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REMOVAL ACTION COMPLETION REPORT

Prepared for
Ironite Products Company
Humboldt, Arizona
September 25, 2007

VOLUME 1 OF 2

BROWN AND CALDWELL

Environmental Engineers & Consultants

201 East Washington Street
Suite 500
Phoenix, AZ 85004

Tel: (602) 567-4000
Fax: (602) 567-4001

September 27, 2007

BROWN AND CALDWELL

Mr. Harry Allen
Federal On-Scene Coordinator
Superfund Division, SFD-9-2
EPA Region 9
75 Hawthorne Street
San Francisco, California 94105

15-130508

Subject: Final Report, Humboldt Removal Action, Humboldt, Arizona
EPA Region 9
CERCLA Docket No. 2006-13

Dear Mr. Allen:

Brown and Caldwell, on behalf of Ironite Products Company, is submitting two copies of the final report for the referenced project. The final report conforms to the requirements of Section VIII.20 of the United States Environmental Protection Agency, Region 9 (EPA) Administrative Settlement Agreement and Order on Consent for Removal Action (Settlement Agreement), dated May 12, 2006.

Based on Brown and Caldwell's estimate to date, the cost to comply with the settlement agreement is $361,000. This estimate includes $185,000 of Brown and Caldwell's; $145,000 of Philip Transportation and Remediation's; $20,000 of resident relocations'; and $11,000 of backfill material's costs.

In accordance with Section XXIX.78 of the Settlement Agreement, Brown and Caldwell, on behalf of Ironite Products Company, requests EPA to issue a written notice of completion of work.

If you have any questions or require additional information, please contact me at (602) 567-3823.

Very truly yours,

BROWN AND CALDWELL

Pejman Eshraghi, P.E.
Project Coordinator

PE:tc

cc: David Wallis, Gallagher & Kennedy

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REMOVAL ACTION COMPLETION REPORT

Prepared for
Ironite Products Company
Post Office Box 218
Humboldt, Arizona 86329

September 25, 2007

Brown and Caldwell Project #: 130508

BROWN AND CALDWELL
201 E. Washington Street, Suite 500
Phoenix, Arizona, 85004

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µg/L	micrograms per liter
ADEQ	Arizona Department of Environmental Quality
AL	Action level
ASTM	American Society for Testing and Materials
bgs	Below ground surface
CFR	Code of Federal Regulations
COC	chain-of-custody
DQI	Data Quality Indicators
E&E	Ecology and Environment, Inc.
EPA	Environmental Protection Agency
GPS	Global Positioning System
IDW	investigation derived waste
LDC	Laboratory Data Consultants
mg/kg	milligrams per kilogram
MS/MSD	Matrix spike/matrix spike duplicate
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration
PPE	personal protective equipment
ppm	parts per million
PSC	Philip Services Company
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
QC	quality control
RAC	Remedial Action Completion
RCRA	Resource Conservation and Recovery Act
RPD	relative percent difference
RTK	real-time kinematic
SAG	Stakeholder Advisory Group
SAP	Sampling and Analysis Plan
SRL	Soil Remediation Level
SSHP	Site Safety and Health Plan
TCLP	Toxicity Characteristic Leaching Procedure
UCL	Upper confidence limit
UDS	Underground Detection Services, Inc.
USCS	Unified Soil Classification System

1. INTRODUCTION

Brown and Caldwell, on behalf of Ironite Products Company (Ironite), has prepared this Removal Action Completion (RAC) Report pursuant to the requirements of the Administrative Settlement Agreement and Order on Consent (Settlement Agreement) for removal action signed by Ironite and the United States Environmental Protection Agency (EPA) effective May 12, 2006 (Appendix A). This document summarizes the activities necessary to complete the removal of soil at four properties in the vicinity of the Ironite property in the Town of Dewey-Humboldt, Arizona (the "Site", Figure 1). These four properties, identified as Property #2, #3, #4, and #7 as identified in Section IV.8 of the Settlement Agreement, are located northeast of Ironite property along Chaparral Gulch (Figure 2).

1.1 Purpose and Scope

The purpose and scope of this report is to provide EPA with documentation of the following activities performed in compliance with Section VIII.14 of the Settlement Agreement:

- Completion of preparation/planning/reporting documents related to delineation and removal of soil (Section 3.0).
- Collection of arsenic delineation samples (Section 4.0).
- Laboratory analyses of delineation samples and data evaluation (Section 5.0 and 6.0).
- Determination of the removal action boundaries based on conditions in the Settlement Agreement and data presented herein (Section 7.0).
- Completion of arsenic removal and associated actions (Section 8.0 and 9.0).
- Evaluation of the effectiveness of the removal action and certification of compliance with the Settlement Agreement (Section 10.0).

Supporting documentation with this report includes copies of project planning, access, and safety documents, laboratory analytical reports, and a photographic record of removal activities. Background information containing details of the previous investigations, or guidance for the completion of the activities in this report, is presented separately in documents summarized in Section 12.0.

1.2 Site Name or Sampling Area

The Work Plan referred to the Site as consisting of the Ironite property and residential Properties #2, #3, #4, and #7 (Figure 2). For purposes of discussion in this document, the Iron King Mine and each residential property are referred to specifically. All field activities, including sampling and removal actions, were conducted either on residential property or at the Ironite Mine Site.

1.3 Responsible Agency

Federal regulatory oversight was provided by EPA.

1.4 Project Organization

The organization for the project as presented in the Work Plan is summarized below:

TITLE/RESPONSIBILITY	NAME	PHONE NUMBER
EPA		
On-Scene Coordinator (OSC)	Harry Allen	Office (415) 972-3063 Mobile (415) 218-7406
On-Scene Alternate Coordinator	Daniel Suter	(415) 972-3050
On-Scene Alternate Coordinator	Hedy Salter	(415) 972-3046
CONTRACTOR (BROWN AND CALDWELL)		
Principal In Charge	Eric Mears, R.G.	Office (602) 567-3859 Mobile (602) 615-0433
Project Coordinator	Pejman Eshraghi, P.E.	Office (602) 567-3823 Mobile (602) 370-3443
Field Manager	Mathew Nation, R.G.	Office (602) 567-3866 Mobile (480) 234-3734
Quality Control Manager	John Kim	(602) 567-3884

There were no modifications or additions to the individuals or entities cited above for the duration of the project.

2. PROJECT BACKGROUND

The basis for the Settlement Agreement was a determination that arsenic concentrations in soil at Properties #2, #3, #4, and #7 were greater than the screening level of 100 milligrams per kilograms (mg/kg). This determination relied on a Site Assessment of 17 properties in the Humboldt area conducted on behalf of EPA by Ecology and Environment, Inc. (E&E). The Site Assessment included the collection of surface soil samples from nine locations each at Property #2, #3, #4, and #7. The results of E&E's Site Assessment is documented in a report titled *"Iron King Mine Site, Humboldt, Arizona, Final Report"* dated October 2005. In addition, sampling had previously been conducted by the Arizona Department of Environmental Quality (ADEQ) in 2002 at specific locations along Chaparral Wash and data was included in the E&E report. The results of the Site Assessment were subsequently incorporated in Section IV.8.d of the Settlement Agreement as supporting documentation to require a removal action.

As a requirement of the Settlement Agreement (Section VIII.15), Brown and Caldwell prepared a Work Plan describing the activities to be performed for EPA review and approval (Section 3.1).

2.1 Decision Statement

The Decision Statement in the Work Plan required the completion of the following:

1. Determine the amount of arsenic-impacted surficial soils that will require removal at the referenced properties to a concentration of 23 mg/kg, or an alternative concentration as approved by EPA, at the surface of the excavation zone as stated in Section (VIII)(14)(a) of the Settlement Agreement.
2. Excavate arsenic-impacted surficial soils to depths determined after completion of item 1, but will not exceed a depth of 4 feet below ground surface (bgs) at the referenced properties. The delineation depth of 4 feet is being proposed pursuant to ADEQ's letter to the EPA titled "*Proposed EPA Removal at Iron King Mine Site in Humboldt, Arizona*" dated April 3, 2006 (Appendix B). In the letter, ADEQ recommended that *"... remediation remove the contaminated soil to either a concentration equal to the natural background concentration of arsenic, or at least to a depth of four feet to prevent future exposure to residents."*

In addition, the Settlement Agreement in Section XIV stipulated that the On-Scene Coordinator (OSC) was authorized to *"... halt, conduct, or direct any work required by the Settlement Agreement, or to direct any other removal action undertaken at the Site."* In certain circumstances described in this report and as deemed appropriate by the OSC, the Scope of Work was modified from what was proposed in the approved Work Plan, including the conditions specified in the Decision Statements above.

Each of these activities is summarized in this document in their appropriate Sections. The first portion of the report describes the activities to determine the concentrations of arsenic in soil and determine the extent of removal. The second portion of the report summarizes the activities relevant to the removal of soil and restoration activities at each property.

2.2 Decision Inputs

The information in E&E's report reflected arsenic concentrations to a depth of 0.5 feet bgs that exceeded the established action level (AL) of 23 mg/kg. As stated in the Work Plan, there was no additional input required to determine the need to remove the surficial 0.5 feet of soil at each referenced property. Additional decision input data was necessary from Properties #2, #3, #4, and #7 to delineate the vertical and lateral extent of arsenic above the AL, and the resultant volume of surficial soil below a depth of 0.5 feet bgs that required

removal. The collection of additional data at Property #7 was restricted around the single sample location "G" that yielded an arsenic concentration of 520 mg/kg. The data for the decision was collected by delineation soil sampling at specific locations for each property and analyses for arsenic. The proposed sample locations and rationale for their placement to determine the lateral extent of arsenic was presented in the Work Plan. The proposed depths for sample collection were of 0.5, 1, 2, and 3 feet bgs to determine the vertical distribution of arsenic.

2.2.1 Expected Range of Arsenic Concentrations

The expected range of arsenic at Properties #2, #3, #4, and #7 ranged from 25 to 180 mg/kg (E&E, 2005). An outlier of 520 mg/kg from Property #7 was not included due to the potential of other sources for arsenic on the property. Further evaluation of the arsenic ranges on Property #7 was not performed after submittal of the Work Plan when access for delineation sampling could not be obtained from the owner. The distribution of detected arsenic ranges from the E&E data at each property were included as Figures 3 through 6 of the Work Plan.

2.2.2 Decision Errors

A discussion of the Decision Errors and methods to control them were presented in Section 3.6.2 of the Work Plan. The necessary controls on Decision Errors were incorporated in the sampling activities described in subsequent Sections and allow data to be utilized in the decision process for arsenic removal.

3. PROJECT PLANNING AND REPORTING

Multiple documents were developed for the proposed removal action that included guidance for collection of data, community or property owner notifications, and health and safety. Documentation of field activities during the delineation sampling and removal actions was reviewed daily and used to prepare weekly summaries to EPA. This document represents the formal record of the sampling and removal activities for use in determining the appropriateness and effectiveness of the removal action.

3.1 Work Plan

A formal project Work Plan was developed by Brown and Caldwell, on behalf of Ironite, pursuant to the requirements of the Settlement Agreement. The Work Plan designated the procedures to delineate soil containing arsenic and conduct removal actions at Properties #2, #3, #4, and #7. The Work Plan was reviewed by EPA and a revised version of the document was approved on June 23, 2006, for use in performing the activities summarized in this report.

A separate Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) for the Ironite Mine site were included as Attachments E and F of the Work Plan, respectively. Modifications to procedures in those documents were described in Sections 1 through 11 of the Work Plan. Deviations to the Work Plan activities that occurred during the delineation soil sampling and removal actions are summarized in specific Sections of this document with justifications for each of the changes.

3.2 Community Involvement Documents

The Work Plan described how local community members were to be informed about the certain environmental activities, including field activities, at the Site and how they would be provided with opportunities for involvement. Mr. Stephan Schuchardt, Ironite Plant Manager, served as the designated spokesperson on behalf of Ironite to the property owners and surrounding community representative in providing the appropriate notification.

However, during the implementation of the Work Plan, the OSC assumed the responsibility of providing the public notices.

3.3 Access Agreement

Brown and Caldwell, on behalf of Ironite and in accordance with Section IX.23 of the Settlement Agreement, negotiated access agreements from the owners of Properties #2, #3, and #4 to conduct soil delineation sampling and removal actions for arsenic. The owner of Property #7 did not grant access prior to the delineation sampling or removal actions in 2006. No further activities occurred at Property #7 until access was obtained by EPA in 2007 to conduct limited soil removal associated with sample location "G" from the previous Site Assessment (E&E, 2005). Copies of the signed access agreements for each property owner were retained by Ironite and EPA during the performance of the activities described in this report.

3.4 Site Safety and Health Plan

The Site Safety and Health Plan (SSHP), included as Appendix B of the Work Plan, was utilized for both the delineation and removal action phases of work. The SSHP incorporated the requirements of Occupational Safety and Health Administration (OSHA) Title 29 Code of Federal Regulations (CFR), Part 1910.120 for

hazardous site work. The SSHP described appropriate measures and safe practices for field personnel to follow and prevent exposure to chemical contaminants, and physical and biological hazards. The SSHP also identified appropriate personal protective equipment (PPE), monitoring requirements, site control measures, and emergency procedures to be followed during the field activities.

The designated level of PPE for all personnel involved in the on-site activities was modified Level D protection. Additional precautions to prevent cross-contamination of excavated areas were utilized during the removal actions, including protective footwear covers and restriction to portions of the excavations. The potential upgrade to respirators during soil removal actions was dependant upon the field monitoring for arsenic content in dust. The dust monitoring summarized in Section 8.4 did not indicate significant, prolonged conditions of elevated dust that required use of respirators.

As stipulated in Section 4.3 of the Work Plan, subcontractors were also required to prepare and adhere to their own SSHP. A daily safety meeting was conducted during the delineation and removal action phases of work when safety protocols were reviewed and changes in site conditions discussed. These meetings incorporated both Brown and Caldwell's SSHP requirements and additional issues relating to the subcontractors SSHP. Copies of the Brown and Caldwell SSHP daily meeting forms are provided in Appendix C.

All personnel potentially accessing the Ironite property were required to complete an orientation at the property supervised by an Ironite representative. The orientation was required to ensure all personnel were familiar with procedures for accessing the site and potential hazards for vehicular traffic. Brown and Caldwell field personnel and subcontracted individuals from Philip Services Corporation (PSC) completed the orientation prior to the removal action. Ironite representatives indicated the location designated for soil disposal on the mine tailings during the orientation.

3.5 Field Activity Documentation

Documentation of field activities during delineation sampling and removal actions was performed using multiple records that could be compared for verification purposes. A comprehensive record of significant field activities was maintained in a Project Log Book that recorded events on a daily basis. Additional information recorded in the Log Book consisted of field diagrams, notations regarding modifications to planned activities, discussions with project personnel or visitors, and decisions regarding the status of field activities. The Log Book was reviewed and a copy of the log was retained in the Brown and Caldwell Phoenix office for recordkeeping purposes while field activities were ongoing.

A separate set of daily field logs included a summary of the number of personnel and organizations present at the Site, with a record of the number and types of samples collected, if any. These field logs were primarily maintained to verify events recorded in the Log Book and types of samples listed in chain-of-custody documents.

Sample logs provided a description of the number, dates, times, locations, identification, and types of each individual sample collected. The soil sample material was described using the Unified Soil Classification system (USCS) as presented in American Society for Testing and Materials (ASTM) D-2488. Additional features of the sample material, including surrounding surface conditions, were recorded with the description. These descriptions were used to evaluate the physical conditions of each property for determination of removal actions as discussed in Section 7.3.

Chain-of-custody (COC) forms provide a record of sample information and requested analyses to the laboratory. The COCs were completed as sampling progressed in the field and were subsequently reviewed prior to delivery to the laboratory to ensure the information was accurate. The number and types of samples on the COCs were also verified with the daily field and sample logs to identify any discrepancies.

The information on each COC included the following information:

- Brown and Caldwell project name, number, and contact information.
- Sample identification numbers.
- Sample media types.
- Preservatives used.
- Dates and times of collection.
- Laboratory analyses requested.
- Names, signatures, and dates of sampling personnel and all other individuals who retained custody of samples to the laboratory.
- Special instructions regarding analytical methods or procedures (e.g. compositing samples).

Samples were in the possession of Brown and Caldwell personnel from the time of sampling to delivery at the laboratory. Copies of the COC were provided to Brown and Caldwell upon delivery to the laboratory for reference during the analytical process. Copies of COC documents as completed by the laboratories are provided in their reports contained the Appendix D.

The locations of sample points, removal action boundaries, structures, utilities, and other pertinent features were surveyed using global positioning system (GPS) devices. Surveying was performed prior to the delineation sampling and later during removal actions. A field log of the points surveyed and a physical description of the points was maintained to verify the electronic data when it was downloaded. Details of the GPS surveys are presented in separate Sections of this report for the delineation sampling and removal actions.

3.6 Periodic Progress Reports

Brown and Caldwell prepared weekly progress reports that summarized the previous week's activities and submitted them to Ironite and EPA on each Monday. The weekly progress reports were initiated on July 3, 2006 for the preceding week of June 26 through 30, 2006, and continued until December 2006 when a request to stop preparation of the weekly progress reports by Ironite was approved by the OSC. The activities summarized in this report, including modifications to the scope of work, were communicated in the weekly reports according to the requirements of the Work Plan. A summary of project field activities in Table 1 was also condensed from the weekly report information and field data review.

3.7 Removal Action Completion Report

This RAC Report satisfies the conditions of Section VIII.20 of the Settlement Agreement, and Section 9.2 of the Work Plan. The submittal of the RAC Report was required within 60 days of the completion date cited in the Settlement Agreement at August 1, 2006. An extension to the completion date to September 29, 2006, was granted by EPA in correspondence entitled *Ironite Mine Site Work Completion Deadline Extension*, dated August 30, 2006. The extension was granted to accommodate delays in the completion of the removal action due to field conditions and additional requests for access to Property #7. An additional extension of time was not requested because EPA assumed the responsibility of acquiring access to Property #7. The information supplied in this document satisfies the decision input requirements for evaluating the lateral and vertical extent of arsenic in soil. The determination of removal action boundaries is presented utilizing the data generated for the decision input. A record of the removal actions and supporting documentation to demonstrate compliance with the Settlement Agreement are included.

4. ARSENIC DELINEATION

Delineation of arsenic concentrations was conducted in accordance with Section 4.4 of the Work Plan. The collection of delineation samples was necessary to augment the existing data used for decision input and decision rules for arsenic removal. The evaluation of the delineation soil data for determining the remedial action boundaries is presented in Section 7.0.

4.1 Study Boundaries

The properties identified in the Settlement Agreement for potential sampling and removal actions are Properties #2, #3, #4, and #7. Negotiations with the owner of Property #7 did not result in immediate access to that property, and it was not included in the study boundaries for delineation sampling as acknowledged in the Work Plan. However, access to Property #7 in 2007 permitted the inclusion of a single location for removal action into the study boundary. The initial proposed locations for delineation samples and removal action were presented in Figures 7 through 10 of the Work Plan. Revisions to the proposed delineation sample locations resulted in a greater frequency of sampling as described in Section 4.3.1. Additional modifications to the delineation sample locations and removal action boundaries were made based upon field conditions (e.g. utilities, easements, slopes, structures), resulting in the elimination or relocation of sample points. The modifications to the sample locations and removal area boundaries were communicated to the OSC in the weekly Periodic Progress Reports. The resultant delineation sample locations and modified removal boundaries for Properties #2, #3, and #4 are depicted in Figures 3 through 5.

The proposed vertical boundary of the characterization and removal action was a depth of 4 feet bgs or less, subject to modification based upon the presence of subsurface utilities. The vertical boundary for the delineation sampling was specified at 3 feet bgs as part of the Decision Input discussed in Section 2.2 of this document and Section 3.3 of the Work Plan.

4.2 Utility Clearance

Utility clearance surveys were performed before initiating any subsurface work at the properties. Initial notification was provided to Arizona Bluestake prior to the delineation sampling to identify and mark all underground utilities coming into or out of the three properties.

A qualified underground utility locating contractor, Underground Detection Services (UDS), was also retained to conduct a survey of the proposed sampling/excavation zones and locate and mark underground utilities. This additional utility location was required because Arizona Bluestake and the utility companies notified do not typically access private property. The initial utility location occurred on June 26, 2006 at Properties #2, #3, and #4. The utilities located at each property included those constructed of metal, with additional plastic lines located with a tracer wire. However, the locations of several plastic lines could not be confirmed and their placement was approximated with the assistance of the property owners. The confirmation of a natural gas line was also requested at Property #4 due to a conflict with the utility markings with the location as determined by UDS.

Additional clarification of subgrade utilities occurred on July 24, 2006, at Properties #2 and #3, and August 7, 2006, at Property #4. The clarification was performed to ensure markings were clear and to discuss potential limits to the depths of excavation over selected utilities. Utility location was performed by UDS prior to the removal action at Property #7 on May 15, 2007.

4.3 Delineation Sample Collection

Collection of arsenic delineation samples was conducted at Properties #2, #3, and #4 on June 28 through July 11, 2006. The sampling was performed by two Brown and Caldwell personnel, one of which was the Field Manager designated for the project. The sampling was assisted by PSC under subcontract to Brown and Caldwell to operate the equipment used for excavation of sample potholes. The Brown and Caldwell Project Manager was present on multiple dates to review the status of sampling, field conditions, and coordinate with property owners for pending activities. A summary of the dates and activities during delineation sampling is presented in Table 1.

4.3.1 Sample Locations

The proposed locations for delineation samples were designed to represent an area not more than 2,800 square feet in area at each of the properties. The sample grid utilized points with a nominal 40-foot spacing at Properties #3 and #4, and a 60-foot spacing at Property #2. These grid spacings were proposed in order to reduce the decision error for both types of errors identified in Section 3.6.2 of the Work Plan. Thus, the frequency of sampling was increased, and locations modified from those depicted in Figures 7, 8, and 9 in the Work Plan. The sample points at each location were identified and staked prior to sampling to evaluate potential changes in the locations. Each of the modifications cited below were documented and the reasons for altering the sampling grids were communicated to the OSC. The resultant sample locations were then surveyed and the preliminary information utilized to generate maps for evaluating potential excavation areas.

The initial survey of Property #2 conducted on June 26 and 27, 2006, identified several sample locations that required modification. These changes were necessary to accommodate dense vegetation (BC-P2-K, BC-P2-L), a stockpile of cobbles (BC-P2-B), and the steep slope of hills to the north of the property (BC-P2-E, BC-P2-M, BC-P2-L). The close proximity of an underground water line also contributed to the modification of sample point BC-P2-L. The resultant sample locations as collected at Property #2 are presented in Figure 3.

