145-Reeve-B	1	
Relinquished by: (Signature) SD:gt		Date / Time 6/18/12 1045		Received by: (Signature)		Relinquished by: (Signature)	
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)	
Received for Laboratory by: (Signature) Ch...		Date / Time 06/18/12 1050		Temp. 212	Seal's Intact (Y/N) N/A	Conditions / Remarks Hand Delivered.	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files