The locations of sample points at Property #3 required more extensive modifications due to physical constraints at the Site. Proposed sample points BC-P3-E, BC-P3-F, and BC-P3-G were removed because their locations were on steeply sloped backfill that was a mixture of natural and imported material. The backfilled material had been used in construction of elevated plots north of Property #3 or as support material for the county road and drainage culvert north of sample BC-P3-D. The row of sample points BC-P3-A through D was shifted eastward because the actual easement for the property and the county road was closer to the house than presented in the Work Plan. The placement of points BC-P3-H, BC-P3-J, BC-P3-K, and BC-P3-L were modified due to limitations accessing portions of the property that contained structures or landscaping. The access agreement and negotiations with the property owner stipulated that no sampling would occur in the landscaped area south of the house. The location of point BC-P3-N was shifted southwest because it was at the base of a steep slope with trees that limited access. The resultant sample locations as collected at Property #3 are presented in Figure 4.

Sample locations at Property #4 were modified primarily due to the proximity of subgrade utilities. The locations of sample points BC-P4-A, BC-P4-G, BC-P4-H, BC-P4-I, and BC-P4-J were altered to provide sufficient space to excavate and collect samples near utilities. In addition, a plastic subgrade water line was encountered during the initial excavation of BC-P4-I and the point was relocated northward after the line was repaired. The presence of stockpiled brick and building materials north of BC-P4-D and a wall near BC-P4-J also limited the placement of the sample points. The resultant sample locations as collected at Property #4 are presented in Figure 5.

4.3.2 Sample Collection

Delineation soil samples were collected using an alternate method to those described in Section 4.4 and Attachment F of the Work Plan. The proposed method of collection was to recover core using a hydraulic direct-push probe to the target depths. However, inspections of the physical content of the material to be sampled at the three properties indicated the presence of extensive gravel or cobbles at relatively shallow depths. The direct-push or hand auger techniques of sampling would not penetrate effectively below depths of 1 to 2 feet in the coarse-grained material, and an alternate method was proposed and accepted by the OSC.

The sampling method utilized a backhoe to excavate a pothole at each location to successive depths for sample collection. The samples were collected manually at each specified depth of 0.5, 1, 2, and 3 feet bgs from the potholes according to the procedures described below. The potholes were backfilled after sampling was completed and the material was compacted to a relatively level surface. This method allowed the collection of samples in coarse-grained material to the required depths at each location.

Soil delineation samples were collected from the potholes using the following procedures:

- The backhoe removed soil the appropriate depth of sample collection, which was verified by a measuring rod or tape from the land surface to the base of the pothole.
- Loose material was cleared from the area where the sample is to be collected. The samples were collected from undisturbed material and placed into an 8-ounce glass jar with a plastic lid and Teflon liner. The material was recovered directly from the base of the pothole with the jar, or if the material was hard and consolidated, a disposable plastic trowel was used to remove the sample and place it in the jar.
- The sample jar was sealed tightly and any loose material adhering to the jar was brushed off. A label recording the ID and time of collection was affixed to the outside of the jar. The jar was then placed in a plastic bubble-wrap bag, sealed with an adhesive strip, and placed in a cooler with ice.
- The sample was logged on a COC form, and a description of the sample material was recorded on field data sheets. Excess sample material was placed in the pothole during backfilling.
- The backhoe was decontaminated as described in Section 4.6 and any disposable equipment was placed in trash bag for subsequent disposal.

Soil sample locations are depicted on Figures 3 through 5. The locations were re-staked after backfilling was complete to ensure reacquisition if additional sampling was required and for reference during the removal actions.

Delineation soil samples were identified according to the protocols stipulated in the Work Plan with the following nomenclature:

- Project name;
- Sample ID number with a Brown and Caldwell (BC) abbreviation, followed by the property number, followed by sample location letter, and followed by the depth at which the sample is collected. For example, sample BC-P2-C-3 was a delineation soil sample collected by Brown and Caldwell at Property #2, Location C, from a depth of 3 feet; and,
- Date and time of collection.

A summary of all samples collected during the delineation sampling, including dates sampled and the types of samples, is presented in Table 2. The samples collected at the conclusion of each day of sampling were managed according to the procedures in Section 1.7 of the Work Plan. Samples were conveyed from the sites in Humboldt to the Brown and Caldwell office in Phoenix, Arizona for verification of sample information with COC documents prior to delivery to the laboratory for analyses.

4.4 Backfill Material Sample Collection

Brown and Caldwell collected five samples from a borrow pit designated by Ironite as potential material for backfill after arsenic removal was complete. The borrow pit was located approximately two miles north of the residential properties on the west side of Highway 69. Samples were collected from representative locations in the borrow pit, either in undisturbed material or from stockpiled soil. The soil samples were collected manually using methods consistent with those of delineation sampling and Section 1.5.1 of the SAP. Backfill samples were identified with the abbreviations BC-B-1-D-1 through BC-B-1-D-5, corresponding to Section 4.9.2 of the Work Plan (Table 3).

4.5 Quality Control Samples

Quality control (QC) samples collected during sampling were described in Section 2.0 of the SAP and consisted of field duplicates and sample equipment rinsate blanks. The frequency of collection for field duplicates was 1 per 10 delineation soil samples. The sample equipment rinsate blanks were collected to verify the effectiveness of decontamination procedures used for non-dedicated sampling equipment. As described above in Section 4.3.2, the method of collection utilized a backhoe and dedicated sampling equipment. The equipment rinsate blank samples were therefore collected only from the backhoe on a daily basis as described in the SAP. The collection of the final two equipment blank samples were collected on July 11, 2006, because the backhoe had malfunctioned on July 10 and could not be properly decontaminated for sampling. An equipment blank was collected prior to the start of sampling on July 11, 2006, after the backhoe was decontaminated (BC-P4-GWS-07), and a second blank was collected at the end of the sampling activities on that day (BC-P4-GWS-08).

The method of collection for field duplicates was identical to that for the delineation samples. The equipment rinsate blanks were collected by pouring distilled/deionized water over the backhoe bucket after decontamination was complete. The water was collected as it ran off the backhoe bucket into appropriate containers for laboratory analyses. An additional QC sample was collected from the decontamination water in the storage tank that was used to steam clean the backhoe (BC-P4-GWS-09). The water was collected from the outlet spigot on the storage tank and the sample submitted with the equipment blank for analyses.

The QC samples were labeled in a manner similar to those for the delineation samples, with the following modifications:

- Field duplicates utilized the same designation as delineation samples with a fictitious sample location letter for the location (e.g. BC-P2-S-1).
- Equipment rinsate blanks utilized a BC abbreviation, followed by "GWS" which fictitiously signifies it to be a groundwater sample, followed by property number, followed by a fictitious well location number. For example, the sample BC-GWS-P2-02 was collected during sampling at Property #2, and the "02" was the fictitious well location number. One of the rinsate blanks was mislabeled as BC-GWS-03 and did not include the property designation of P2.

A summary of the QC sample types, collection dates, and identification are presented in Table 2.

4.6 Decontamination Procedures

Sampling equipment that required decontamination was the backhoe bucket used to excavate each sample location and a measuring bar to gauge the depth of excavation. However, the measuring bar was not used to collect or assist in sampling of the soil. The remaining sampling equipment were disposable and did not require decontamination.

Decontamination efforts were conducted in accordance with Section 3.0 of the SAP specifically for soil sampling. The decontamination procedures incorporated the initial removal of gross contamination by dry brushing or scraping visible residue clinging to the backhoe equipment. The decontamination of residual contamination was performed using a three-phase method generally comparable to that described in the SAP. The process was modified due to the alteration in sampling equipment (backhoe) used from the proposed method of direct-push coring or hand auger sampling.

The first phase of decontamination involved spraying down the backhoe bucket and portions of the mechanical arm that contacted the soil with a pressurized solution of potable water and Liquinox®. The backhoe was then rinsed with a steam cleaning pressure washer supplied by PSC. This pressure washing also removed any potential gross contamination that was in joints that could not be removed by brushing. The final rinse was performed with a spray of distilled or deionized water and the backhoe was allowed to air dry.

The rinsate solutions generated from the decontamination procedures were allowed to disperse on the ground near the periphery of the removal action boundaries at each property. This procedure was in accordance with Section 10.3 of the Work Plan and was confirmed with the Brown and Caldwell Project Manager at the beginning of sampling activities.

4.7 Investigative Derived Waste

Investigative derived waste (IDW) generated during the delineation sampling consisted of the following types:

- Solid waste – containers, cardboard, paper towels, debris that was not used as PPE and did not contact material sampled.
- PPE waste – disposable nitrile gloves, plastic sample trowels, bags, used to collected or prepare samples.
- Liquid waste – decontamination rinsate.

Each of these types of IDW were managed and disposed as described in Section 9.0.

4.8 Global Positioning System Readings

The locations of delineation samples, removal action boundaries, houses and other structures, and utilities were surveyed using GPS methods prior to the initiation of sampling at each property. The type of GPS recorder used was a hand-held unit that contained the receiver and antenna. The electronic data collected during each day was downloaded for verification with coordinates recorded in field logs. Additional field measurements were collected using measuring tapes, wheels, and compass bearings to compare with the GPS data.

The GPS data was combined with direct measurements and compass bearings for each property to generate maps in correspondence to EPA on July 13 and 24, 2006. Modified versions of the maps initially provided to EPA are reproduced in Figures 3, 4, and 5. Revisions to the GPS data were made during the removal action when a different type of GPS unit was used to reacquire sample locations and other significant features, as summarized in Section 8.13.

4.9 Significant Deviations from Proposed Activities

The details regarding deviations from proposed activities were presented in the preceding Sections, and are restated below with justifications for each of the deviations:

1. Sample locations were modified at each property from the proposed sampling grid for the following reasons:
   A. The modifications were required to accommodate the actual property boundaries compared with the proposed grid.
   B. Subgrade utilities prevented excavation and sampling at the proposed locations.
   C. Proposed sample locations were on steep slopes of material that was of potentially mixed origin.
   D. Excavation of sample locations on slopes would compromise the integrity of the slope (e.g. county road at Property #3).
2. Sample collection was performed using a backhoe to excavate potholes where samples were collected manually. This modification was necessary because the material at each site consisted of a high proportion of coarser gravel at depth, and use of direct-push or hand auger methods would not have penetrated to the required depths for sample collection. In addition, sample retention of the coarser material would have been problematic for a direct-push core.
3. Backfill samples were submitted for discrete analyses instead of a single composite sample. The borrow pit was a supplier for backfill to multiple contractors, prior to and during the removal actions at the properties. The areas in which backfill would be obtained from the borrow pit could not therefore be specifically determined. The collection of discrete samples was necessary to ensure stockpiled or undisturbed soil was acceptable for backfilling regardless of where the material was obtained at the borrow pit.
4. Decontamination procedures were modified to accommodate the use of a backhoe for sample excavation. The modifications were generally comparable to the methods stipulated in the SAP, but a pressure steam cleaner was used to effectively remove any gross or residual material after the initial decontamination solution rinse.
5. Collection of an equipment rinsate blank on a daily basis was modified on July 10 and 11, 2006. The backhoe malfunctioned at the conclusion of sampling on July 10 and could not be effectively decontaminated prior to the collection of an equipment blank sample. An equipment blank sample was collected after the decontamination, and prior to sampling, on July 11 and a second sample was collected at the conclusion of sampling on that day.

The deviations from the proposed activities were communicated to the Brown and Caldwell Project Manager for confirmation. The resultant modifications are not considered indicative of non-compliance with data acquisition requirements, critical data gaps, or compromise the acceptability of the data generated.

5. LABORATORY ANALYSIS

Soil and liquid samples collected during arsenic delineation were managed according to the relevant procedures in the SAP and QAPP, and submitted to Transwest Geochem for analyses. Chain-of-custody documentation was reviewed and confirmed with the laboratory to ensure all samples were accounted and the required analyses performed. The following Sections present the results of laboratory analyses for delineation and QC samples.

5.1 Delineation Soil Samples

Delineation soil samples were submitted for the following analyses as per Section 5.1 of the Work Plan:

- Arsenic using EPA Test Method 6010B.

The delineation soil samples were analyzed utilizing a seven-day turnaround time to expedite the data review and determine if the arsenic concentration at each property was at or below the remedial action level of 23 mg/kg.

The following total number of delineation soil samples were analyzed from each property:

- Property #2 - 68 samples;
- Property #3 - 44 samples; and
- Property #4 - 56 samples.

Table 2 summarizes the arsenic concentrations at each sample location for all three properties. Concentrations of arsenic that exceeded the proposed remedial action level were identified in a total of 66 samples from the following locations:

- Property #2 - A, B, D, E, F, G, H, I, J, K, M, N, O, P, Q;
- Property #3 - A, B, D, H, I, J, K, L, M, N; and,
- Property #4 - A, B, D,E, F, G, H, I, J, K, M, N.

The depths at which the detected concentrations exceeded the proposed remedial action level were variable, but the majority (36) were concentrated at a depth of 6 inches (Table 2). The number of detected concentrations exceeding the proposed remedial action level decreased to 15 at a depth of 1 foot, 11 at a depth of 2 feet, and 5 at a depth of 3 feet. Copies of the laboratory analytical reports for the delineation soil samples are included in Appendix D.

5.2 Backfill Material Samples

A total of five discrete soil samples of backfill material were submitted for the following analyses as per Section 5.2 of the Work Plan:

- Resource Conservation and Recovery Act (RCRA) eight total metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) using EPA Test Method SW6010B/7000 and 7471A.

Samples were not composited for analyses as had been stipulated in the Work Plan. As noted in Section 4.4, they were collected for analyses separately since it was unknown where the backfill would be taken from at the borrow pit. A summary of the analytical results for the backfill material samples is presented in Table 3. The detected metals in the samples constituted arsenic, barium, and chromium at concentrations below their

respective Arizona Residential Soil Remediation Levels (SRLs). The results of the laboratory analyses were communicated to OSC with a recommendation for use of the borrow pit for suitable backfill in the remedial action. Copies of the laboratory analytical reports for the backfill soil samples are included in Appendix D.

5.3 Field Quality Control Samples

The QC samples consisting of field duplicates of soil and equipment blanks of liquid were analyzed for arsenic using the following analytical methods:

- Soil samples using EPA Test Method 6010B; and
- Liquid samples using EPA Test Method 200.7 or 6010B.

The following number of field duplicate samples were analyzed from each property:

- Property #2 - 7 samples;
- Property #3 - 4 samples; and
- Property #4 – 6 samples.

A summary of the analyses for the field duplicates is presented in Table 2. The results of the field duplicate and equipment blank analyses are included with the laboratory analytical reports in Appendix D. The analytical results of the duplicate sample were compared to the original sample to determine the relative percent difference (RPD) using the following formula:

$$RPD = \frac{(A - B)}{A + B} \times 100$$

Where: A = Arsenic Concentration of Delineation Sample in mg/kg
B = Arsenic Concentration of Field Duplicate Sample in mg/kg

The RPD is used as an indicator to evaluate the analytical laboratory's precision by assessing the reproducibility of the analytical results. The RPD is compared to a precision goal, which is typically 30 percent or less for analyses of metals in soils. The majority of analytical results for field duplicates were within 30 percent of the original delineation sample concentrations. However, the RPDs for field duplicate samples BC-P2-S-1 and BC-P2-W-1 exceeded 30 percent. The original arsenic concentration in delineation sample BC-P2-G-1 was lower than the duplicate (S-1), although the concentration in BC-P2-O-1 was higher than the field duplicate result (W-1). The soil was removed to a depth of 1 foot at each of these locations as summarized in Section 8.

A total of nine equipment blank samples were analyzed distributed as follows:

- Property #2 - 3 samples;
- Property #3 - 2 samples; and
- Property #4 – 3 samples, 1 water tank sample.

A summary of the analyses for the field duplicates is presented in Table 2. Arsenic was not detected in the equipment blank samples with the exception of BC-GWS-P3-04, which contained a concentration of 0.011 micrograms per liter (µg/L) (Appendix D). Although the detection suggested residual arsenic was present during sampling on the date of collection July 5, 2006, the concentration was near the detection limit of 0.010 µg /L. The arsenic detection in the equipment blank is not inferred to indicate a significant non-conformance during the field sampling or decontamination procedures, and would not result in modifications or flags to concentrations detected in soil samples collected on that date.

5.4 Laboratory Quality Control

Laboratory QC samples were analyzed to assess the validity of the analytical results and confirm QC procedures at the laboratory. The QC samples consisted of method blanks, surrogate spikes, matrix spikes/matrix spike duplicates (MS/MSD), internal standards, duplicate samples, and check standard analyses. These samples are prepared and analyzed by the laboratory and are consistent with the requirements of the QAPP. Results of the analyses are provided in the laboratory QC documentation and are reviewed in Section 6.2.

6. DATA VERIFICATION AND VALIDATION

The verification and validation of delineation laboratory data was performed by an outside firm, Laboratory Data Consultants, Inc. (LDC), specializing in this type of evaluation in accordance with Section 4.0 of the QAPP. A copy of the QAPP was provided to LDC for their use in validating the laboratory data. Additional verification of field data was performed by Brown and Caldwell as appropriate to the types of information collected and described in the Work Plan and SAP.

6.1 Field Data Verification

Verification of field data primarily involved evaluation of the completeness, correctness, and conformance of data with respect to the standard operating procedures for collection, tracking, method of analysis, or contractual requirements for this project. These procedures are summarized in the Work Plan and SAP, with additional assessment and response actions for field procedures in Section 3.1 of the QAPP. From a verification standpoint, field data non-conformance is defined as an occurrence or measurement that is either unexpected or does not meet established acceptance criteria and that will affect data quality if corrective action is not implemented. Non-conformance may result from the following:

- Natural conditions (e.g. inappropriate material type or size);
- Incorrect use of field equipment;
- Field instrument failure/malfunction;
- Data record errors (e.g. times, dates, locations);
- Incomplete field documentation, including COC records; and
- Incorrect collection of QC samples.

Two types of corrective action exist: immediate and long-term. Immediate corrective actions include the correction of documentation deficiencies or errors, the repair of inaccurate instrumentation, or the correction of improper procedures. Often, the source of the problem is obvious and can be corrected at the time of observation by either the personnel involved in the data collection or the Project Manager/QC manager. Long-term corrective actions are designed to eliminate the sources of problems. Long-term corrective actions may include correction of systematic errors in sampling or analysis, or correction of procedures producing questionable results. Corrections can be made through additional supervision, instrument and equipment replacement, and/or procedural improvements.

The following types of field data were verified either on a daily basis by the field personnel and Project Manager, or immediately after the sampling and removal activities were concluded:

- Field log books;
- Sample logs;
- Sample COC records;
- GPS records and electronic data;
- Waste identification information;
- Photographs; and
- Site sketches or field maps.

The review of field data collected during the delineation indicated significant non-conformance with the initial placement of the sampling grid. This condition was created due to the alignment and spacing of the sample points relative to features on maps contained in the Work Plan. The actual property or proposed removal action boundaries were documented in the field and the delineation sample grid verified in relation to the boundaries. The verifications of property boundaries resulted in a shift in grid placement at Properties #3 and #4. The orientation of the grid was also slightly modified at Property #2 to align with the bearings of the removal action boundaries. These actions rectified the non-conformance with the placement of the delineation sampling grid.

A non-conformance is not recognized for the reacquisition and relocation of sampling points with a separate GPS unit during the removal actions (Section 4.3 and 8.13). The instrumentation was used correctly and did not malfunction. The data records were also accurate and complete. The alteration of the sample locations occurred due to less precision in the GPS unit used for sampling in comparison with that used during the removal action. In addition, verification of the staked sample locations was obtained by field observations at each property prior to the initiation of the removal action.

6.2 Internal Laboratory Data Verification

Internal QC samples were utilized by the laboratory to assess the validity of the analytical results for the samples collected during arsenic delineation activities. The laboratory QC procedures included method blank, surrogate spike, MS/MSD, internal standards, duplicate sample, and check standard analyses. The objectives of the laboratory QC sample analyses are defined in the QAPP.

Specific aspects of laboratory QC measures that varied from nominal operations included the following:

- The MS recovery associated with samples collected at all depths from Locations A through D at Property #2, and at 0.5, 1, and 2 feet bgs at Location E at Property #2 was high. The method control sample recovery was acceptable.
- The MS recovery associated with samples collected at 3 feet bgs at Location E at Property #2, and at all depths from Locations F through I at Property #2 was low. The method control sample recovery was acceptable.
- The accuracy of the spike recovery value associated with samples collected at all depths from Location L at Property #3, at all depths from Locations A through C at Property #4, and at 0.5 feet bgs at Location D at Property #4 is reduced because the analyte concentration in the samples was disproportionate to the spike level. However, the method control sample recovery was acceptable.
- The RPD for the MS/MSD associated with samples collected at all depths from Location L at Property #3, at all depths from Locations A through C at Property #4, and at 0.5 feet bgs at Location D at Property #4 exceeded the laboratory control limit. The laboratory report's case narrative indicated "*the RPD between the MS and MSD is outside the acceptance criteria due to non-homogeneous nature of the sample. LCS/LCSD PRD was within criteria.*"

The instances where these QC measures deviated from the acceptable criteria are detailed in analytical reports (Appendix D) and were reviewed by the data validation subcontractor; however, the qualified data are usable because the laboratory data QC was determined to be acceptable, as flagged.

6.3 Laboratory Data Validation

A Level IV data validation was performed on all analytical results associated with arsenic delineation activities in accordance with Section 4.2 of the QAPP. Standard Level IV QA/QC data packages were supplied to Brown and Caldwell as part of the laboratory reports for analysis of the delineation and backfill samples (Appendix D). These data packages included results of daily method blanks, MS/MSD, laboratory control

samples, and surrogate recoveries for all samples as discussed in the preceding Section. Brown and Caldwell contracted with LDC to perform a data quality review of the laboratory results and associated QA/QC data. The LDC review and examination of the data focused on validating the degree to which the data quality indicators (DQIs) established in the QAPP had been achieved. The measurement data were validated in general accordance with the EPA's July 1990 *Draft Laboratory Documentation Requirements for Data Validation.*

The data quality criteria evaluated by LDC include:

- Laboratory report/documentation;
- Chain-of-custody;
- Timeliness and errors;
- Blanks and contamination;
- Surrogate recovery;
- Precision and accuracy;
- Quantitation and reported detection limits;
- Field duplicate evaluation; and
- Data use and overall quality assessment.

Review of the analytical data by LDC indicated that, as qualified and modified/flagged below, the data are acceptable for use and the analyses were performed in general accordance with the requirements of the referenced methods. The detailed review and recommendations from LDC are provided in Appendix E.

6.3.1 Delineation Samples

The following modifications or flags to the laboratory results were made for the delineation soil samples:

- Arsenic results for samples collected from all depths at Locations A through D and from depths of 0.5 feet to 2 feet bgs from Location E at Property #2 were flagged "J" (value is estimated) because the MS recovery was high, but the method control sample recovery was acceptable.
- Arsenic results for samples collected from 3 feet bgs from Location E and samples from all depths at Locations F through I at Property #2 were flagged "J" (value is estimated) because the MS recovery was low, but the method control sample recovery was acceptable.
- Arsenic results for samples collected from all depths at Locations L at Property #3, from all depths at Locations A through C at Property #4, and from 0.5 feet bgs from Location D at Property #4 were flagged "J" (value is estimated) because the RPD exceeded the laboratory control limit.
- Arsenic concentrations in samples BC-P2-E-0.5, BC-P2-G-1, and BC-P2-O-1 collected at Property #2, and sample BC-P3-H-1 collected at Property #3 were flagged "J" (value is estimated) because the RPD exceeded the method control limit. The associated field duplicate sample concentrations were also flagged.

No additional modifications were recommended for the delineation soil sample data.

6.3.2 Backfill Material Samples

The data validation performed by LDC indicated that the analytical results were acceptable without modifications or flagging.

6.3.3 Field Quality Control Samples

The following modifications or flags to the laboratory results were made as a result of field QC samples validation:

- Field duplicate samples BC-P2-R-0.5, BC-P2-S-1, and BC-P2-W-1 collected at Property #2 and field duplicate BC-P3-P-1 collected at Property #3 were flagged "J" (value is estimated) because the RPD exceeded the method control limit.
- Field duplicate samples BC-P2-R-0.5, BC-P2-S-1, and BC-P2-T-0.5 collected at Property #2 were flagged "M1 and M2" because matrix spike recovery was high or low. Method control sample recoveries were acceptable.
- Field duplicate samples BC-P4-O-0.5 and BC-P4-P-1 were flagged "R2" because the RPD exceeded the laboratory control limit. LCS/LCSD RPD were within criteria.

No additional modifications were recommended for the field quality control sample data.

7. REMOVAL ACTION DETERMINATION

Delineation sample data satisfied the criterion of the Decision Input to determine the depths and resultant volume for potential soil removal. Sample data also fulfilled the first component of the Decision Statement and provided quantifiable information for completion of the second removal action component.

7.1 Decision Rule

The AL identified in Section VIII.14.a. of the Settlement Agreement was an arsenic concentration of 23 mg/kg or less at the excavation surface unless an alternative concentration was approved by EPA. The decision to remove soils below 6 inches was to be based on a mean arsenic concentration calculated from the analytical results of delineation sampling compared to the AL of 23 mg/kg. A 95% upper confidence limit (UCL) could be calculated based upon the mean of arsenic concentrations at a depth of 0.5 foot bgs. If the calculated UCL was below the AL, then no further action was to be performed at the property. However, if the calculated UCL was above the AL, arsenic concentrations in samples at each discrete sample location were compared to the AL to determine if further removal was required at each successive depth sampled. Areas requiring additional removal to depths below 0.5 feet were designated as "Hot Spots". Additional considerations to the application of the Decision Rule included a data gap analysis, the physical conditions of each property, and the type of material sampled or proposed for removal. Although the decision rule was applicable to the removal of soil at Property #7, the area for excavation was restricted to target the highest concentration of arsenic at the direction of the OSC.

7.2 Data Gap Analysis

A data gap analysis was performed to determine if critical gaps existed that would limit the ability to use data for Decision Input, affect calculations for the Decision Rule, or prevent determination of removal action boundaries. There are two types of data gaps that can be discerned: critical and non-critical. A critical data gap prevents complete delineation of the extent of arsenic, or that limits ability to determine the extent of remedial boundaries. No critical data gaps are inferred to exist for delineation of arsenic at Properties #2, #3, and #4. Further, existing characterization data was considered sufficient to complete the limited removal action at Property #7. Delineation samples were collected at the appropriate locations within the constraints of the physical conditions at each property and at the specified depths. Three potential sample locations at Property #3 were excluded because their placement was not considered appropriate for removal actions. All delineation samples were analyzed according to the appropriate methods and data validation indicates the data is acceptable for use. Field QC analyses do not indicate non-conformance with procedures for sample collection or anomalies in subsequent analyses. The locations of each sample were recorded and reacquired during the removal actions, and are reproducible for any further activities.

Non-critical data gaps are those that will not result in significant limitations to delineate the extent of arsenic, make determinations of removal action boundaries, or verify that removal actions are complete. These types of gaps are uncommon and must be considered in relation to project objectives to determine whether they are critical in nature. Due to the critical nature of data acquisition for the Decision Rule and documentation of compliance with the Settlement Agreement, there are no data gaps that should be considered as non-critical for the project.

7.3 Physical Conditions

An evaluation of the surficial and subsurface conditions at the properties is necessary as qualifying information to the analytical data to determine the applicability of the Decision Rule. The EPA asserted that the origin for the arsenic in soil at the properties subject to removal action was from the Iron King mine tailings.

The Iron King Mine began operations in 1904 for the recovery of gold and silver from the subsurface ore bodies with the addition of lead and zinc recovery in the 1930s (Hoque and Associates, 2001). Active mining was discontinued in 1969, but mine tailings from milling and processing operations have been processed by Ironite since 1974 and sold as commercial plant supplements. The evaluation of physical conditions must determine if the material matches the criteria cited by EPA and ADEQ above, and is inferred to have originated during the period when the Iron King Mine has existed. The classification of material encountered during sampling according to ASTM guidelines is useful for geotechnical purposes (Table 4), but lack sufficient detail necessary to determine the origin and age of the material.

The Iron King Mine is located on the eastern flank of Spud Mountain in an area underlain primarily by Precambrian metamorphic rocks that have been extensively mineralized by hydrothermal alteration (Hoque and Associates, 2001). The metamorphic rocks are covered in areas north of the Iron King Mine by basin fill deposits that are Pliocene to Miocene in age (2-16 Ma)(Arizona Bureau of Mines, 1958; Reynolds and others, 2000). These deposits are also widespread to the north towards Prescott and exposed in many hills or ridges. The basin fill deposits contain a high proportion of sand and coarser clasts that are igneous or metamorphic in character, similar to the Precambrian bedrock exposed around the Iron King Mine and to the west in foothills (Brown and Caldwell, 2004). The hills and ridge north of Property #2 and #3 are composed of basin fill deposits and the material is visible in exposures along Highway 69 to the east and on the north side of Main Street in Humboldt. Colluvium from the basin fill deposits covers the hillslopes and overlaps finer-grained alluvium along the northern portions of Properties #2 and #3 (Figure 3 and 4). The colluvium is similar to coarse-grained alluvial deposits but the rock fragments are typically more angular and the material contains a higher proportion of fine sediment. Additional fill material used for architectural support of developed parcels or the county roadway has been mixed with colluvium at Property #3.

Properties #2, #3, #4, and #7 are located within the boundaries of the Chaparral Wash floodplain, with the hillslopes on the northern edges of Properties #2 and #3 defining the floodplain at those locations. Chaparral Wash drains an area north and east of the Iron King Mine where stream deposits in the floodplain are proximal to the sources. Alluvial deposits in Chaparral Wash west of Highway 69 are typically coarse grained, consisting of sand, gravel, and boulders that were deposited in multiple sequences as the wash changed course through time. A private borrow pit along the Chaparral Wash contains exposures of at least two coarse-grained alluvial sequences capped with finer-grained material that can be correlated northeast to the land surface at Property #2. The coarse alluvial deposits can also be traced along the cutbank of the north side of the wash downstream to the boundary of Property #4.

7.4 Removal Action Boundaries

The removal action boundaries for each property were determined using the data generated during delineation sampling and application of the Decision Rule. Additional delineation was not performed at Property #7 due to access restrictions prior to 2007. The removal action boundaries proposed for Property #7 in the Work Plan was restricted to a single location at the direction of the OSC, based upon existing data collected by E&E.

7.4.1 Aerial Extent

The original maximum aerial extent of the removal action at Properties #2, #3, and #4 were proposed in the Work Plan and are depicted in Figures 3, 4, and 5. The excavation boundary of Property #2 was determined based on E&E's August 2005 sampling locations, while the boundaries of Properties #3 and #4 were the parcel boundaries as registered with the Yavapai County Assessor. These boundaries were refined based upon evaluation of delineation soil data, field verification of the property limits, and additional physical conditions as described above.

The following areas were excluded from the scope of the removal action as negotiated with EPA prior to the initiation of field activities:

- Excavations were limited to areas outside of any septic tank and leachfield determined to be present at any of the properties. A 5-foot perimeter around any identified leachfield was established prior to commencement of the removal action. A 5-foot perimeter was used to compensate for the error associated with utility detection equipment.
- Excavations were generally limited to areas outside of any subsurface utility corridor determined to be present on any of the properties. A 5-foot perimeter on both sides of any identified underground utility corridor was established prior to commencement of the removal action.
- Excavation was limited to areas where no significant structures were present. A 5-foot perimeter around any identified structure was established prior to commencement of the removal action. A 5-foot perimeter is selected in order to avoid any structural damage due to soil removal or contact with the excavation equipment.
- Excavation was generally limited to areas where large trees or shrubs, or dense vegetation were not present. A 5-foot perimeter around trees/shrub/vegetation was established prior to commencement of the removal action. A 5-foot perimeter was established to avoid any root damage associated with the removal action activities.
- Excavation was restricted to areas that did not possess a significant slope that could result in disruption of drainage or structural considerations (e.g. road support).
- Excavation was limited to areas currently not paved with concrete or asphalt.

The conditions for determining the limits of soil removal allowed for modifications based upon the field conditions and subject to EPA approval. The revised excavation boundaries were depicted in site maps for Properties #2, #3, and #4 and provided to EPA for review in weekly correspondence dated July 13 and 24, 2006. The EPA granted general concurrence with the revised excavation boundaries, but additional modifications during the removal action were not excluded if field conditions supported further changes. The application of the Decision Rule was restricted to the single area around sample point "G" at Property #7. This modification to the proposed removal action boundary was reviewed with the OSC prior to the removal action in 2007.

Specific exceptions to the conditions cited above were made for removal of soil to limited depths over some utilities, excluding natural gas lines. Additional limited soil removal was performed in close proximity to houses at Properties #2 and #3. Details of the modifications to the aerial extent boundaries are summarized individually by property in the following Sections. The final boundaries of excavated areas at Properties #2, #3, #4, and #7 and depicted in Figures 6 through 9.

7.4.2 Vertical Extent

The minimum vertical extent of soil removal was 0.5 feet bgs as stated in the Decision Rule. The removal of soil below a depth of 0.5 feet at specific "Hot Spots" was determined using the methodology cited in the

Decision Rule and physical conditions at each specific location. The calculation of 95 percent UCLs for each property yielded values that were significantly above the AL of 23 mg/kg. The detected arsenic concentrations in the delineation samples were within the range of expected values except for samples BC-P2-J-3 (210 mg/kg) and BC-P3-L-1 (300 mg/kg), which contributed to the elevation of calculated UCLs at those properties (Table 2). The determination of vertical extent defaulted to a comparison of arsenic concentrations at specific depths below 0.5 feet to the AL. Concentrations of arsenic exceeding the AL were proposed as "Hot Spots" with vertical limits at the appropriate depths from 1 to 3 feet bgs.

Limitations to the proposed vertical extent of soil removal were based on the physical conditions of the material as described in Section 7.3, or the proximity of features cited for aerial extent. Material that was considered naturally occurring, coarse-grained alluvial deposits, or colluvium on hillslopes (Table 4) was not proposed for removal. The vertical limits for "Hot Spot" excavation were subject to modification if the coarse-grained alluvial deposits were encountered prior to the proposed depths of removal. An additional consideration for vertical limits of "Hot Spots" was the presence of arsenic exceeding the AL, but deeper samples that contained arsenic that was less than the AL. This discrimination rationale limited the proposed vertical extent to a depth of 0.5 feet bgs applied to the following selected locations:

- BC-P2-D;
- BC-P2-N;
- BC-P4-D;
- BC-P4-E; and
- BC-P4-K.

The proposed locations of "Hot Spots" and the vertical extent of excavation for each property were communicated to EPA in weekly correspondence dated July 13 and 24, 2006. The locations of the "Hot Spots" on the maps provided to the OSC were modified as depicted in Figures 6, 7, and 8 to account for the GPS resurveying that occurred during the removal action. The excavated area at Property #7 was considered a "Hot Spot" with a nominal depth to 1 foot bgs as directed by the OSC.

Exceptions to the limits of aerial and vertical extent were made in selected locations over subgrade utilities or near trees and landscaping. These exceptions were dependant upon the depth of burial determined during the removal activities. Removal of surficial material was performed to depths of 1 inch in areas where landscaping was present or within 5 feet of the houses at Properties #2 and #4. Soil removal was limited in depth to 3 inches in areas where subgrade electrical, water, or leach lines were at approximate depths of 1.5 feet bgs at Properties #3 and #4. No other significant factors limited the vertical extent of removal as proposed. The approximate depths of the excavations for each property as completed are identified in Figures 6 through 9.

7.5 Removal and Disposal Options

Options for the removal and disposal of soil had been discussed and partially determined during preparation of the Work Plan. The proposed methodology for soil removal was reviewed by Brown and Caldwell and PSC during the planning phases for this project. Itemized estimates including the types of equipment, personnel, and schedules were prepared by PSC and reviewed by Brown and Caldwell to determine the most effective method of soil removal. The methods selected for excavation, and described in the following Sections, were approved by the OSC prior to the mobilization. Recommendations regarding the types of equipment in use or their performance in specific tasks were incorporated as field activities progressed.

The selected disposal option for the excavated soil was transport to an approved location at the Ironite property and placement as directed by mine personnel in accordance with Section VIII 14(c) of the Settlement Agreement.

8. ARSENIC REMOVAL ACTION

The arsenic removal action was performed by PSC under the supervision of the Brown and Caldwell Field Manager and an assistant. The OSC was present during the majority of the removal actions. United States Coast Guard personnel were utilized by EPA for dust monitoring and to provide oversight of the removal activities. The EPA also retained E&E to assist in oversight and collection of verification samples.

8.1 Environmental Permits and Prevention Plans

Brown and Caldwell notified the Town of Dewey-Humboldt Building Department of the planned removal action prior to initiation of field activities to acquire the necessary permits. Discussions with the Town of Dewey-Humboldt Building Department indicated that a Dust Control Permit was not required. However, minimization of dust was considered a critical element for the removal action due to the potential for worker exposure to arsenic. The dust control measures used during the excavation and backfill activities are described in Section 8.4.

A Storm Water Permit to control or limit the potential runoff of surface water at the excavated areas was also not necessary. This determination was based on the size of the construction activity at each property which was less than 1 acre. Storm water control measures were implemented at the excavation areas primarily as a means to minimize potential transport of arsenic in soil beyond the excavation boundaries into areas that were not proposed for excavation. The minimization of surface water runoff was also considered prudent to protect the residential property from flooding during excavation when the normal land surface was disturbed.

Surface water control measures including straw waddles were implemented at Properties #2 and #4 at the beginning of the excavation activities. The surface water control was not utilized at Properties #3 and #7 due to the short period of time when northern portion of the site was excavated prior to backfilling (Table 1). The surface water controls consisted of a silt fence and hay bales placed along the upslope (northern) portions of the excavations where water could enter the working areas (refer to photos in Appendix F). The silt fence and hay bales were removed at the conclusion of backfill activities and taken to the Ironite property for use in storm water control during the placement of excavated material.

8.2 Site Clearance

Brown and Caldwell met with each property owner/tenant as part of the relocation process to discuss the proposed areas of excavation and the clearance of significant obstructions to removal action. Property owners/tenants communicated requests for protection of property or possible excavation limit modifications to Brown and Caldwell and EPA prior to the removal actions. Photographs of each property were taken prior to excavation in order to document the types of items and their location (Appendix F). The photographs were also used to determine if any damages had occurred to items or structures as a result of the removal activities. The locations and conditions of items moved by PSC and Brown and Caldwell were discussed with the owners/tenants during the site inspections conducted after the removal and restoration activities were completed. No significant damage or issues relating to the placement of the items were communicated to Brown and Caldwell at the conclusion of the site inspections.

Site clearance at Property #2 consisted primarily of relocation of items to areas not proposed for excavation and near the houses. The items were replaced in their original locations at the completion of restoration activities.

Property #3 contained multiple items that were either relocated by the owner or PSC. In addition, items that did not retain value as determined by the owner were placed in a 20-cubic yard roll-off bin staged on the western side of the county road. Concurrence to place the items in the roll-off for disposal was obtained from the property owner. The remainder of items at Property #3 were relocated away from excavation areas. A stockpile of wood at the northwest portion of the property was moved during excavation and subsequently replaced in the original position at the conclusion of restoration activities. The wood was sprayed with a dilute solution of 10% chlorine bleach and water for suppression of dust and to eliminate exposure to potential airborne biological hazards such as Hanta Virus (Appendix F).

The majority of items at Property #4 that obstructed removal actions were relocated by the property owner (Appendix F). In addition, electrical and water lines at the eastern side of the house were removed and relocated by the owner. Building materials that could be relocated on the northern portions of the excavation were placed near the property boundary and replaced in the original locations during restoration activities.

The limited area for excavation at Property #7 did not require significant site clearance prior to initiation the removal actions.

8.3 Property Owner/Tenant Relocation

Brown and Caldwell, as a representative of Ironite, communicated the proposed arsenic removal actions with the owners or tenants of each property prior to mobilization and initiation of field activities. The relocation of property owners or residents was in general accordance with the EPA document titled *"Superfund Response Action: Temporary Relocations Implementation Guidance"* dated April 2002. Brown and Caldwell communicated the schedule and physical aspects of the proposed removal actions with the property owners/tenants in accordance with Section 8.3 of the Work Plan. The potential concerns of property owners/tenants and specific requests were also documented to incorporate necessary actions into the field activities.

An EPA-approved temporary relocation agreement was provided to each property owner/tenant and subsequently to Ironite for signature at least seven days prior to the initiation of field activities. Copies of each signed relocation agreement were furnished to the EPA to verify compliance with EPA policy, and dates for proposed removal action. Brown and Caldwell notified the property owners/tenants of potential changes to the schedule for completion as the removal actions progressed. The extension of removal actions at Property #2 required the tenants to remain off site for an additional period from July 31 through August 4, 2006. No modifications to the relocation arrangements were required for Properties #3 or #4. The owner of Property #7 was not present during the removal action on May 15, 2007, and no formal relocation arrangement was necessary.

The relocation agreements included compensation for each property owner/tenant affected by the removal actions. Ironite provided funding for the relocation including lodging, per diem, and mileage allowance during the completion of removal actions.

8.4 Dust Control

The minimization of dust during the removal activities was identified as a critical task due to the potential for exposure of personnel to arsenic which was designated as the chemical hazards for the project in Section 3.2 of the SSHP. Dust control was not specifically required from the town of Dewey/Humboldt, but minimization of visible dust was required to eliminate a potential nuisance as described in Section 3.2 of the SSHP.

Dust control procedures during removal and backfill activities consisted primarily of water application to prevent the propagation of airborne dust. Water was applied directly to the excavation or areas proposed for removal to pre-treat the soil and make it less susceptible to generation of dust. Water was also directed at locations undergoing excavation, stockpiled material, and earthmoving equipment during active removal of soil (Appendix F). The water was applied using spray nozzles from water storage tanks or using a fire hose to direct the water in a specific location. Excavation and movement of soil, except for transport trucks, was discontinued during periods when water storage tanks were refilled at the Ironite property. Water was also applied to access roads to each property to minimize fugitive dust entering the excavation areas and general nuisance reduction.

8.4.1 Encapsulation of Homes

Each of the houses at Properties #2, #3, and #4 were encapsulated with plastic sheeting by PSC personnel prior to the initiation of removal actions. This method of protection prevented dust or debris from contacting the sides of the houses or entering the interior of the homes through cracks or joints. The plastic sheeting was attached to roof edges with staples and the seams sealed with duct tape around the entire structures (Appendix F). The lower edges of the sheeting were staked or weighted to the ground to minimize disturbance and maintain a seal with the land surface. The plastic sheeting remained in place through the removal actions and was removed from each house upon conclusion of restoration activities. No significant breaches were noted in the plastic during the removal actions that may have allowed dust or debris to contact the homes. The materials used for the encapsulation were subsequently disposed as solid waste (Section 9). The limited aerial extent and duration of the removal action at Property #7 was not considered sufficient to require encapsulation of the residence, and was confirmed with OSC prior to the initiation of excavation.

8.4.2 Dust Monitoring

Monitoring of dust was required to comply with appropriate chemical exposure limits determined in Section 3.2 of the SSHP. However, the United States Coast Guard personnel conducted the monitoring of dust within the excavation areas and perimeter of each property during the removal actions in 2006. The monitoring data was obtained using portable meters that collected continuous readings of airborne dust. The data was downloaded from the meters during multiple periods each day that removal actions occurred. The results of the dust monitoring were communicated verbally to Brown and Caldwell and PSC during each day, with recommendations based upon the results of the monitoring. No significant events that required cessation of field activities or upgrading of PPE occurred during the removal action. Records of all dust monitoring data were retained by the United States Coast Guard personnel and provided to EPA at the conclusion of the removal action.

Dust monitoring was not performed by the United States Coast Guard or EPA during the removal action at Property #7. The limited duration of the activities and volume of material removed was not considered sufficient to deploy the monitoring network or equipment used for the previous actions in 2006. This modification to the conditions of the SSHP was confirmed with EPA prior to initiation of field activities on May 15, 2007.

8.5 Excavation Methods

The removal of soil at Properties #2, #3, and #4 was primarily accomplished using a trackhoe equipped with a straight edge on the bucket to produce a smooth floor in excavated areas. The trackhoe was stationed in various locations to progressively remove the soil and either deposit the material directly in haul trucks or stockpile the material for subsequent loading (Appendix F). Access to excavations was limited to personnel with appropriate PPE to reduce the potential for cross contamination from portions of the property that had

not been excavated. The support vehicles for personnel were staged at locations outside the defined exclusion zone at each property. The only support equipment allowed in the exclusion zone was the trackhoe, haul trucks, backfilling equipment, and a water wagon used for dust suppression.

The areas to be excavated were identified with a combination of stakes, feathers, or paint on the ground to indicate the limits of soil removal. The borders of "Hot Spots" were marked with paint after the initial 6 inches of soil had been removed. Assistance for excavating areas near utilities or structures was also provided by visual observation of the ground by Brown and Caldwell personnel. The final borders of the excavated areas, including the "Hot Spots", were delineated with stakes or paint to facilitate the mapping of the boundaries with the GPS unit (Section 8.13). The depths of the excavation were periodically measured to verify the soil removal to appropriate vertical limits. The removal of soil was performed manually in limited areas near structures at Properties #2 and #4 as described below. The material removed in this manner was stockpiled or placed near areas where the trackhoe could access and remove the soil.

The excavation at Property #7 was performed using a backhoe that removed soil and placed it directly into a haul truck for transport (Appendix F). An exclusion zone was established for the excavation area to limit access for personnel with the appropriate PPE. The boundaries of the excavated area were established prior to soil removal with stakes and the vertical limit of excavation was measured prior to backfilling.

8.6 Property #2 Removal Action

Soil removal actions were conducted at Property #2 from July 24 through August 2, 2006 (Table 1). The soil removal was initiated at the northeastern portion of the property and progressed west and south around the houses to the main access road (Appendix F). The western portion of the property was subsequently excavated with the access road remaining intact until the final stages of removal. An estimated total of 1,030 cubic yards of soil was removed from Property #2.

The excavation boundaries as completed are depicted on Figure 6, which also depicts the depths of removal in selected areas or "Hot Spots". Large trees or shrubs, typically exceeding 6 to 8 feet in height, were not removed by excavation. Dense clusters of shorter trees or shrubs were also left in place in the central area and north of the southern house at Property #2. Smaller vegetation, such as flower beds or grass, also limited excavation dependant upon the tenant's preference for the eastern yard of the southern house. The northern limit of removal in the western area of Property #2 was determined by the significant break in slope and drainage north of sample point BC-P2-D (Figure 6). An isolated portion of the western area was also not excavated beneath a stockpile of cobbles.

Subgrade utilities limited excavation along two corridors extending from the northern house to the southwest and northwest (Figure 6). A domestic water line located outside of the designated excavation was broken when soil was removed for use along the northern part of the excavation to support the storm water controls described in Section 8.1. The line was subsequently repaired and the area backfilled in conjunction with the excavation. Multiple abandoned steel pipes were excavated in areas between the two houses and in the roadway to the west of both houses. The pipes were not connected to either house or an existing utility, but appeared to have been used for water distribution.

The "Hot Spots" were excavated to depths ranging from one to two feet and dependant upon the vertical limitations of removal. The depths of removal at the points BC-P2-J and BC-P2-Q were less than proposed because alluvial cobbles were encountered at approximately 1.5 feet bgs, and limited further excavation.

Limited removal actions were performed in close proximity to the southern house at the request of the EPA to mitigate exposure of the tenant to arsenic in the surficial soil. The depths of removal varied from one to three inches in areas north and west of the house (Figure 6). The aerial extent restrictions for removal were reduced to excavate soil around trees, decorative items, and the walkway to the house (Appendix F). The soil was removed with the trackhoe and manually in areas where the trackhoe bucket could not reach.

8.7 Property #3 Removal Action

Soil removal actions were performed at Property 3# on August 1 and 2, 2006 (Table 1). The soil removal was initiated at the eastern portion of the property and progressed westward north of the house to the easement with the county road (Appendix F). The northern portion of the property was subsequently excavated and the final stages of removal progressed along the western side of the house and southern portion of the property. An estimated total of 140 cubic yards of soil was removed from Property #3.

The excavation boundaries as completed are depicted on Figure 7, which also depicts the depths of removal in selected areas or "Hot Spots". Limitations to the removal areas included trees, landscaping, and structures in the northern portion of the property and a landscaped area south of the house. The western and northern edges of the proposed removal areas were reduced due to the verification of the county road easement closer to the house. Subgrade utilities and a leach line limited excavation to depths of 1 to 3 inches along a corridor extending from the northern and northeastern sides of the house (Figure 7). A plastic liner at a depth of approximately 4 inches bgs was removed during excavation of the area extending approximately 20 feet from the northeast portion of the house. The base of the excavation extended several inches below the liner to the minimum target removal depth of 0.5 feet bgs.

The "Hot Spots" were excavated to depths ranging from 1 to 3 feet and dependant upon the vertical limitations of removal. The depth of removal at point BC-P3-A was approximately 1.5 feet bgs and was less than the proposed depth of 2 feet bgs because alluvial cobbles limited further excavation. A domestic water line was encountered and broken during the excavation of the area at BC-P3-L at a depth of approximately 3 feet bgs (Appendix F). The water line was subsequently repaired prior to backfilling, but additional soil was removed from around the water line to a depth of approximately 4 feet bgs to permit the repairs (Figure 7).

8.8 Property #4 Removal Action

Soil removal actions were conducted at Property #4 from August 7 through 10, 2006 (Table 1). The soil removal was initiated at the northeastern portion of the property in landscaped areas located east and south of the house (Appendix F). Removal actions continued on the northern portion of the property extending west and subsequently around the western and southern portions of the property. An estimated total of 434 cubic yards of soil was removed from Property #4.

The excavation boundaries as completed are depicted on Figure 8, which also depicts the depths of removal in selected areas or "Hot Spots". Limitations to removal consisted of trees, walls, and landscaped areas in areas south and east of the house. Additional limitations were present along utility corridors for natural gas, electric, and water lines, and a septic leach line located in the northern and western portions of the property (Figure 8). The northern limit of removal in the western area of Property #4 was determined by the presence of stockpiled building materials and a berm that acted as a surface water diversion. Portions of the utility corridors north and west of the house were manually excavated to depths of 1 to 3 inches, but no excavation occurred over subgrade utilities south of point BC-P4-H. Manual removal of soil also occurred around trees and landscaping east of the house to depths of 1 to 3 inches.

The "Hot Spots" were excavated to depths ranging from 1 to 2 feet without vertical limitations due physical limitations. A domestic water line was encountered and broken during the excavation of the area at BC-P4-H at a depth of approximately 1.5 feet bgs. The water line was subsequently repaired prior to backfilling, but additional soil was removed laterally from around the water line at a depth of approximately 2 feet bgs to permit the repairs.

8.9 Property #7 Removal Action

Soil removal actions were conducted at Property #7 on May 15, 2007 (Table 1). The soil removal was performed in a single area measuring approximately 15 feet in a square configuration south of the house and concrete pad (Figure 9 and Appendix F). An estimated total of 8 cubic yards of soil was removed from Property #7.

The excavation boundaries and depth of removal as completed are depicted on Figure 9. These boundaries were stipulated by EPA due to the isolated nature of the arsenic in soil at that location (Sections 7.4.1 and 7.4.2). No physical limitations or utilities were present during the excavation of the soil.

8.10 Disposal

Excavated soils were transported by PSC to the Ironite property and deposited on mine tailings at a location designated by Ironite representatives. The material was subsequently distributed as tailings cover by Ironite personnel using mine equipment. Each of the loads of material transported to the Ironite property was weighed to record the total amount of soil excavated. Summary of the soils transported out of and into the properties are provided in Table 6. An estimated total of approximately 1,612 cubic yards of soil were removed from the four properties and placed on the tailings at the Ironite property.

8.11 Backfilling and Compaction

The backfilling and compaction of excavated areas at Properties #2, #3, and #4 occurred from July 31 to August 11, 2006, in partial conjunction with removal activities at each property (Table 1). Excavated areas were backfilled with imported soil from a borrow pit approximately two miles north of the properties. The backfill material had been previously sampled and the material deemed acceptable for use based upon the physical and chemical conditions of the soil. Backfill material was transported to the properties by personnel and trucks under subcontract to PSC and placed in stockpiles at the edges of the excavations as the backfilling progressed (Appendix F). Backfilling and compaction of Property #7 occurred on May 15, 2007, the date of excavation, utilizing material obtained from the same source as the other properties.

8.11.1 Excavation Backfill and Compaction

Backfilling at Properties #2, #3, and #4 was performed using a bulldozer to distribute and compact the majority of the soil across the excavated areas. Portions of the excavations where trucks brought backfill for stockpiling at Properties #2 and #4 were covered with plastic to minimize the contact of truck wheels with the exposed soil (Appendix F). The potholes created during "Hot Spot" excavations were filled and compacted to the approximate level of the main excavation prior to placement of the final lift of backfill. Water was applied to the backfill during the distribution and compaction process to assist in compaction and to reduce dust. Locations where water lines had been repaired were filled with soil and water to settle the material, providing support to the lines prior to the final backfill lift at the surface. The bulldozer was used for the majority of grading the final backfilled surfaces to the approximate level of the pre-excavation surfaces. The backfilling and compaction process was assisted with the use of a Bobcat loader in areas with reduced access, such as near houses or around trees and landscaping.

Backfilling of the excavation at Property #7 was performed by placing material directly into the excavated area from a dump truck. The material was distributed and compacted with a backhoe, with water application to aid compaction and reduce dust. The backfill material was compacted and graded to a level equivalent to the surrounding ground surface and no further restoration was conducted (Appendix F).

8.11.2 Surficial Backfill and Restoration

Portions of each property required additional backfill and restoration activities prior to completion of the removal action. Additional backfill consisting of topsoil similar to pre-existing soil was used in the excavated areas near the southern house at Property #2. Coarse gravel was also replaced at the surface on the northern side of the house, where gravel had been removed during the excavation activities. The location of the subgrade leach field in the center of Property #2 was raised topographically above the surrounding areas prior to the removal action. An extension of this raised area was constructed by PSC at the request of the property owner to assist drainage away from the road. However, surface water became trapped behind the berm and flowed toward the southern house during a subsequent thunderstorm. Brown and Caldwell directed PSC to shorten the berm and raise the grade near the leach field to prevent further events and allow surface water to drain to the south and west (Appendix F).

Upon completion of backfilling and compaction at Property #3, the areas north of the house were restored with pea gravel on the surface and landscape boundaries were replaced. Plastic lining was placed underneath the soil and pea gravel in areas northeast of the house to replace the plastic removed during excavation. The pea gravel cover was extended around the western side and southern sides of the house extending to the county road (Appendix F). The stockpile of wood was replaced in its original location and the slope along the county road was restored.

Surficial backfilling was necessary in areas east and north of the house at Property #4. Topsoil was used for backfilling and compaction, overlain by imported gravel to restore the surface to the pre-excavation conditions (Appendix F). The surface drainage along the eastern portion of the excavated area was also re-graded to promote flow away from the landscaped areas and the house. Coarse gravel had been present on the surface in areas southeast of the house prior to the excavation. This material was removed, stockpiled, and then replaced as surface cover at the conclusion of restoration activities.

8.12 Confirmation and Verification Sample Collection

Collection of confirmation or verification samples after removal of soil was not proposed by Brown and Caldwell as stated in Section 4.5 of the Work Plan. However, EPA and E&E collected verification samples on a grid layout at each property, except Property #7, after the excavation activities were completed. Backfill activities were not initiated until the verification samples had been collected from a specific excavated area. The details concerning the sample locations, methods of collection, and analytical results of the samples were not provided to Ironite and are not included in this document.

8.13 Revegetation

The excavation areas at each of the three properties were inspected prior to the initiation of soil removal. The considerations of removing substantial vegetation were discussed and the boundaries of soil removal were confirmed with the EPA representative prior to initiating excavation at each property. The limitations generally placed on excavation boundaries were dependant upon size or type of vegetation as discussed in Sections 8.6 through 8.8. The extent of final excavation boundaries and subsequent site restoration activities did not necessitate revegetation of portions of Properties #2, #3, #4, or #7. Brown and Caldwell consulted with each property owner at the conclusion of the restoration activities and confirmed that no revegetation was necessary.

8.14 GPS Readings

The locations of each delineation sample point, significant features or structure, and utilities were reacquired and surveyed prior to the removal activities with a GPS unit. The type of GPS unit used was a backpack unit and real-time kinematic (RTK) antenna, which typically can locate points with sub-meter precision. The boundaries of the excavated areas were surveyed upon completion of the soil removal to the required depths.

The survey was performed using a combination of fixed reference points and a mapping function in the GPS unit that allowed data acquisition as the boundaries of the excavated areas were traversed. The record of points along the excavation boundaries were then translated into a map of the path and downloaded.

As discussed in Section 4.8, a review of sample locations and other reference points surveyed during the removal action indicated that inaccuracies were present in the initial GPS data collected during delineation sampling. The precision of the GPS locations contained a significant amount of error of up to 10 meters, resulting in their placement that was inconsistent with one another, or to surface features. The use of a different GPS unit for mapping during the removal activities yielded greater precision and the locations of all delineation sample locations were reacquired at that time. The physical locations of the removal action boundaries were not affected by the revisions to the GPS data. A summary of the GPS coordinates for delineation samples and other significant features at each property is presented in Table 5. The locations of delineation samples and removal action boundaries in Figures 3 through 9 are based upon the coordinates in Table 5.

8.15 Heavy Equipment Decontamination

The decontamination of heavy equipment occurred as an ongoing process for haul trucks transporting excavated soil, and in discrete events between removal actions at each property. The haul trucks were visually inspected for gross contamination or other items that adhered to or hung off the trucks. Hanging or loose material was placed securely in the bed of the truck to ensure it did not become loose and fall during transport on the roads to the Ironite property. Loose dirt or dust was brushed off the exterior of the trucks to minimize the spread of excavated material outside of the excavation zones.

Decontamination of the trackhoe and backhoe was performed by scraping and brushing loose material from the bucket, followed by steam cleaning with a pressure washer. This process was performed after the excavation activities were completed prior to use at each successive property. The decontamination was performed outside of the removal action boundary, but within the excavation limits of each property. The trackhoe also removed material adhering to tracks by raising each side individually above the ground and rotating the tracks rapidly to dislodge the soil. The wheels of the backhoe were rinsed with a pressure washer after completion of backfilling at Property #7. The decontamination fluids were allowed to disperse on the ground surface at each location in accordance with the practices described for delineation sampling equipment decontamination.

8.16 Significant Deviations from Proposed Activities

All deviations from proposed removal and backfilling activities were approved and/or modified by the OSC and were presented in the preceding Sections. The deviations are restated below with justifications for each of the deviations:

1. *Aerial extent of excavation was decreased in western and northwestern portions of Property #2.* The removal boundaries were modified for the following reasons:
   A. Areas proposed for removal included significant slopes or drainages. The northwestern boundary overlapped an elevated area that was part of the drainage and also used for a domestic water line. In addition, the material was of potentially mixed origin from the hill north of the removal action boundary. The excavation did not extend north from the break in topographic slope at the location of Sample BC-P2-D.
   B. A stockpile of cobbles was present at the western edge of the removal area. The relocation of the material was not requested by EPA to allow excavation beneath the stockpile.

2. *Aerial extent of excavation was decreased in western and northern portions of Property #3.* The removal boundaries were modified for the following reasons:
   A. The areas proposed for removal included significant slopes or material that was used to support a county road and drainage culvert. The western property boundary was restricted by the easement with the county road.
   B. Subgrade utilities and structures attached to the house prevented excavation to the proposed boundaries on the northern side of the house.
3. *Aerial extent of excavation was decreased in western and northwestern portions of Property #4.* The removal boundaries were modified for the following reasons:
   A. Multiple subgrade utilities were present within 1.5 feet of surface. Limited excavation was performed to depths of 1 to 3 inches bgs.
   B. Multiple trees along western edge of property and drainage berm at northwestern portion of excavation limited access to remove soil.
4. *Aerial extent of excavation was decreased at Property #7.* The removal boundaries were modified for the following reasons:
   A. Access to the property was not obtained until after the delineation sampling was completed in 2006. The existing data indicated that the area of maximum exposure risk was restricted to an area south of the house. The EPA concurred in limiting the excavation to minimize disruption to the property and owner, to remove the soil and eliminate the exposure risk.
5. *Excavation of specific "Hot Spots" were terminated at depths shallower than proposed.* The removal boundaries were modified for the following reasons:
   A. Alluvial cobbles were encountered at a depth of approximately 1.5 feet bgs at locations P2-J and P2-Q at Property #2.
   B. Alluvial cobbles were encountered at a depth of approximately 1.5 feet bgs at location P3-A at Property #3.

The deviations from the proposed activities were communicated to the OSC for approval prior to implementation.

9. WASTE MANAGEMENT

9.1 PPE Waste

Personal protective equipment that was used during the delineation sampling and removal action consisted of nitrile gloves and disposable footcovers. No other PPE equipment was utilized that required disposal as a waste product. The PPE was managed and disposed with other non-regulated solid waste as summarized below.

9.2 Solid Waste

The primary type of solid waste generated was excavated soil from the removal action. A pre-determination to classify the soil as non-hazardous according to RCRA was made in Section 10.2 of the Work Plan. Accordingly, the non-hazardous excavated soil was transported to the Ironite property as described previously in Section 8.9.

Other types of solid waste consisted of a mixture of wood, plastic, metal, and paper or cardboard materials that were classified as non-hazardous and non-regulated debris in accordance with Section 4.0 of the SAP. The solid waste included materials stockpiled in the roll-off bin at Property #3 and authorized by the owner for disposal as construction debris.

Solid waste generated during delineation sampling was disposed in appropriate off-site receptacles by Brown and Caldwell or PSC. Solid waste generated during the removal action was contained and removed from the individual properties by PSC.

9.3 Liquid Waste

Liquid waste was generated during decontamination activities for the delineation sampling and removal actions. The decontamination liquids were allowed to disperse on the ground in accordance with the procedures stipulated in Section 10.3 of the Work Plan. No other liquid wastes were generated during the completion of delineation sampling or the removal actions.

10. REMOVAL ACTION SUMMARY

10.1 Site Inspection

The inspection of each property was conducted immediately following backfilling and restoration activities by the Brown and Caldwell On-Site representative and the Project Manager. The inspections were intended to identify areas that potentially required additional action to restore the properties to pre-removal conditions. The modification of surface drainage at Property #2 was performed after the inspection indicated retention and flooding in the central portion of the property (Section 8.11.2). No significant surface drainage problems were observed at Properties #3, #4, and #7 at the conclusion of restoration activities.

10.2 Decision Errors

The two types of decision errors identified in the Work Plan were:

1. Deciding that the concentrations of arsenic in a sample are less than the AL when, in fact, it is greater than or equal to the AL.
2. Deciding that the concentrations of arsenic in a sample are greater than or equal to the AL when, in fact, they are less than the AL.

The evaluation of sampling and laboratory analytical data did not identify significant non-conformances that resulted in either of the two types of decision error. No significant critical data gaps have been identified that resulted in decision errors.

Removal actions were completed to the designated aerial extent and depths based upon the application of the Decision Rule to the delineation sample data and physical conditions at each property. Limitations in removal depths at multiple "Hot Spots" could be considered a Type 1 decision error; however, the reductions in vertical extent were based on criteria that had been confirmed by EPA. The completed removal actions therefore did not result in a Type 1 decision error. The removal of additional soil for repairs of utilities is not considered a Type 2 decision error because the material was not removed based upon sample data.

The application of the Decision Rule was modified for the removal of soil at Property #7. Access to the property was not obtained until 2007, and the limitation of excavation to a single area was considered acceptable to minimize disruption to the owner. This limited application of the Decision Rule removed the exposure risk to the maximum concentration of arsenic, and eliminated a Type 1 error for that location. The remaining concentrations of arsenic at Property #7 may be subject to additional delineation or removal action by EPA, dependant upon access. Therefore, evaluation of decision errors for Property #7 is considered premature and may be completed pending further actions.

10.3 Post-Removal Site Control

An evaluation of potential actions for post-removal site control is required by the Settlement Agreement. The backfilling, compaction, and restoration of the excavation areas at each property have resulted in surface conditions that are equivalent to, or improved from, the original property characteristics. Surface topography was restored to pre-excavation conditions. Access to the surface at each property may be unrestricted without compromising the restored conditions. Therefore, no post-removal controls are considered necessary for the properties.

10.4 Effectiveness

The evaluation of the effectiveness of the removal actions can be based upon several criteria:

1. Compliance with the Decision Rule, modified as a result of physical conditions at each property.
2. Comparison with the defined lateral and vertical boundaries of the removal action.
3. Completion of tasks associated with the removal action in a manner that is appropriate and compliant with regulatory and industry practices.
4. Completion of removal actions without significant health and safety incidents.
5. Completion of restoration to the satisfaction of owners or tenants at each property.
6. The elimination of additional actions to maintain the conditions at each property at the conclusion of restoration.

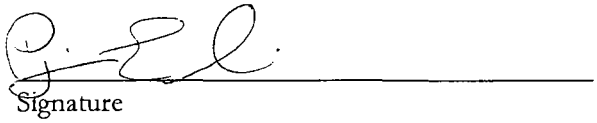
The removal actions complied with the conditions of the Decision Rule and the proposed limits of excavation. No significant Decision Errors were identified to determine the removal boundaries, or in the completion of the removal actions. No health and safety incidents were recorded and removal actions were conducted in accordance with the conditions applicable at each property. The site restoration activities and inspections have not identified significant deficiencies in the condition of the properties and no post-removal controls are necessary.

The removal action for arsenic in soil at Properties #2, #3, #4, and #7 has been completed as required by the Settlement Agreement.

10.5 Certification

The following certification of completion for the activities described in this report for the Ironite is in compliance with Section VIII 20 of the Settlement Agreement.

> Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Signature

Pejman Eshraghi, Associate, Brown and Caldwell
Printed Name and Title

11. REPORT LIMITATIONS

This report was prepared solely for Ironite Products Company in accordance with the standards of the environmental consulting industry at the time the services were performed. This report is governed by the specific scope of work authorized by Ironite Products Company and is not intended to be relied upon by any other party except regulatory agencies as contemplated by the Scope of Work. We have relied on information or instruction provided by Ironite Products Company and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information. This report makes no representation or warranty that environmental contamination does not exist at this site beyond that described in this report.

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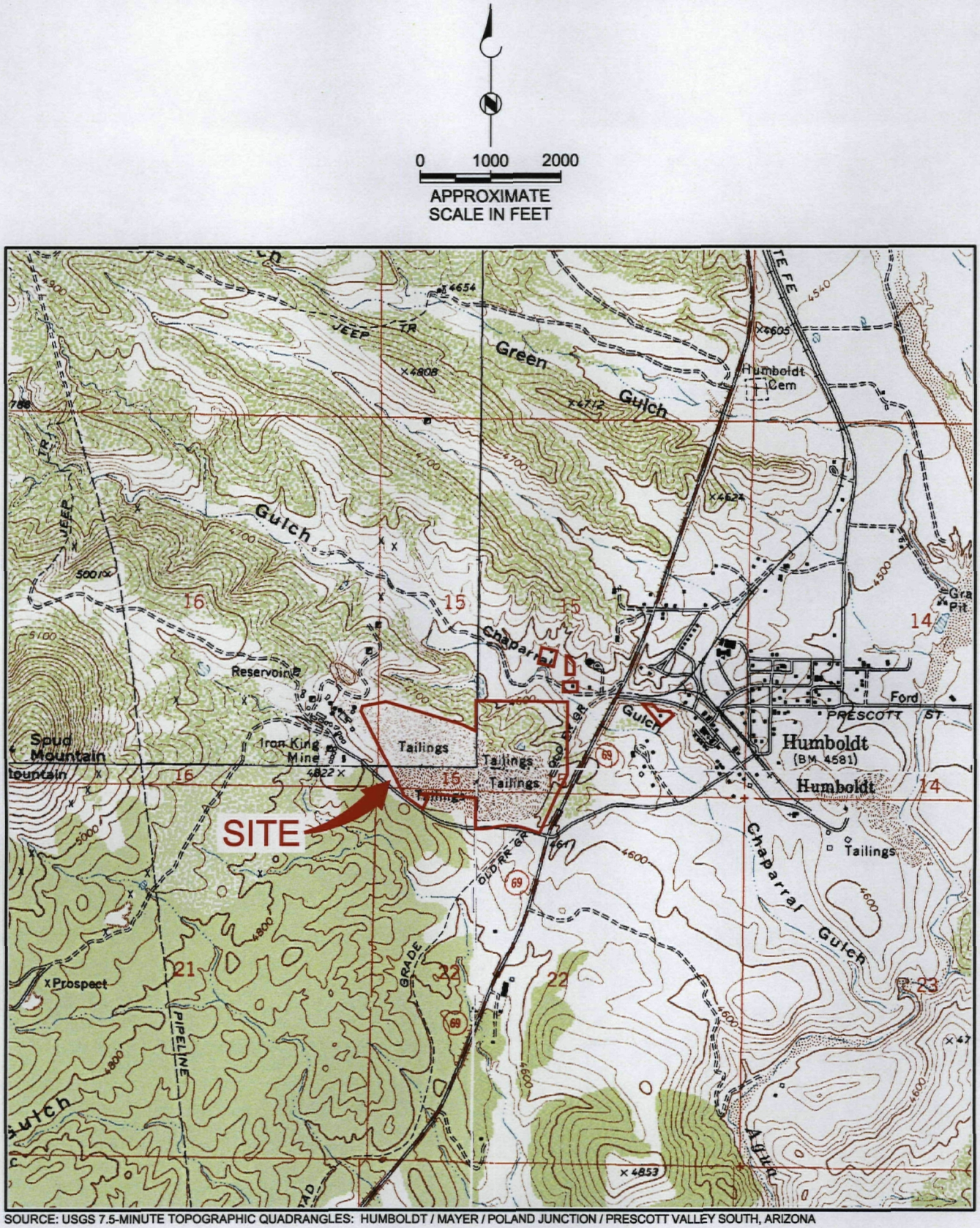
Figures

BROWN AND CALDWELL



SOURCE: USGS 7.5-MINUTE TOPOGRAPHIC QUADRANGLES: HUMBOLDT / MAYER / POLAND JUNCTION / PRESCOTT VALLEY SOUTH, ARIZONA

BROWN AND CALDWELL

Figure 1

VICINITY MAP

IRONITE PRODUCTS COMPANY
HUMBOLDT, ARIZONA

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APPROXIMATE SCALE IN FEET

EXPLANATION

IRONITE SITE BOUNDARY

APPROXIMATE PROPERTY LIMITS SUBJECT TO REMOVAL ACTION

BROWN AND CALDWELL

Figure 2

GENERAL SITE MAP AND PROPERTY LOCATIONS

IRONITE PRODUCTS COMPANY
HUMBOLDT, ARIZONA

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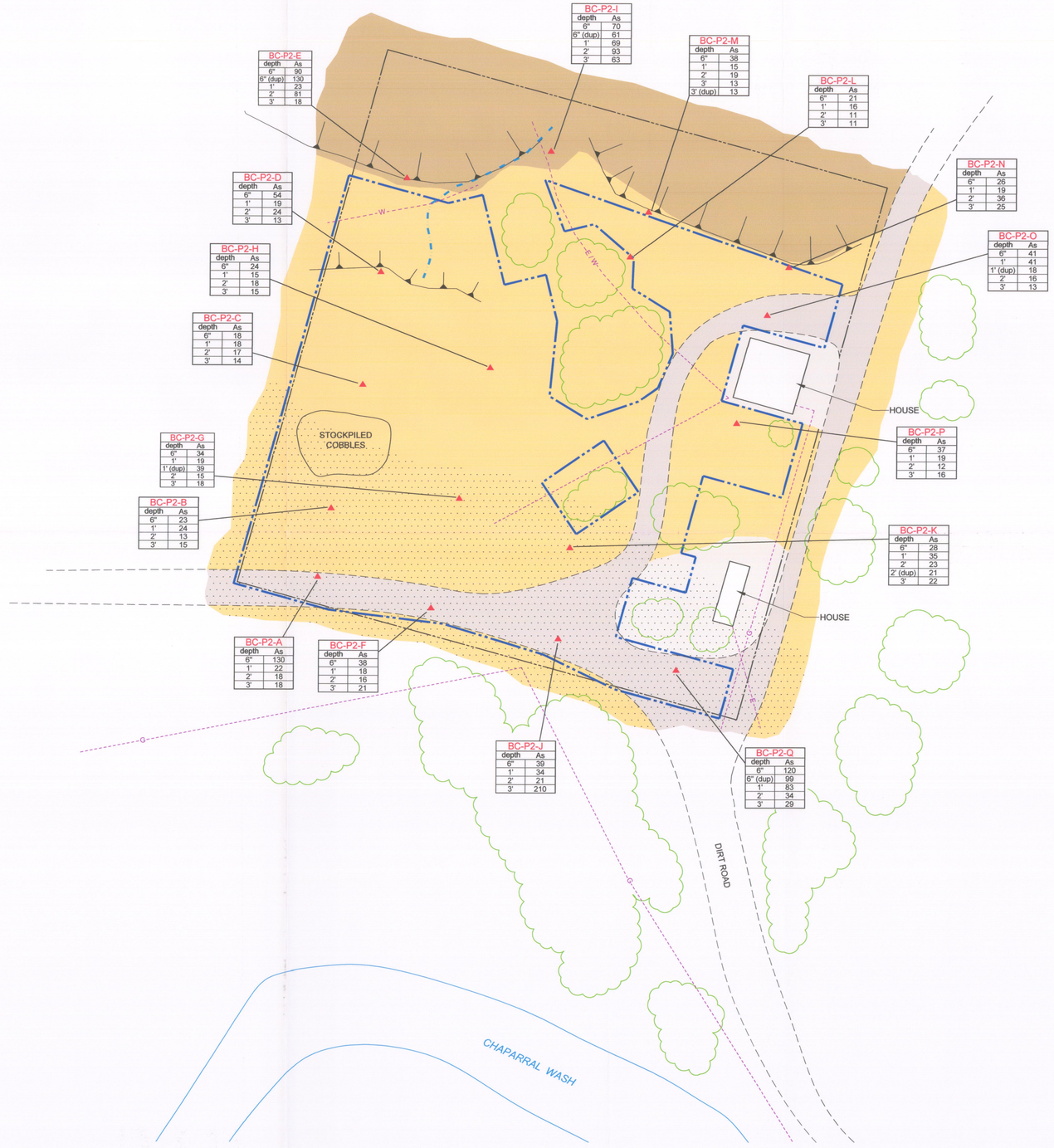

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APPROXIMATE SCALE IN FEET

EXPLANATION

- ORIGINAL PROPOSED EXCAVATION BOUNDARY
- REVISED PROPOSED EXCAVATION BOUNDARY
- DRAINAGE
- SLOPE INDICATOR
- E — UNDERGROUND ELECTRICAL
- G — UNDERGROUND GAS LINE
- L — UNDERGROUND LEACH LINE
- E / W — UNDERGROUND ELECTRICAL & WATER
- AREAS OF DENSE VEGETATION
- SAMPLE LOCATION
- BACKFILL (MIXED MATERIALS)
- ROAD BACKFILL
- HILL SLOPE COLLUVIUM
- FINE-GRAINED STREAM DEPOSITS / TOPSOIL
- APPROXIMATE EXTENT OF STREAM GRAVEL BELOW SURFICIAL MATERIAL

BC-P2-E	
depth	As
6"	90
6" (dup)	130
1'	23
2'	81
3'	18

BC-P2-E → SAMPLE ID
As → ARSENIC
6" (dup) ← DUPLICATE SAMPLE
23 → SAMPLE RESULT

ALL TOTAL ARSENIC RESULTS SHOWN IN mg/Kg

BROWN AND CALDWELL

Figure 3
DELINEATION SAMPLE MAP
PROPERTY #2
IRONITE PRODUCTS COMPANY
HUMBOLDT, ARIZONA

DIRT ROAD

DIRT ROAD

BUILDING

STORAGE SHED

HOUSE

FRONT YARD

DIRT ROAD

DIRT ROAD

W

L

E

BC-P3-D	
depth	As
6"	130
1'	19
2'	14
3'	12

BC-P3-H	
depth	As
6"	110
1'	29
1' (dup)	16
2'	14
3'	15

BC-P3-C	
depth	As
6"	19
6" (dup)	18
1'	15
2'	22
3'	20

BC-P3-N	
depth	As
6"	140
1'	25
2'	12
3'	10

BC-P3-I	
depth	As
6"	97
1'	22
2'	18
3'	13

BC-P3-J	
depth	As
6"	51
1'	45
2'	43
3'	16

BC-P3-B	
depth	As
6"	34
1'	31
2'	20
3'	23

BC-P3-M	
depth	As
6"	47
1'	150
1' (dup)	110
2'	16
3'	12

BC-P3-L	
depth	As
6"	42
1'	300
2'	31
3'	14

BC-P3-A	
depth	As
6"	26
1'	21
2'	31
3'	22

BC-P3-K	
depth	As
6"	30
1'	19
2'	17
2' (dup)	20
3'	10

CHAPARRAL WASH

0 10 20

APPROXIMATE SCALE IN FEET

EXPLANATION

- ORIGINAL PROPOSED EXCAVATION BOUNDARY
- REVISED PROPOSED EXCAVATION BOUNDARY
- DRAINAGE
- SLOPE INDICATOR
- W UNDERGROUND WATER LINE
- G UNDERGROUND GAS LINE
- L UNDERGROUND LEACH LINE
- E UNDERGROUND ELECTRIC LINE
- AREAS OF DENSE VEGETATION
- SAMPLE LOCATION
- BACKFILL (MIXED MATERIALS)
- ROAD BACKFILL
- HILL SLOPE COLLUVIUM
- FINE-GRAINED STREAM DEPOSITS / TOPSOIL
- APPROXIMATE EXTENT OF STREAM GRAVEL BELOW SURFICIAL MATERIAL

BC-P3-C → SAMPLE ID	
depth	As → ARSENIC
6"	19
DUPLICATE SAMPLE → 6" (dup)	18
1'	15 → SAMPLE RESULT
2'	22
3'	20

ALL TOTAL ARSENIC RESULTS SHOWN IN mg/Kg

BROWN AND CALDWELL

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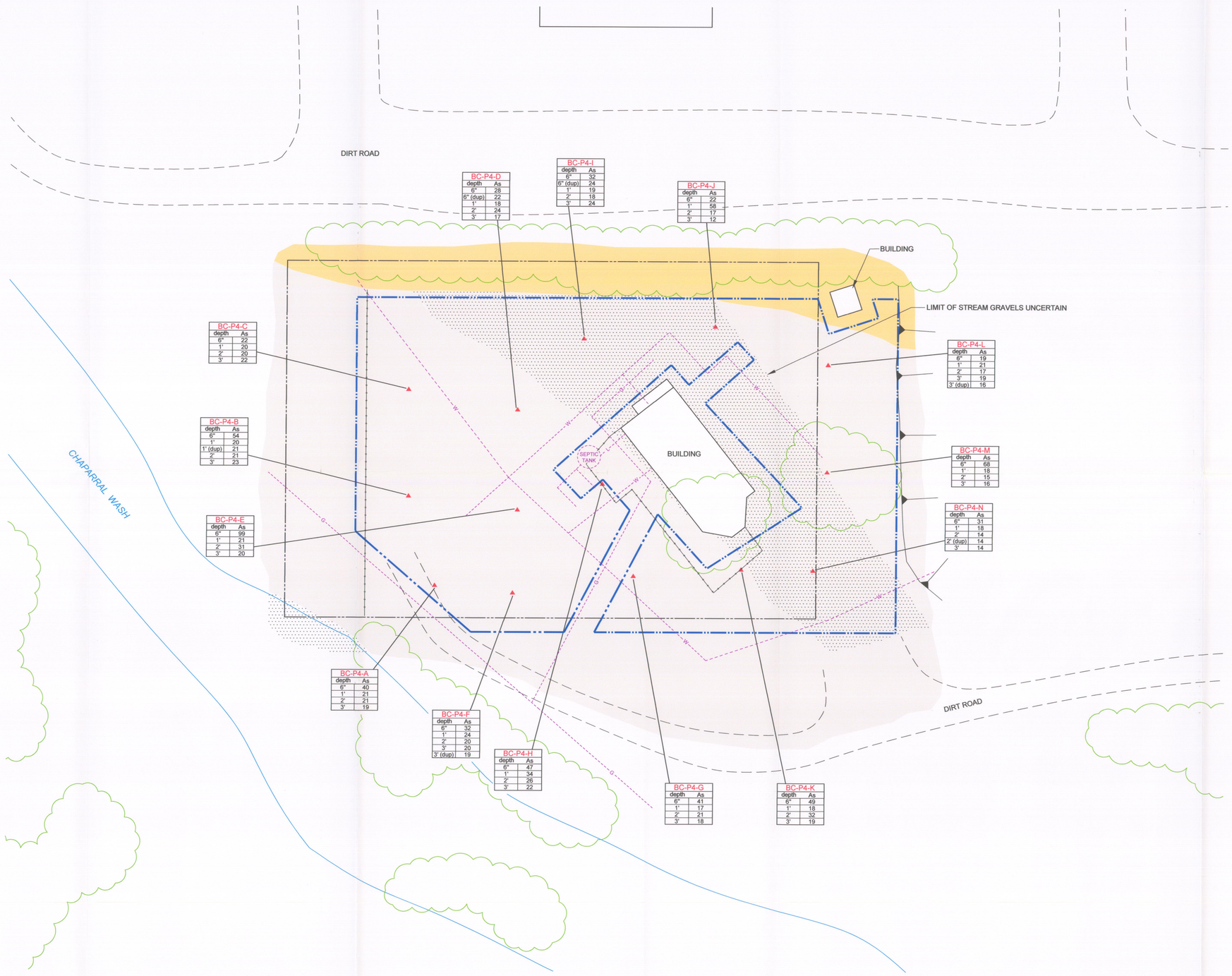
Figure 4
DELINEATION SAMPLE MAP
PROPERTY #3
IRONITE PRODUCTS COMPANY
HUMBOLDT, ARIZONA



BROWN AND CALDWELL

Figure 5
DELINEATION SAMPLE MAP
PROPERTY #4
IRONITE PRODUCTS COMPANY
HUMBOLDT, ARIZONA

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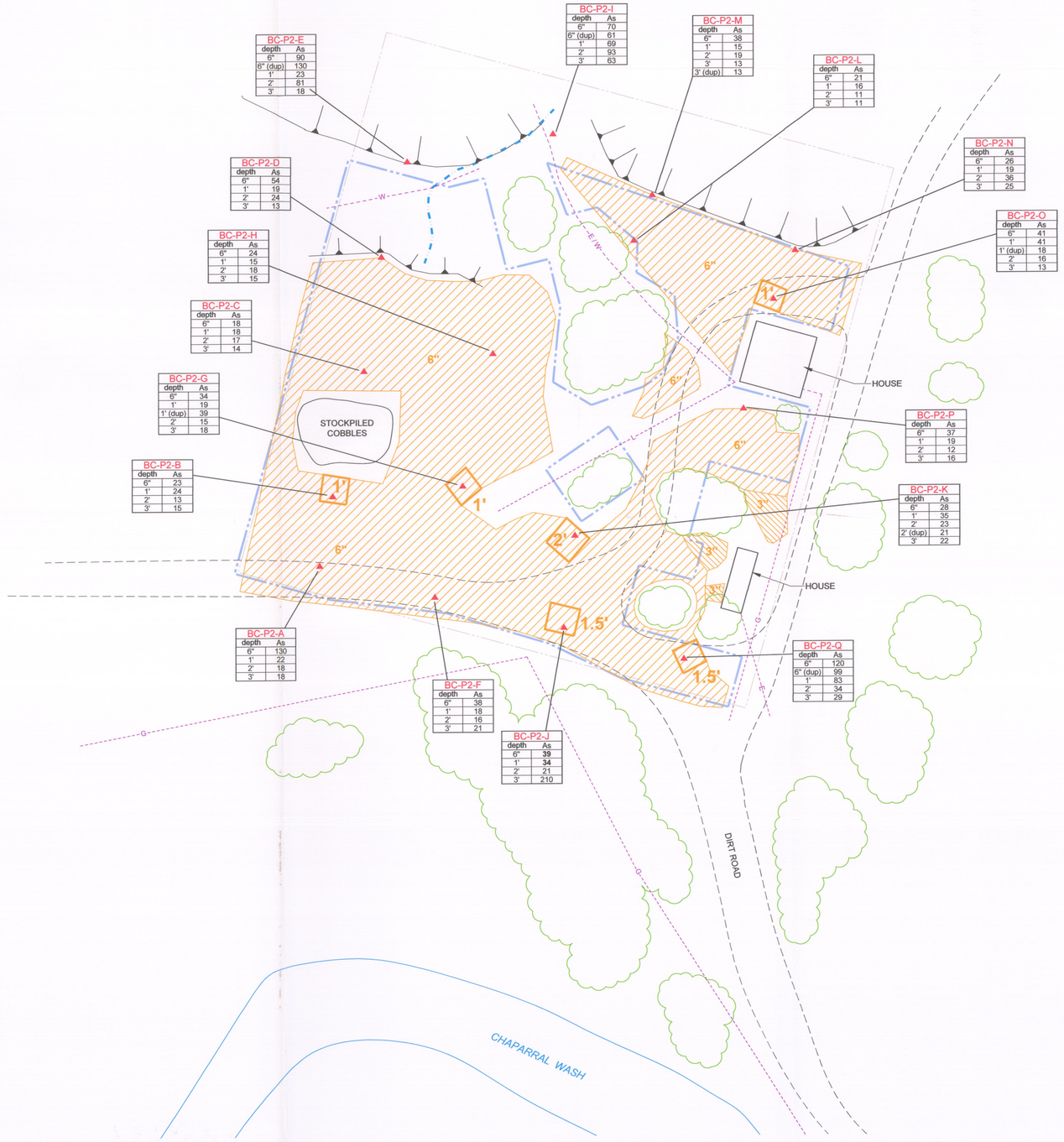

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APPROXIMATE SCALE IN FEET

EXPLANATION

- ORIGINAL PROPOSED EXCAVATION BOUNDARY
- REVISED PROPOSED EXCAVATION BOUNDARY
- 6" — ACTUAL REMOVAL AREA AND DEPTH
- 2' — ACTUAL HOTSPOT REMOVAL AREA AND DEPTH
- DRAINAGE
- SLOPE INDICATOR
- E — UNDERGROUND ELECTRICAL
- G — UNDERGROUND GAS LINE
- L — UNDERGROUND LEACH LINE
- E/W — UNDERGROUND ELECTRICAL & WATER
- AREAS OF DENSE VEGETATION
- SAMPLE LOCATION

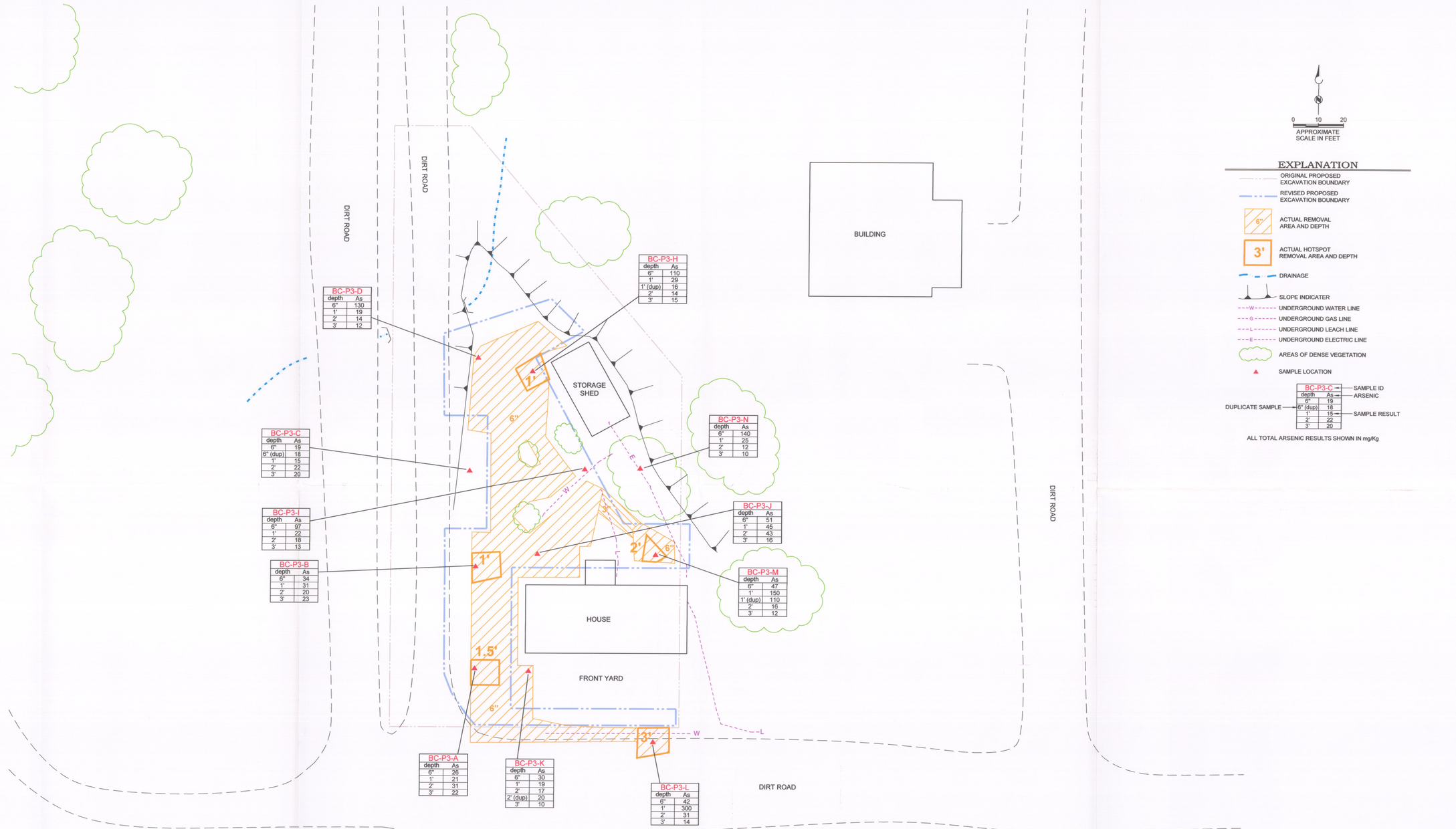
BC-P2-E	→ SAMPLE ID
depth As	→ ARSENIC
6" 90	
DUPLICATE SAMPLE → 6" (dup) 130	
1' 23	→ SAMPLE RESULT
2' 81	
3' 18	

ALL TOTAL ARSENIC RESULTS SHOWN IN mg/Kg

BROWN AND CALDWELL

Figure 6

ARSENIC REMOVAL AREA MAP
PROPERTY #2
IRONITE PRODUCTS COMPANY
HUMBOLDT, ARIZONA



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APPROXIMATE SCALE IN FEET

EXPLANATION

- ORIGINAL PROPOSED EXCAVATION BOUNDARY
- REVISED PROPOSED EXCAVATION BOUNDARY
- 6" — ACTUAL REMOVAL AREA AND DEPTH
- 3' — ACTUAL HOTSPOT REMOVAL AREA AND DEPTH
- DRAINAGE
- SLOPE INDICATER
- W — UNDERGROUND WATER LINE
- G — UNDERGROUND GAS LINE
- L — UNDERGROUND LEACH LINE
- E — UNDERGROUND ELECTRIC LINE
- AREAS OF DENSE VEGETATION
- SAMPLE LOCATION

BC-P3-C → SAMPLE ID
depth | As → ARSENIC
6" | 19
DUPLICATE SAMPLE → 6" (dup) | 18
1' | 15 → SAMPLE RESULT
2' | 22
3' | 20

ALL TOTAL ARSENIC RESULTS SHOWN IN mg/Kg

BROWN AND CALDWELL

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Figure 7
ARSENIC REMOVAL AREA MAP
PROPERTY #3
IRONITE PRODUCTS COMPANY
HUMBOLDT, ARIZONA

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APPROXIMATE SCALE IN FEET

EXPLANATION

- ORIGINAL PROPOSED EXCAVATION BOUNDARY
- REVISED PROPOSED EXCAVATION BOUNDARY
- FENCE / PROPERTY BOUNDARY
- 6" — ACTUAL REMOVAL AREA AND DEPTH
- 3' — ACTUAL HOTSPOT REMOVAL AREA AND DEPTH
- SLOPE INDICATOR
- W — UNDERGROUND WATER LINE
- G — UNDERGROUND GAS LINE
- L — UNDERGROUND LEACH LINE
- AREAS OF DENSE VEGETATION
- SAMPLE LOCATION

BC-P4-B	
depth	As
6"	54
1'	20
1' (dup)	21
2'	21
3'	23

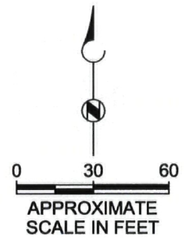
BC-P4-B: SAMPLE ID; As: ARSENIC; 1' (dup): DUPLICATE SAMPLE; 21: SAMPLE RESULT

ALL TOTAL ARSENIC RESULTS SHOWN IN mg/Kg

BROWN AND CALDWELL

Figure 8

ARSENIC REMOVAL AREA MAP
PROPERTY #4
IRONITE PRODUCTS COMPANY
HUMBOLDT, ARIZONA



EXPLANATION

- ORIGINAL PROPOSED EXCAVATION BOUNDARY
- AREAS OF DENSE VEGETATION
- ---W------ UNDERGROUND WATER LINE
- ---G------ UNDERGROUND GAS LINE
- ---L------ UNDERGROUND LEACH LINE
- 1' ACTUAL REMOVAL AREA AND DEPTH

BROWN AND CALDWELL

Figure 9

ARSENIC REMOVAL AREA MAP
PROPERTY #7
IRONITE PRODUCTS COMPANY
HUMBOLDT, ARIZONA

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TABLE 1. SUMMARY OF FIELD ACTIVITIES ASSOCIATED WITH THE ARSENIC REMOVAL ACTIONS

DATE	SAMPLING ACTIVITIES	OTHER ACTIVITIES	
6/26/2006	Performed initial sample point location and defined removal action boundaries at Property #2.	Met with property owners and PSC to discuss scope of work. UDS located underground utilities.	
6/27/2006	Located and staked sample locations at Property #2 and located initial pattern of sampling grid at Property #4.	None	
6/28/2006	Initiated sample collection at Property #2; 8 soil samples, 1 equipment blank.	Adjusted sample grid at property #4 to account for reduced potential removal area at north end of property.	
6/29/2006	Continued sampling at Property #2; 31 soil samples, 1 equipment blank.	None	
6/30/2006	Completed sampling at Property #2; 36 soil samples, 1 equipment blank.	None	
7/5/2006	Initiated sample collection at Property #3; 22 soil samples, 1 equipment blank.	Sample grid at Property #3 removed 3 locations, relocated 1 location. Verified gas line location at Property #4.	
7/6/2006	Continued sampling at Property #3; 22 soil samples, 1 equipment blank.	Rain caused temporary cessation of sampling.	
7/7/2006	Completed sampling at Property #3, initiated sample collectin at Property #4; 35 soil samples, 1 equipment blank.	Backfilled and graded sample areas at Pproperty #3 that had subsided from rain.	
7/10/2006	Continued sampling at Property #4; 21 soil samples.	Unmarked water line broken and repaired; backhoe malfunctioned and could not decontaminate for collection of equipment blank.	
7/11/2006	Completed sampling at Property #4; 6 soil samples, 2 equipment blanks.	Backhoe repaired and decontaminated prior to collection of equipment blank.	
	EXCAVATION ACTIVITIES	**BACKFILL ACTIVITIES**	**OTHER ACTIVITIES**
7/24/2006	Prepared Property #2 for excavation including encapsulation of houses with plastic to prevent dust accumulation and delineation of excavation boundaries and depths. Initiated excavation activities at northeast corner of Property #2 (north of northern house) at approximate locations of Samples N and O.	None	Verified underground utility location markings at Property #2 including natural gas lines.
7/25/2006	Continued excavation northwest of northern house and began excavation between the northern and southern houses at Property #2.	None	Not applicable
7/26/2006	Began transporting soil from Property #2 to Ironite Mine site. Excavated soil from northeast portion of Property #2 to a location south of the northern house. Performed manual removal of soil from areas on western side of the southern	None	Water line broken while obtaining backfill to reconstruct drainage berm north of excavation.
7/27/2006	Excavated areas along the road west of the houses at Property #2. Began excavating areas west of vegetation and along boundaries to the northwest.	None	Water line repaired.
7/28/2006	Continued excavation to the west and south of the southern house at Property #2 to southeast boundary of removal action. Excavated western portion of Property #2, north of the rock pile.	None	Suspended excavation for brief period in afternoon due to lightning.
7/31/2006	Continued excavation on the western portion of Property #2.	Initiated backfilling on the southern portion of Property #2, progressed to the north to the northern house.	Delivered roll-off bin at Property #3 for disposal of items by owner.
8/1/2006	Completed excavation on the western and southern portions of Property #2. Initiated soil removal at northeastern area of house at Property #3.	Continued backfilling and site restoration at Property #2.	Encapsulated house at Property #3, cleared items in northern property to allow access to perform removal.
8/2/2006	Continued excavation in the northern portion of Property #3, progressed along western and southern portions of property and completed excavation activities for Property #3.	Continued backfilling and site restoration at Property #2. Initiated backfilling on the northern portion of Property #3.	Broke unmarked water line along road on southern end of property. Initiated repairs of water line.
8/3/2006	None	Finalized Property #2 site restoration activities. Continued backfilling and site restoration at Property #3.	Completed repairs of water line. Preparation of Property #4 for excavation by owner.
8/4/2006	None	Finalized Property #3 site restoration activities.	Preparation of Property #4 for excavation by owner.
8/7/2006	Initiated excavation on the east portion of Property #4.	None	Confirmation of underground utilities and encapsulated house at Property #4 prior to excavation.
8/8/2006	Continued excavation at north and northwestern portions of Property #4.	Initiated backfilling on the east portion of Property #4.	Not applicable
8/9/2006	Continued excavation in western portion of Property #4 extending east to house.	Continued backfilling on eastern and northern portions of Property #4.	Broke unmarked water line and repaired prior to backfilling on 8/10/2006. Suspended excavation for brief period in afternoon due to heavy rain and lightning.
8/10/2006	Continued excavation in southeastern and southern portions of Property #4 and completed excavation activities.	Backfill and restoration continued along northwestern and southern portions of Property #4.	Berm extending from leach line modified at Property #2 to provide better drainage and prevent accumulation/flooding of portions of the property.
8/11/2006	None	Finalized Property #4 pea gravel surface backfill and site restoration activites.	Not applicable
5/11/2007	None	Not applicable	Inspected Property #7 to determine excavation area
5/15/2007	Excavated 15x15x1 foot area south of concrete pad in yard at Property #7.	Completed backfill and restoration of excavated area at Property #7.	Verified underground utility location markings at Property #7 with UDS.

TABLE 2. SUMMARY OF SAMPLE INFORMATION AND ANALYTICAL RESULTS FOR DELINEATION SAMPLING

LOCATION	SAMPLE ID	SAMPLE TYPE	DATE COLLECTED	TOTAL ARSENIC (mg/kg)	DATA FLAG
Property #2	BC-P2-A-0.5	Soil Delineation	6/28/2006	**130**	J, M1
	BC-P2-A-1	Soil Delineation	6/28/2006	22	J, M1
	BC-P2-A-2	Soil Delineation	6/28/2006	18	J, M1
	BC-P2-A-3	Soil Delineation	6/28/2006	18	J, M1
	BC-P2-B-0.5	Soil Delineation	6/28/2006	23	J, M1
	BC-P2-B-1	Soil Delineation	6/28/2006	**24**	J, M1
	BC-P2-B-2	Soil Delineation	6/28/2006	13	J, M1
	BC-P2-B-3	Soil Delineation	6/28/2006	15	J, M1
	BC-P2-C-0.5	Soil Delineation	6/29/2006	18	J, M1
	BC-P2-C-1	Soil Delineation	6/29/2006	18	J, M1
	BC-P2-C-2	Soil Delineation	6/29/2006	17	J, M1
	BC-P2-C-3	Soil Delineation	6/29/2006	14	J, M1
	BC-P2-D-0.5	Soil Delineation	6/29/2006	**54**	J, M1
	BC-P2-D-1	Soil Delineation	6/29/2006	19	J, M1
	BC-P2-D-2	Soil Delineation	6/29/2006	**24**	J, M1
	BC-P2-D-3	Soil Delineation	6/29/2006	13	J, M1
	BC-P2-E-0.5	Soil Delineation	6/29/2006	**90**	J, M1, R8
	BC-P2-E-1	Soil Delineation	6/29/2006	23	J, M1
	BC-P2-E-2	Soil Delineation	6/29/2006	**81**	J, M1
	BC-P2-E-3	Soil Delineation	6/29/2006	18	J, M2
	BC-P2-F-0.5	Soil Delineation	6/29/2006	**38**	J, M2
	BC-P2-F-1	Soil Delineation	6/29/2006	18	J, M2
	BC-P2-F-2	Soil Delineation	6/29/2006	16	J, M2
	BC-P2-F-3	Soil Delineation	6/29/2006	21	J, M2
	BC-P2-G-0.5	Soil Delineation	6/29/2006	**34**	J, M2
	BC-P2-G-1	Soil Delineation	6/29/2006	19	J, M2, R8
	BC-P2-G-2	Soil Delineation	6/29/2006	15	J, M2
	BC-P2-G-3	Soil Delineation	6/29/2006	18	J, M2
	BC-P2-H-0.5	Soil Delineation	6/29/2006	**24**	J, M2
	BC-P2-H-1	Soil Delineation	6/29/2006	15	J, M2
	BC-P2-H-2	Soil Delineation	6/29/2006	18	J, M2
	BC-P2-H-3	Soil Delineation	6/29/2006	15	J, M2
	BC-P2-I-0.5	Soil Delineation	6/29/2006	**70**	J, M2
	BC-P2-I-1	Soil Delineation	6/29/2006	**69**	J, M2
	BC-P2-I-2	Soil Delineation	6/29/2006	**93**	J, M2
	BC-P2-I-3	Soil Delineation	6/29/2006	**63**	J, M2
	BC-P2-J-0.5	Soil Delineation	6/30/2006	**39**	
	BC-P2-J-1	Soil Delineation	6/30/2006	**34**	
	BC-P2-J-2	Soil Delineation	6/30/2006	21	
	BC-P2-J-3	Soil Delineation	6/30/2006	**210**	
	BC-P2-K-0.5	Soil Delineation	6/30/2006	**28**	
	BC-P2-K-1	Soil Delineation	6/30/2006	**35**	
	BC-P2-K-2	Soil Delineation	6/30/2006	23	
	BC-P2-K-3	Soil Delineation	6/30/2006	22	
	BC-P2-L-0.5	Soil Delineation	6/30/2006	21	

LOCATION	SAMPLE ID	SAMPLE TYPE	DATE COLLECTED	TOTAL ARSENIC (mg/kg)	DATA FLAG
Property #2 (cont.)	BC-P2-L-1	Soil Delineation	6/30/2006	16	
	BC-P2-L-2	Soil Delineation	6/30/2006	11	
	BC-P2-L-3	Soil Delineation	6/30/2006	11	
	BC-P2-M-0.5	Soil Delineation	6/30/2006	**38**	
	BC-P2-M-1	Soil Delineation	6/30/2006	15	
	BC-P2-M-2	Soil Delineation	6/30/2006	19	
	BC-P2-M-3	Soil Delineation	6/30/2006	13	
	BC-P2-N-0.5	Soil Delineation	6/30/2006	**26**	
	BC-P2-N-1	Soil Delineation	6/30/2006	19	
	BC-P2-N-2	Soil Delineation	6/30/2006	**36**	
	BC-P2-N-3	Soil Delineation	6/30/2006	**25**	
	BC-P2-O-0.5	Soil Delineation	6/30/2006	**41**	
	BC-P2-O-1	Soil Delineation	6/30/2006	**41**	J, R8
	BC-P2-O-2	Soil Delineation	6/30/2006	16	
	BC-P2-O-3	Soil Delineation	6/30/2006	13	
	BC-P2-P-0.5	Soil Delineation	6/30/2006	**37**	
	BC-P2-P-1	Soil Delineation	6/30/2006	19	
	BC-P2-P-2	Soil Delineation	6/30/2006	12	
	BC-P2-P-3	Soil Delineation	6/30/2006	16	
	BC-P2-Q-0.5	Soil Delineation	6/30/2006	**120**	
	BC-P2-Q-1	Soil Delineation	6/30/2006	**83**	
	BC-P2-Q-2	Soil Delineation	6/30/2006	**34**	
	BC-P2-Q-3	Soil Delineation	6/30/2006	**29**	
Property #3	BC-P3-A-0.5	Soil Delineation	7/5/2006	**26**	
	BC-P3-A-1	Soil Delineation	7/5/2006	21	
	BC-P3-A-2	Soil Delineation	7/5/2006	**31**	
	BC-P3-A-3	Soil Delineation	7/5/2006	22	
	BC-P3-B-0.5	Soil Delineation	7/5/2006	**34**	
	BC-P3-B-1	Soil Delineation	7/5/2006	**31**	
	BC-P3-B-2	Soil Delineation	7/5/2006	20	
	BC-P3-B-3	Soil Delineation	7/5/2006	23	
	BC-P3-C-0.5	Soil Delineation	7/5/2006	19	
	BC-P3-C-1	Soil Delineation	7/5/2006	15	
	BC-P3-C-2	Soil Delineation	7/5/2006	22	
	BC-P3-C-3	Soil Delineation	7/5/2006	20	
	BC-P3-D-0.5	Soil Delineation	7/5/2006	**130**	
	BC-P3-D-1	Soil Delineation	7/5/2006	19	
	BC-P3-D-2	Soil Delineation	7/5/2006	14	
	BC-P3-D-3	Soil Delineation	7/5/2006	12	
	BC-P3-H-0.5	Soil Delineation	7/5/2006	**110**	
	BC-P3-H-1	Soil Delineation	7/5/2006	**29**	J, R8
	BC-P3-H-2	Soil Delineation	7/5/2006	14	
	BC-P3-H-3	Soil Delineation	7/5/2006	15	
	BC-P3-I-0.5	Soil Delineation	7/6/2006	**97**	
	BC-P3-I-1	Soil Delineation	7/6/2006	22	
	BC-P3-I-2	Soil Delineation	7/6/2006	18	
	BC-P3-I-3	Soil Delineation	7/6/2006	13	
	BC-P3-J-0.5	Soil Delineation	7/6/2006	**51**	
	BC-P3-J-1	Soil Delineation	7/6/2006	**45**	

LOCATION	SAMPLE ID	SAMPLE TYPE	DATE COLLECTED	TOTAL ARSENIC (mg/kg)	DATA FLAG
Property #3 (cont.)	BC-P3-J-2	Soil Delineation	7/6/2006	**43**	
	BC-P3-J-3	Soil Delineation	7/6/2006	16	
	BC-P3-K-0.5	Soil Delineation	7/6/2006	**30**	
	BC-P3-K-1	Soil Delineation	7/6/2006	19	
	BC-P3-K-2	Soil Delineation	7/6/2006	17	
	BC-P3-K-3	Soil Delineation	7/6/2006	10	
	BC-P3-L-0.5	Soil Delineation	7/7/2006	**42**	J, R2
	BC-P3-L-1	Soil Delineation	7/7/2006	**300**	J, R2
	BC-P3-L-2	Soil Delineation	7/7/2006	**31**	J, R2
	BC-P3-L-3	Soil Delineation	7/7/2006	14	J, R2
	BC-P3-M-0.5	Soil Delineation	7/6/2006	**47**	
	BC-P3-M-1	Soil Delineation	7/6/2006	**150**	
	BC-P3-M-2	Soil Delineation	7/6/2006	16	
	BC-P3-M-3	Soil Delineation	7/6/2006	12	
	BC-P3-N-0.5	Soil Delineation	7/6/2006	**140**	
	BC-P3-N-1	Soil Delineation	7/6/2006	**25**	
	BC-P3-N-2	Soil Delineation	7/6/2006	12	
	BC-P3-N-3	Soil Delineation	7/6/2006	10	
Property #4	BC-P4-A-0.5	Soil Delineation	7/7/2006	**40**	J, R2
	BC-P4-A-1	Soil Delineation	7/7/2006	21	J, R2
	BC-P4-A-2	Soil Delineation	7/7/2006	21	J, R2
	BC-P4-A-3	Soil Delineation	7/7/2006	18	J, R2
	BC-P4-B-0.5	Soil Delineation	7/7/2006	**54**	J, R2
	BC-P4-B-1	Soil Delineation	7/7/2006	20	J, R2
	BC-P4-B-2	Soil Delineation	7/7/2006	21	J, R2
	BC-P4-B-3	Soil Delineation	7/7/2006	23	J, R2
	BC-P4-C-0.5	Soil Delineation	7/7/2006	22	J, R2
	BC-P4-C-1	Soil Delineation	7/7/2006	20	J, R2
	BC-P4-C-2	Soil Delineation	7/7/2006	20	J, R2
	BC-P4-C-3	Soil Delineation	7/7/2006	22	J, R2
	BC-P4-D-0.5	Soil Delineation	7/7/2006	**28**	J, R2
	BC-P4-D-1	Soil Delineation	7/7/2006	18	
	BC-P4-D-2	Soil Delineation	7/7/2006	**24**	
	BC-P4-D-3	Soil Delineation	7/7/2006	17	
	BC-P4-E-0.5	Soil Delineation	7/7/2006	**99**	
	BC-P4-E-1	Soil Delineation	7/7/2006	21	
	BC-P4-E-2	Soil Delineation	7/7/2006	31	
	BC-P4-E-3	Soil Delineation	7/7/2006	20	
	BC-P4-F-0.5	Soil Delineation	7/7/2006	**32**	
	BC-P4-F-1	Soil Delineation	7/7/2006	**24**	
	BC-P4-F-2	Soil Delineation	7/7/2006	20	
	BC-P4-F-3	Soil Delineation	7/7/2006	20	
	BC-P4-G-0.5	Soil Delineation	7/7/2006	**41**	
	BC-P4-G-1	Soil Delineation	7/7/2006	17	
	BC-P4-G-2	Soil Delineation	7/7/2006	21	
	BC-P4-G-3	Soil Delineation	7/7/2006	18	
	BC-P4-H-0.5	Soil Delineation	7/10/2006	**47**	
	BC-P4-H-1	Soil Delineation	7/10/2006	**34**	
	BC-P4-H-2	Soil Delineation	7/10/2006	**26**	

LOCATION	SAMPLE ID	SAMPLE TYPE	DATE COLLECTED	TOTAL ARSENIC (mg/kg)	DATA FLAG
Property #4 (cont.)	BC-P4-H-3	Soil Delineation	7/10/2006	22	
	BC-P4-I-0.5	Soil Delineation	7/11/2006	**32**	
	BC-P4-I-1	Soil Delineation	7/11/2006	19	
	BC-P4-I-2	Soil Delineation	7/11/2006	18	
	BC-P4-I-3	Soil Delineation	7/11/2006	**24**	
	BC-P4-J-0.5	Soil Delineation	7/10/2006	22	
	BC-P4-J-1	Soil Delineation	7/10/2006	**58**	
	BC-P4-J-2	Soil Delineation	7/10/2006	17	
	BC-P4-J-3	Soil Delineation	7/10/2006	12	
	BC-P4-K-0.5	Soil Delineation	7/10/2006	**49**	
	BC-P4-K-1	Soil Delineation	7/10/2006	18	
	BC-P4-K-2	Soil Delineation	7/10/2006	**32**	
	BC-P4-K-3	Soil Delineation	7/10/2006	19	
	BC-P4-L-0.5	Soil Delineation	7/10/2006	19	
	BC-P4-L-1	Soil Delineation	7/10/2006	21	
	BC-P4-L-2	Soil Delineation	7/10/2006	17	
	BC-P4-L-3	Soil Delineation	7/10/2006	19	
	BC-P4-M-0.5	Soil Delineation	7/10/2006	**68**	
	BC-P4-M-1	Soil Delineation	7/10/2006	18	
	BC-P4-M-2	Soil Delineation	7/10/2006	15	
	BC-P4-M-3	Soil Delineation	7/10/2006	16	
	BC-P4-N-0.5	Soil Delineation	7/11/2006	**31**	
	BC-P4-N-1	Soil Delineation	7/11/2006	18	
	BC-P4-N-2	Soil Delineation	7/11/2006	14	
	BC-P4-N-3	Soil Delineation	7/11/2006	14	
Property #2	BC-P2-R-0.5	Field Duplicate of BC-P2-E-0.5	6/29/2006	**130**	J, M1, R8
	BC-P2-S-1	Field Duplicate of BC-P2-G-1	6/29/2006	**39**	J, M2, R8
	BC-P2-T-0.5	Field Duplicate of BC-P2-I-0.5	6/29/2006	**61**	J, M2
	BC-P2-U-2	Field Duplicate of BC-P2-K-2	6/30/2006	21	
	BC-P2-V-3	Field Duplicate of BC-P2-M-3	6/30/2006	13	
	BC-P2-W-1	Field Duplicate of BC-P2-O-1	6/30/2006	18	J, R8
	BC-P2-X-0.5	Field Duplicate of BC-P2-Q-0.5	6/30/2006	**99**	
Property #3	BC-P3-O-0.5	Field Duplicate of BC-P3-C-0.5	7/5/2006	18	
	BC-P3-P-1	Field Duplicate of BC-P3-H-1	7/5/2006	16	J, R8
	BC-P3-Q-1	Field Duplicate of BC-P3-M-1	7/6/2006	**110**	
	BC-P3-R-2	Field Duplicate of BC-P3-K-2	7/6/2006	20	
Property #4	BC-P4-O-0.5	Field Duplicate of BC-P4-D-0.5	7/7/2006	22	J, R2
	BC-P4-P-1	Field Duplicate of BC-P4-B-1	7/7/2006	21	J, R2
	BC-P4-Q-3	Field Duplicate of BC-P4-F-3	7/7/2006	19	
	BC-P4-R-0.5	Field Duplicate of BC-P4-I-0.5	7/11/2006	**24**	
	BC-P4-S-3	Field Duplicate of BC-P4-L-3	7/10/2006	16	
	BC-P4-T-2	Field Duplicate of BC-P4-N-2	7/11/2006	14	
Property #2	BC-GWS-P2-01	Equipment Blank	6/28/2006	<0.010	
	BC-GWS-P2-02	Equipment Blank	6/29/2006	<0.010	
	BC-GWS-03	Equipment Blank	6/30/2006	<0.010	
Property #3	BC-GWS-P3-04	Equipment Blank	7/5/2006	0.011	
	BC-GWS-P3-05	Equipment Blank	7/6/2006	<0.010	

LOCATION	SAMPLE ID	SAMPLE TYPE	DATE COLLECTED	TOTAL ARSENIC (mg/kg)	DATA FLAG
Property #4	BC-GWS-P4-06	Equipment Blank	7/7/2006	<0.010	
	BC-GWS-P4-07	Equipment Blank	7/11/2006	<0.010	
	BC-GWS-P4-08	Equipment Blank	7/11/2006	<0.010	
	BC-GWS-P4-09	Equipment Blank	7/11/2006	<0.010	

Sample Suffix (0.5, 1, 2, 3) of Delineation Samples indicates depth collected in feet.
Bold Value indicates concentrations exceeds Arizona Residential Soil Remediation Level of 23 mg/Kg for arsenic.
J = Value is estimated
M1 = Matrix spike recovery was high, method control sample recovery was acceptable.
M2 = Matrix spike recovery was low, method control sample recovery was acceptable.
R2 = RPD exceeded laboratory control limit, additional explanation in laboratory case narrative.
R8 = Sample RPD exceeded method control limit.

TABLE 3. SUMMARY OF BACKFILL MATERIAL ANALYTICAL RESULTS

Sample ID	Date Collected	Sample Type	Analyte Concentrations							
			Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury
BC-B-1-D-1	7/11/2006	Backfill Stockpile	7.6	74	<1.0	12	<5.0	<5.0	<5.0	<0.083
BC-B-1-D-2	7/11/2006	Backfill Stockpile	7.4	85	<1.1	14	<5.0	<5.0	<5.0	<0.084
BC-B-1-D-3	7/11/2006	Backfill Native	5.3	68	<1.2	14	<5.0	<5.0	<5.0	<0.085
BC-B-1-D-4	7/11/2006	Backfill Native	7.8	60	<1.3	15	<5.0	<5.0	<5.0	<0.086
BC-B-1-D-5	7/11/2006	Backfill Native	9.2	120	<1.4	16	<5.0	<5.0	<5.0	<0.087
Applicable Regulatory Level			23*	5,300	38	2,100	400	380	380	6.7

Concentrations reported in mg/Kg.
* = Action Level determined for Ironite sites. Remainder of Regulatory Levels are Arizona Residential Soil Remediation Levels.

TABLE 4. SUMMARY OF PHYSICAL CONDITIONS FOR DELINEATION SAMPLES.

Sample Location	Classification				Interpretation
	0.5 ft bgs	1 ft bgs	2 ft bgs	3 ft bgs	
			PROPERTY #2		
P2-A	**SW/SM** road backfill	**SM/ML** dark organic soil	**SM/ML** dark organic soil	**SM/ML** with minor gravel	Road backfill covering fine-grained alluvium, underlain by coarse alluvium.
P2-B	**SM/ML** light organic soil	**SM/ML** organic soil	**SM/ML** dark organic soil	**SM/ML** lighter, isolated gravel and cobbles	Fine-grained overbank deposits underlain by upper gravel stream deposits.
P2-C	**SM** similar to B	**SM** similar to dark organic material in A/B	**SM** lighter with traces of caliche/CaCO3	**SM** dark, isolated gravel and cobbles	Fine-grained overbank deposits underlain by upper gravel stream deposits.
P2-D	**SM** at base of lower bench/berm	**SM** similar to A-C with more sand	**SM** similar to A-C	**SM** dark, higher sand content with gravel	Fine-grained overbank deposits possibly mixed with hillslope material at near surface, underlain by upper gravel stream deposits.
P2-E	**SM** with gravel/colluvium at base of hillslope	**SM** similar to dark organic material in A-C but with coarse sand and gravel	**SM** similar to 1 foot	**SM** similar to dark organic material in A-C, contains caliche/CaCO3 as in C	Mixed hillslope colluvium and imported (?) material covering a finer-grained mixture of SM, gravel, and caliche - base of pit equal to approximate surface of A-D.
P2-F	**SM** road backfill with minor gravel	**SM** similar to road backfill but finer grained	**SM** as in A-C	**SW/SM** Lighter brown and higher amount of gravel compared with A-C	Road backfill covering fine-grained overbank deposits, underlain by upper gravel stream deposits.
P2-G	**SM** similar to B and C	**SM** similar to dark organic material in A-C but with more coarse sand	**SM** similar to dark organic material in A-C but with coarse sand and gravel	**SM** similar to organic material in A-C, contains some cobbles of schist/metamorphic rock	Fine-grained overbank deposits underlain by upper gravel stream deposits.
P2-H	**SM** similar to B/C and G	**SM** similar to A-C	**SM** similar to A-C	**SM** similar to A-C	Fine-grained overbank deposits underlain by upper gravel stream deposits.
P2-I	**SM/SW** diversion berm - reworked hillslope or imported material at base of hillslope	**SM** lighter colored but similar to darker fine grained deposits in other holes and coarser grained	**SM** lighter colored but similar to darker fine grained deposits in other holes and coarser grained	**SM** lighter colored but similar to darker fine grained deposits in other holes and coarser grained	Mixed hillslope or imported (?) material covering a finer-grained mixture of sand with lesser amounts of gravel - all material appears to have been moved and base of pit is above pits in lower areas (A-D, F-G).
P2-J	**SW/SM** road backfill	**SM** similar to A-C, G/H	**SM** similar to A-C, G/H	**SW/SM** Lighter brown and higher amount of gravel compared shallow material	Road backfill covering fine-grained overbank deposits, underlain by upper gravel stream deposits.
P2-K	**SM** similar to B/C and G	**SM** similar to A-C, G/H	**SM** similar to A-C, G/H	**SM** similar to overlying material but with trace of gravel and cobbles	Fine-grained overbank deposits underlain by upper gravel stream deposits.
P2-L	**SM** similar to B/C, G/H, and K	**SM** similar to B/C, G/H, and K - nail and charcoal at this depth	**SM** similar to B/C, G/H, and K	**SM** similar to B/C, G/H, and K	Fine-grained overbank deposits, possible disturbed material or backfill mixture (nail, charcoal).

Sample Location	Classification				Interpretation
	0.5 ft bgs	1 ft bgs	2 ft bgs	3 ft bgs	
PROPERTY #2 (continued)					
P2-M	**SW/SM** hillslope colluvium	**SM** hillslope material	**SW/SM** hillslope colluvium	**SW/SM** hillslope colluvium	Hillslope colluvium covering a mixture of fine-grained deposits and colluvium.
P2-N	**SW/GW** hillslope colluvium	**SW/GW** hillslope colluvium with CaCO3	**SW/GW** hillslope colluvium lighter colored	**SW/GW** hillslope colluvium and caliche from 2 to 3 feet	Hillslope colluvium and caliche layer.
P2-O	**SM** with minor backfill	**SM/SW** brown with trace of gravel	**SM** similar to A-C, G/H	**SM** similar to A-C, G/H	Backfill covering fine-grained deposits similar to other locations in center of property.
P2-P	**SM** brown organic soil	**SM** similar to A-C, G/H	**SM** similar to A-C, G/H	**SM** similar to A-C, G/H with trace of gravel	Fine-grained soil (imported?) and overbank deposits.
P2-Q	**SW/SM** road backfill	**SM** with gravel	**GW/SW** drainage gravel deposits	**GW/SW** drainage gravel deposits	Road backfill covering thin layer of fine-grained overbank material, underlain by upper gravel stream deposits.
PROPERTY #3					
P3-A	**SM** road backfill; high percentage of sand and gravel	**SM** backfill material; less sand and gravel	**SM** hard with gravel/cobbles between 1-2 ft.	**SW/GW** same gravel with cobbles from 2-3 ft; river terrace deposits	Road backfill covering, underlain by upper gravel stream deposits.
P3-B	**SM** road backfill; less gravel present than sample point A	**SM** similar to A, boundary of fill just above sample depth	**SM** fewer cobbles at a deeper depth than Sample A	**SM** less cobbles present	Road backfill covering, underlain by upper gravel stream deposits.
P3-C	**SM** road backfill, same as A-B	**SM** similar to dark SM in many locations at P2	**SP-SM** with river cobbles at 2 ft.	**SW/GW** many cobbles below 2 ft, same material as in A-B	Road backfill covering underlain by upper gravel stream deposits.
P3-D	**SM** backfill adjacent to shoulder of county road	**SM** similar to material at C	**SC** darker material with a higher clay content	**SM** similar to 2 ft with more sand	Possible backfill material underlain by finer-grained mixture of sand and clay with less gravel content
P3-H	**SM** hard packed, cohesive material at base of hill	**SM** similar to 0.5 ft. with less gravel	**SM** similar to previous samples with slightly higher clay content	**SM** similar to 2 ft but harder with more fines	Fine grained soil and overbank deposits
P3-I	**SM** high sand content with no gravel	**SM** similar soil to H	**SM** no cobbles like in previous samples	**SM** similar to 2 ft but finer and harder	Fine grained soil and overbank deposits
P3-J	**SM** backfill material, compacted sand and pea gravel to at least 1 ft	**GP/SM** Pea gravel with sand/silt mixture of backfill	**SP-SC** coarse grained cobbles starting around 2 ft	**GW/GM** similar to sample point A and river channel	Compacted backfill material underlain by coarse grained river deposits
P3-K	**SM** backfill material	**SM** lighter and more sand	**SM** similar to 1 ft	**SW/GW** cobbles from 2.5 ft with more M-C sand	Backfill material underlain by upper gravel stream deposits
P3-L	**SM** similar to point I	**ML/SM** lighter/finer material at 10"	**SM** similar to 0.5 ft	**SM** similar, but harder than 1-2 ft. One cobble present at 2.5 ft.	Fine-grained overbank deposits, possible disturbed material at shallower depths

Sample Location	Classification				Interpretation
	0.5 ft bgs	1 ft bgs	2 ft bgs	3 ft bgs	
PROPERTY #3 (continued)					
P3-M	SM caliche and gravel from 0.5-1 ft although less gravel present in 0.5 sample	SM hard caliche	SC thin caliche layer at 1.8 ft on north side; not present on south side of hole	SM organic soil	Fine grained deposits and caliche layer
P3-N	SM at toe of hillslope of exposed sand and gravel	SM similar to 0.5 ft. with less gravel	SC hard packed material	SM/ML hard packed material similar to Sample I- 3 ft.	Hillslope material covering organic rich fine sand and clay
PROPERTY #4					
P4-A	SM near edge of stream channel; gravel and cobbles exposed	SM soft, no gravel	SM with gravel	SM/ML with minor gravel	Backfill material covering fineto coarse-grained alluvium
P4-B	SM soft, few cobbles present	SM similar to A-1	SM gravel/cobbles at 2.5 ft	SW/GW fine matrix of gravel deposit	Fill material underlain by river deposits
P4-C	SM similar to B	GW gravel and sand from 1-2 ft	SM sandy fill layer, absence of gravel	GW sandy layer below gravel layer (present at 2.5 ft)	Interbedded river deposits with backfill material
P4-D	SM/SP more gravel present, backfill material	SM less gravel present at this depth	SM increase of gravel and cobbles	SP finer material, coarse sand on south side; SM on north side	Backfill material underlain by upper gravel stream deposits, tonguing of SP layer from the south
P4-E	SM fine grained deposits	SM similar to material in A B with more coarse sand	SW/GW gravel and cobbles above 2 ft; similar sand as in D-3 ft.	SW/GW fine matrix between gravel clasts	Fine-grained overbank deposits underlain with coarse river deposits.
P4-F	SM raised ground (fill?)	SM similar to A; trace coarse sand and fine gravel	SM similar to 1 ft	SM more coarse sand	Backfill, possible levee
P4-G	SM similar to F-0.5-1	SM similar to F-1	SM similar to F-2	SM similar to F-3	Backfill, possible levee
P4-H	SC/SM cobbles along with coarse-grained sand and fine gravel backfill material at surface	SM lighter colored with less gravel and more finer-grained sand	SM similar to 1 ft	SM mostly fine sand with trace gravel	Backfill material
P4-I	SM fine grained sand	SW gravel interval present at about 0.75 ft	SW fine to coarse gravel layer	SW similar material as 1-2 ft.	Possible interbedding of fine-grained overbank material and coarse river deposits.
P4-J	SM backfill sand and gravel similar to I	SM backfill sand and gravel	SM possible backfill or native stream gravels	SM loose sand with fine gravel	Possible backfill material to 2 feet underlain by river deposits
P4-K	SM ditch exposed with fine gravel about 5 ft west	SM fine layer between more course sands	SM similar to 1 ft with more fine sands	SM fine sands; underlain by cobbles and sand; roots present	Fine-grained overbank deposits underlain by upper gravel stream deposits.
P4-L	SM fine sand overlain by imported gravel from upstream	SM coarser sand from 0.75-1.25 ft.	SM layer of gravel within fine sand	SM similar to 1 ft	Fine-grained overbank deposits, possible disturbed material or backfill mixture

Sample Location	Classification				Interpretation
	0.5 ft bgs	1 ft bgs	2 ft bgs	3 ft bgs	
PROPERTY #4 (continued)					
P4-M	**SM** fine sand overlain by imported gravel from upstream; possible gravel mixed into sample	**SM** gravel with coarser sand	**SM/GM** with more gravel present	**SM** fine material below sand gravel interval	Possible backfill covered by imported gravel from upstream, underlain by fine river deposits
P4-N	**SM** native material	**SW** coarse sand and gravel layer	**ML/SW** coarse sand and gravel	**SM** hard packed sand and gravel	Fine-grained overbank deposits underlain by coarse gravel alluvium deposits

GW = Well graded gravel/Well graded gravel with sand
GP = Poorly graded gravel/Poorly graded gravel with sand
SW = Well graded sand/Well graded sand with gravel
SP = Poorly graded sand/Poorly graded sand with gravel
SM = Silty sand/Silty sand with gravel
SC = Clayey sand/Clayey sand with gravel/caliche
ML = Silt/Silt with sand or gravel
Classifications based upon USCS/ASTM system for visual-manual determination of soil properties

TABLE 5. SUMMARY OF GPS LOCATION COORDINATES FOR DELINEATION SAMPLES, SITE FEATURES, AND REMOVAL ACTION BOUNDARIES.

GPS Point Description	Location	Date	Elevation (ft)	Horiz. Prec (ft)	Northing	Easting
Sample P2-A	Property #2	7/28/2006	4561.688	0.9	1275056.659	600186.709
Sample P2-B	Property #2	7/28/2006	4562.563	0.7	1275089.901	600192.898
P2-B hot spot NE corner	Property #2	8/1/2006	4561.974	0.7	1275093.004	600201.734
P2-B hot spot SE corner	Property #2	8/1/2006	4561.230	0.7	1275084.779	600198.820
P2-B hot spot NW corner	Property #2	8/1/2006	4562.578	0.7	1275094.831	600188.339
P2-B hot spot SW corner	Property #2	8/1/2006	4562.001	0.7	1275086.028	600187.137
Sample P2-C	Property #2	7/28/2006	4562.881	0.7	1275149.792	600207.693
Sample P2-D	Property #2	7/28/2006	4563.977	0.7	1275204.379	600216.166
Sample P2-E	Property #2	7/28/2006	4570.057	0.7	1275249.836	600228.352
Sample P2-F	Property #2	7/28/2006	4562.982	0.6	1275041.436	600241.064
Sample P2-G	Property #2	8/1/2006	4561.223	0.6	1275094.608	600254.300
P2-G hot spot W corner	Property #2	8/1/2006	4562.735	0.5	1275095.626	600246.462
P2-G hot spot N corner	Property #2	8/1/2006	4562.808	0.6	1275102.601	600255.021
P2-G hot spot E corner	Property #2	8/1/2006	4561.785	0.6	1275093.622	600263.241
P2-G hot spot S corner	Property #2	8/1/2006	4561.910	0.6	1275085.641	600253.503
Sample P2-H	Property #2	8/1/2006	4563.950	0.8	1275158.028	600268.812
Sample P2-I	Property #2	7/28/2006	4573.404	0.7	1275262.785	600297.532
Sample P2-J	Property #2	7/28/2006	4563.091	0.6	1275026.626	600302.340
P2-J hot spot SE corner	Property #2	8/1/2006	4558.588	0.7	1275022.950	600305.961
P2-J hot spot SW corner	Property #2	8/1/2006	4561.124	0.5	1275026.204	600292.513
P2-J hot spot NW corner	Property #2	8/1/2006	4562.659	0.5	1275038.271	600297.411
P2-J hot spot NE corner	Property #2	8/1/2006	4562.045	0.7	1275032.158	600305.653
Sample P2-K	Property #2	7/28/2006	4561.646	0.6	1275070.793	600307.719
P2-K hot spot SE corner	Property #2	7/28/2006	4563.755	0.6	1275061.501	600306.834
P2-K hot spot NE corner	Property #2	7/28/2006	4562.913	0.6	1275069.710	600314.509
P2-K hot spot NW corner	Property #2	7/28/2006	4562.095	0.6	1275079.194	600303.742
P2-K hot spot SW corner	Property #2	7/28/2006	4563.518	0.6	1275071.142	600296.805
Sample P2-L	Property #2	6/27/2006	4564.948	2.7	1275205.503	600338.687
Sample P2-M	Property #2	7/27/2006	4569.938	0.6	1275233.475	600344.427
Sample P2-N	Property #2	7/27/2006	4571.293	0.6	1275207.000	600412.271
Sample P2-O	Property #2	7/27/2006	4559.434	0.8	1275183.644	600401.841
Sample P2-P	Property #2	7/27/2006	4563.721	0.8	1275131.169	600387.537
Sample P2-Q	Property #2	7/28/2006	4559.574	0.8	1275011.486	600359.097
P2-Q hot spot NW corner	Property #2	7/28/2006	4554.625	1.0	1275018.734	600363.932
P2-Q hot spot NE corner	Property #2	7/28/2006	4556.486	1.0	1275008.490	600369.582
P2-Q hot spot SE corner	Property #2	7/28/2006	4555.504	1.0	1275004.086	600362.151
P2-Q hot spot SE corner	Property #2	7/28/2006	4555.547	1.0	1275013.949	600355.128
Leach line @ North house	Property #2	7/27/2006	4563.049	0.9	1275141.433	600383.444
Leach line 25 feet SW of North house	Property #2	7/27/2006	4562.200	0.6	1275132.137	600363.407
Leach line 50 feet SW of North house	Property #2	7/27/2006	4563.797	0.6	1275121.358	600341.867
Leach field distribution	Property #2	6/27/2006	4557.928	1.8	1275098.014	600295.018
Electric line @ North house	Property #2	7/27/2006	4564.836	0.7	1275140.697	600383.876
Electric line 25 feet NW of North house	Property #2	7/27/2006	4562.765	0.7	1275159.549	600361.096
Electric line 50 feet NW of North house	Property #2	7/27/2006	4565.413	0.6	1275178.168	600345.347
Gas pipeline SW corner of property	Property #2	8/1/2006	4563.331	0.6	1275012.807	600284.762
Gas pipeline south of Sample P2-J	Property #2	8/1/2006	4565.454	0.5	1274990.828	600170.047
North house NE corner	Property #2	7/27/2006	4566.213	0.7	1275162.317	600426.176
North house SE corner	Property #2	7/27/2006	4568.567	1.0	1275128.379	600420.999
North house NW corner	Property #2	7/27/2006	4564.709	1.0	1275173.007	600393.665
North house SW corner	Property #2	7/27/2006	4561.378	1.0	1275137.979	600383.790
South house NW corner	Property #2	7/27/2006	4562.803	0.7	1275062.307	600394.288
South house SW corner	Property #2	7/27/2006	4568.644	0.9	1275036.300	600385.139
N point of removal area	Property #2	7/28/2006	4565.486	0.7	1275202.243	600183.611
NE point of removal area	Property #2	7/27/2006	4564.375	0.9	1275200.352	600443.937
NW point of removal area	Property #2	7/27/2006	4565.100	0.9	1275251.567	600304.132
SW point of removal area	Property #2	7/28/2006	4563.689	0.7	1275044.879	600148.429
SE point of removal area	Property #2	7/28/2006	4556.121	0.8	1274988.008	600377.313
P2-O hot spot NW corner	Property #2	7/27/2006	4563.819	0.9	1275192.359	600394.493
P2-O hot spot SW corner	Property #2	7/27/2006	4560.606	0.9	1275181.864	600392.607
P2-O hot spot SE corner	Property #2	7/27/2006	4561.763	0.9	1275178.509	600405.040
P2-O hot spot NE corner	Property #2	7/27/2006	4559.625	0.8	1275188.412	600406.940

GPS Point Description	Location	Date	Elevation (ft)	Horiz. Prec (ft)	Northing	Easting
East corner of triangle excavation	Property #2	7/27/2006	4559.152	0.8	1275142.200	600367.085
North corner of triangle excavation	Property #2	7/27/2006	4561.031	0.8	1275167.505	600350.237
South corner of triangle excavation	Property #2	7/27/2006	4559.502	0.8	1275127.842	600334.865
Sample P3-A	Property #3	8/1/2006	4552.047	0.7	1274821.135	600609.108
P3-A hot spot SE corner	Property #3	8/3/2006	4541.738	1.0	1274817.919	600620.909
P3-A hot spot SW corner	Property #3	8/3/2006	4548.564	0.5	1274815.006	600609.637
P3-A hot spot NW corner	Property #3	8/3/2006	4549.274	0.5	1274824.201	600608.901
P3-A hot spot NE corner	Property #3	8/3/2006	4550.224	0.5	1274824.404	600619.813
Sample P3-B	Property #3	8/1/2006	4553.084	0.6	1274861.997	600609.430
P3-B hot spot SE corner	Property #3	8/3/2006	4552.306	0.7	1274857.580	600620.226
P3-B hot spot NE corner	Property #3	8/3/2006	4551.986	0.7	1274867.778	600619.683
P3-B hot spot NW corner	Property #3	8/3/2006	4551.511	0.7	1274867.185	600608.786
P3-B hot spot SW corner	Property #3	8/3/2006	4551.431	0.7	1274855.199	600610.085
Sample P3-C	Property #3	8/1/2006	4555.970	0.7	1274900.345	600607.293
Sample P3-D	Property #3	8/1/2006	4556.647	0.6	1274945.704	600610.338
Sample P3-H	Property #3	8/1/2006	4555.647	0.7	1274942.485	600631.877
P3-H hot spot E corner	Property #3	8/3/2006	4553.851	0.7	1274937.056	600638.686
P3-H hot spot N corner	Property #3	8/3/2006	4554.081	0.7	1274947.533	600635.129
P3-H hot spot W corner	Property #3	8/3/2006	4555.287	0.7	1274941.005	600625.169
P3-H hot spot S corner	Property #3	8/3/2006	4554.983	0.7	1274932.512	600629.947
Sample P3-I	Property #3	8/1/2006	4554.598	0.7	1274901.068	600653.161
Sample P3-K	Property #3	8/1/2006	4557.799	0.7	1274819.967	600631.440
Sample P3-L	Property #3	8/1/2006	4555.450	0.7	1274797.433	600681.503
P3-L hot spot SW corner	Property #3	8/3/2006	4551.371	0.5	1274785.471	600674.746
P3-L hot spot SE corner	Property #3	8/3/2006	4551.272	0.5	1274787.659	600687.559
Sample P3-M	Property #3	8/1/2006	4559.453	0.9	1274866.684	600681.566
P3-M hot spot E corner	Property #3	8/3/2006	4552.138	0.7	1274866.224	600685.952
P3-M hot spot N corner	Property #3	8/3/2006	4551.516	0.7	1274874.847	600677.872
P3-M hot spot SW corner	Property #3	8/3/2006	4551.583	0.7	1274864.251	600676.295
P3-M hot spot SE corner	Property #3	8/3/2006	4550.325	0.7	1274863.936	600682.095
Sample P3-N	Property #3	8/1/2006	4560.243	0.8	1274888.600	600682.727
NW corner of porch	Property #3	8/3/2006	4554.150	0.6	1274864.600	600653.718
NE corner of porch	Property #3	8/3/2006	4552.412	0.6	1274865.301	600665.508
NE corner of house	Property #3	8/3/2006	4552.229	0.5	1274854.481	600692.410
SE corner of house	Property #3	8/3/2006	4555.404	0.7	1274828.055	600693.786
SW corner of house	Property #3	8/3/2006	4551.815	0.6	1274829.884	600627.052
NW corner of house	Property #3	8/3/2006	4552.211	0.6	1274851.863	600627.099
Fence Gate north of house	Property #4	8/3/2006	4547.566	0.8	1274678.085	600670.024
W corner of fence near garden	Property #4	8/3/2006	4548.585	1.0	1274667.537	600663.381
SW corner of fence near garden	Property #4	8/3/2006	4551.899	0.9	1274652.762	600672.098
SE corner of fence near garden	Property #4	8/3/2006	4549.729	0.8	1274656.876	600679.048
S corner of fence south of house	Property #4	8/3/2006	4547.529	0.8	1274620.134	600708.334
SE corner of fence south of house	Property #4	8/3/2006	4547.169	0.8	1274633.780	600728.055
NE corner of house	Property #4	8/3/2006	4551.738	1.0	1274656.310	600725.002
N corner of house	Property #4	8/3/2006	4549.012	0.8	1274687.878	600702.815
W corner of house	Property #4	8/3/2006	4548.397	0.9	1274681.633	600672.473
NW corner of septic tank	Property #4	8/3/2006	4546.712	0.8	1274661.009	600657.186
W corner of south shed	Property #4	8/3/2006	4548.150	0.8	1274608.549	600776.991
S corner of south shed	Property #4	8/3/2006	4547.936	0.8	1274602.372	600782.283
N corner of south shed	Property #4	8/3/2006	4548.803	0.8	1274612.607	600782.919
S corner of north shed	Property #4	8/3/2006	4553.978	0.7	1274716.544	600744.637
W corner of north shed	Property #4	8/3/2006	4557.174	1.0	1274726.810	600738.873
N corner of north shed	Property #4	8/3/2006	4555.186	0.8	1274729.551	600747.297
NE point of removal area	Property #4	8/8/2006	4552.046	0.5	1274715.806	600767.970
SE point of removal area	Property #4	8/8/2006	4546.123	0.5	1274588.468	600772.747
Water line from NW to SE	Property #4	8/8/2006	4546.886	0.5	1274599.127	600769.699
Sample P4-A	Property #4	7/7/2006	4550.800	1.6	1274608.945	600602.459
Sample P4-B	Property #4	6/28/2006	4547.960	1.0	1274642.786	600592.363
Sample P4-C	Property #4	6/28/2006	4547.137	1.0	1274683.145	600592.165
Sample P4-D	Property #4	7/7/2006	4553.713	20.1	1274675.603	600633.080
Sample P4-E	Property #4	7/7/2006	4552.878	20.1	1274637.799	600633.195
Sample P4-F	Property #4	8/9/2006	4549.534	0.5	1274606.223	600631.760
P4-F hot spot W corner	Property #4	8/10/2006	4546.578	0.6	1274615.056	600629.507
P4-F hot spot S corner	Property #4	8/10/2006	4546.316	0.6	1274605.594	600626.401

GPS Point Description	Location	Date	Elevation (ft)	Horiz. Prec (ft)	Northing	Easting
P4-F hot spot E corner	Property #4	8/10/2006	4544.958	0.6	1274602.879	600637.440
P4-F hot spot N corner	Property #4	8/10/2006	4545.721	0.7	1274610.212	600641.594
Sampe P4-G	Property #4	6/28/2006	4551.476	1.5	1274612.553	600677.035
Sample P4-H	Property #4	8/10/2006	4545.143	0.7	1274647.232	600665.148
P4-H hot spot S corner	Property #4	8/10/2006	4546.783	0.7	1274639.207	600663.732
P4-H hot spot E corner	Property #4	8/10/2006	4546.858	0.7	1274643.794	600672.694
P4-H hot spot N corner	Property #4	8/10/2006	4546.966	0.7	1274651.984	600666.019
P4-H hot spot W corner	Property #4	8/10/2006	4548.035	0.7	1274649.891	600659.463
Sample P4-I	Property #4	8/9/2006	4549.403	0.6	1274702.581	600657.878
Sample P4-J	Property #4	8/9/2006	4552.143	0.5	1274707.180	600707.181
P4-J hot spot NE corner	Property #4	8/9/2006	4553.222	0.6	1274713.399	600711.088
P4-J hot spot SE corner	Property #4	8/9/2006	4552.993	0.6	1274704.149	600714.515
P4-J hot spot SW corner	Property #4	8/9/2006	4551.908	0.6	1274700.924	600706.054
P4-J hot spot NW corner	Property #4	8/9/2006	4549.811	0.7	1274711.304	600700.812
Sample P4-K	Property #4	6/28/2006	4555.274	1.7	1274615.298	600717.505
Sample P4-L	Property #4	6/28/2006	4556.601	1.7	1274614.781	600744.716
Sample P4-M	Property #4	7/7/2006	4549.405	20.9	1274652.165	600749.696
Sample P4-N	Property #4	7/7/2006	4553.813	20.0	1274692.820	600749.810
Gas meter @ W side of house	Property #4	7/7/2006	4551.601	1.2	1274646.074	600685.694
SWGAS/house gas line connection	Property #4	7/7/2006	4551.005	1.0	1274559.928	600639.445
25 feet west of SWGAS/house connection	Property #4	7/7/2006	4551.225	1.0	1274581.296	600620.842
50 feet west of SWGAS/house connection	Property #4	7/7/2006	4563.808	18.6	1274599.529	600601.980
25 feet east of SWGAS/house connection	Property #4	7/7/2006	4551.329	1.0	1274544.061	600664.137
Water line from south shed SW	Property #4	7/7/2006	4550.541	0.8	1274580.798	600704.515
NE corner of property #7 boundary	Property #7	5/15/2007	4543.410	5.2	1274410.978	601976.086
SW corner of house	Property #7	5/15/2007	4537.824	6.9	1274256.439	601913.569
NW corner of house	Proerty #7	5/15/2007	4528.817	8.5	1274279.958	601911.516
NE corner of house	Property #7	5/15/2007	4535.131	9.2	1274278.595	601974.177
SE corner of house	Property #7	5/15/2007	4536.092	5.2	1274244.421	601970.322
Sample point by EPA	Property #7	5/15/2007	4530.815	4.3	1274227.211	601953.069
SE corner of septic tank	Property #7	5/15/2007	4529.775	3.9	1274232.429	601956.478
SW corner of septic tank	Property #7	5/15/2007	4532.999	3.9	1274230.853	601950.229
NW corner of septic tank	Property #7	5/15/2007	4530.841	5.2	1274236.109	601951.342
NE corner of septic tank	Property #7	5/15/2007	4539.064	4.6	1274238.416	601955.260
Overhead electric line	Property #7	5/15/2007	4534.420	4.6	1274321.940	601997.662
Overhead electric line at house	Property #7	5/15/2007	4533.855	8.5	1274291.446	601954.597
SW gas line	Property #7	5/15/2007	4535.571	5.2	1274287.894	601967.760
Second overhead electric line point	Property #7	5/15/2007	4520.680	7.9	1274226.820	602056.497
NE corner of excavation	Property #7	5/15/2007	4514.628	4.6	1274234.030	601959.695
NW corner of excavation	Property #7	5/15/2007	4517.455	6.9	1274231.422	601949.216
SW corner of excavation	Property #7	5/15/2007	4518.321	4.9	1274217.529	601950.086
SE corner of excavation	Property #7	5/15/2007	4527.053	8.5	1274219.314	601961.985
SE corner of property #7 boundary	Property #7	5/15/2007	4543.410	7.2	1274223.997	602050.826
Eastern edge of property	Property #7	5/15/2007	4530.572	5.2	1274294.878	601992.881
NE corner of barn	Property #7	5/15/2007	4529.254	5.2	1274278.348	601841.292
NW corner of barn	Property #7	5/15/2007	4524.534	8.5	1274281.092	601815.000
SW corner of barn	Property #7	5/15/2007	4505.152	5.6	1274215.064	601814.222
SE corner of barn	Property #7	5/15/2007	4531.812	5.6	1274231.946	601848.388
Western edge of property	Property #7	5/15/2007	4528.060	5.6	1274235.546	601750.090
Southern edge of property at electric pole	Property #7	5/15/2007	4515.727	13.1	1274131.336	601944.573
SW gas line	Property #7	5/15/2007				
Leach line	Property #7	5/15/2007				
Dead water line to well	Property #7	5/15/2007				

TABLE 6. RECORDS OF SOILS AND GRAVEL TRANSPORTED OUT OF AND IN TO PROPERTIES

PROPERTY	MATERIAL VOLUMES (YARDS^3)		
	TRANSPORTED OUT	TRANSPORTED IN	GRAVEL FOR COVER
2	1,030	1,150	13
3	140	160	22
4	434	500	13
7	8	11	0

APPENDIX A

EPA Administrative Settlement Agreement and Order on Consent for Removal Action

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 9

IN THE MATTER OF:

Iron King Mine Site
Dewey-Humboldt,
Yavapai County, Arizona

Ironite Products Company
Respondent

ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT FOR REMOVAL ACTION

U.S. EPA Region 9
CERCLA Docket No. 2006-13

Proceeding Under Sections 104, 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9604, 9606(a), 9607 and 9622

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I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Settlement Agreement and Order on Consent ("Settlement Agreement") is entered into voluntarily by the United States Environmental Protection Agency ("EPA") and Ironite Products Company ("Respondent"). This Settlement Agreement provides for the performance of a removal action by Respondent at or in connection with 4 residential properties located near the Iron King Mine along the stream corridor known as the Chaparral Gulch in Dewey-Humboldt, Arizona, the "Iron King Mine Site" or the "Site."

2. This settlement Agreement is issued under the authority vested in the President of the United States by Sections 104, 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9604, 9606(a), 9607 and 9622, as amended ("CERCLA").

3. EPA has notified the State of Arizona (the "State") of this action pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

4. EPA and Respondent recognize that this Settlement Agreement has been negotiated in good faith and that the actions undertaken by Respondent in accordance with this Settlement Agreement do not constitute an admission of any liability. Respondent does not admit, and retains the right to controvert in any subsequent proceedings other than proceedings to implement or enforce this Settlement Agreement, the validity of the findings of facts, conclusions of law, and determinations in Sections IV and V of this Settlement Agreement. Respondent agrees to comply with and be bound by the terms of this Settlement Agreement and further agrees that it will not contest with the United States the basis or validity of this Settlement Agreement or its terms.

II. PARTIES BOUND

5. This Settlement Agreement applies to and is binding upon EPA and upon Respondent and its successors and assigns. Any change in ownership or corporate status of a Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter such Respondent's responsibilities under this Settlement Agreement.

6. Respondent shall ensure that its contractors, subcontractors, and representatives receive a copy of this Settlement Agreement and comply with this Settlement Agreement. Respondent shall be responsible for any noncompliance with this Settlement Agreement.

III. DEFINITIONS

7. Unless otherwise expressly provided herein, terms used in this Settlement Agreement which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Settlement Agreement or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

a. "Action Memorandum" shall mean the EPA Action Memorandum relating to the Site signed on April 11, 2006, by the Regional Administrator, EPA Region 9, or his delegate, and all attachments thereto. The Action Memorandum is attached as Appendix 1.

b. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601, *et seq.*

c. "Day" shall mean a calendar day. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.

d. "Effective Date" shall be the effective date of this Order as provided in Section XXXI.

e. "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

f. "Arizona Department of Environmental Quality ("ADEQ")" shall mean the State environmental protection agency and any successor departments or agencies of the State.

g. "Future Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States incurs in reviewing or developing plans, reports and other items pursuant to this Settlement Agreement, verifying the Work, or otherwise implementing, overseeing, or enforcing this Settlement Agreement, including but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to Paragraph 23 (costs and attorneys fees and any monies paid to secure access, including the amount of just compensation), Paragraph 33 (emergency response) , and Paragraph 58 (work takeover).

h. "Interest" shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.

i. "National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

j. "Settlement Agreement" shall mean this Administrative Settlement Agreement and Order on Consent and all appendices attached hereto. In the event of conflict between this Settlement Agreement and any appendix, this Settlement Agreement shall control.

k. "Paragraph" shall mean a portion of this Order identified by an Arabic numeral.

l. "Parties" shall mean EPA and Respondent.

m. "RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901, *et seq.* (also known as the Resource Conservation and Recovery Act).

n. "Respondent" shall mean the Ironite Products Company.

o. "Section" shall mean a portion of this Order identified by a Roman numeral.

p. "Site" shall mean that portion of the Iron King Mine property that includes the Ironite Product Company's property and the Chaparral Gulch Residential area located in the town of Dewey-Humboldt in Yavapai County, Arizona, and depicted generally on the map attached as Appendix 2.

q. "State" shall mean the State of Arizona.

r. "Waste Material" shall mean 1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); 2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); 3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27); and 4) any "hazardous waste" under Arizona Revised Statutes Title 49 § 49-922.

s. "Work" shall mean all activities Respondent is required to perform under this Settlement Agreement.

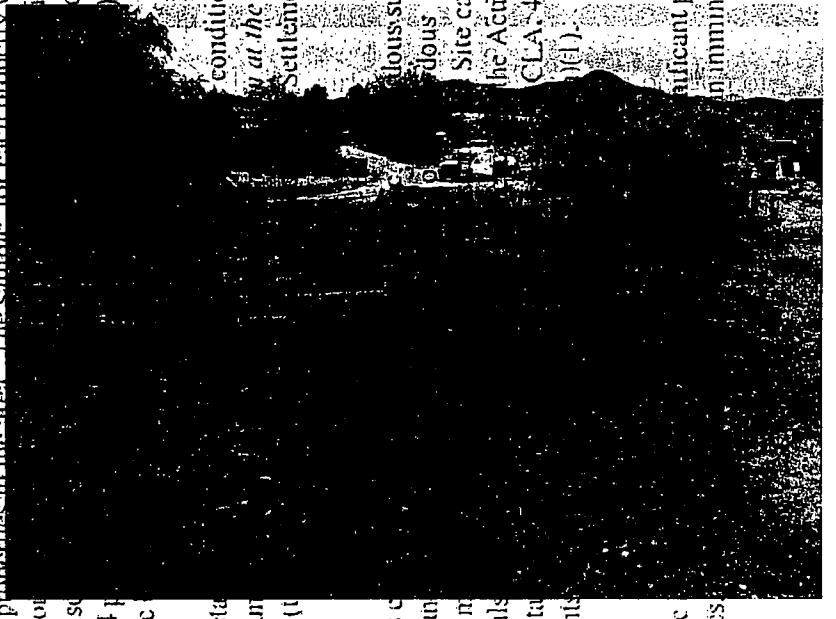
IV. FINDINGS OF FACT

8. The Site includes four privately owned, residential parcels located along the stream corridor known as the Chaparral Gulch in Dewey-Humboldt, Yavapai County, Arizona.

a. The properties are located on both sides of State Highway 69, in the town of Dewey-Humboldt, Arizona. These properties are situated east north east and directly downslope

PROPERTY #4

Backfilling and compaction of the western portion of Property #4. View toward the north from southern edge of removal area.



Completed backfill and surface grade in southern portion of Property #4. View toward the east.

substantial endangerment to the residents that occupy the Site and people engaging in recreational activities on or in close proximity to the Site.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

9. Based on the Findings of Fact set forth above, and the Administrative Record supporting this removal action, EPA has determined that:

a. The Iron King Mine Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

b. The contamination found at the Site, as identified in the Findings of Fact above, includes a "hazardous substance" as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

c. Respondent is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

d. Respondent is a responsible party under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and is liable for performance of a response action and for response costs incurred and to be incurred at the Site. Respondent is the "owner" and "operator" of the facility, as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and within the meaning of Section 107(a)(1) of CERCLA, 42 U.S.C. § 9607(a)(1), from which a hazardous substance was released to the Site.

e. The conditions described in the Findings of Fact above constitute an actual or threatened "release" of a hazardous substance from the facility as defined by Section 101(22) of CERCLA, 42 U.S.C.§ 9601(22).

f. The removal action required by this Settlement Agreement is necessary to protect the public health, welfare, or the environment and, if carried out in compliance with the terms of this Settlement Agreement, will be considered consistent with the NCP, as provided in Section 300.700(c)(3)(ii) of the NCP.

VI. SETTLEMENT AGREEMENT AND ORDER

Based upon the foregoing Findings of Fact, Conclusions of Law, Determinations, and the Administrative Record for this Site, it is hereby Ordered and Agreed that Respondent shall comply with all provisions of this Settlement Agreement, including, but not limited to, all attachments to this Settlement Agreement and all documents incorporated by reference into this Settlement Agreement.

VII. DESIGNATION OF CONTRACTOR, PROJECT COORDINATOR, AND ON-SCENE COORDINATOR

10. Respondent shall retain one or more contractors to perform the Work and shall notify EPA of the name(s) and qualifications of such contractor(s) within 3 days of the Effective Date. Respondents shall also notify EPA of the name(s) and qualification(s) of any other contractor(s) or subcontractor(s) retained to perform the Work at least 5 days prior to commencement of such Work. EPA retains the right to disapprove of any or all of the contractors and/or subcontractors retained by Respondent. If EPA disapproves of a selected contractor, Respondent shall retain a different contractor and shall notify EPA of that contractor's name and qualifications within 10 days of EPA's disapproval. The proposed contractor must demonstrate compliance with ANSI/ASQC E-4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (American National Standard, January 5, 1995), by submitting a copy of the proposed contractor's Quality Management Plan ("QMP"). The QMP should be prepared in accordance with "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B0-1/002), or equivalent documentation as required by EPA. Any decision not to require submission of the contractor's QMP should be documented in a memorandum from the OSC and Regional QA personnel to the Site file.

11. Within 3 days after the Effective Date, Respondent shall designate a Project Coordinator who shall be responsible for administration of all actions by Respondents required by this Settlement Agreement and shall submit to EPA the designated Project Coordinator's name, address, telephone number, and qualifications. To the greatest extent possible, the Project Coordinator shall be present on Site or readily available during Site work. EPA retains the right to disapprove of the designated Project Coordinator. If EPA disapproves of the designated Project Coordinator, Respondent shall retain a different Project Coordinator and shall notify EPA of that person's name, address, telephone number, and qualifications within 10 days following EPA's disapproval. Receipt by Respondent's Project Coordinator of any notice or communication from EPA relating to this Settlement Agreement shall constitute receipt by all Respondents.

12. EPA has designated Harry Allen of the Emergency Response Section, Response, Planning and Assessment Branch of the Superfund Division, Region 9, as its On-Scene Coordinator ("OSC"). EPA designates Daniel Suter and Hedy Salter as alternate OSCs

in the event Harry Allen is not present at the Site or is otherwise unavailable. During such times, these alternate OSC's are available and have the authority vested in the OSC by the NCP. Except as otherwise provided in this Order, Respondent shall direct all submissions required by this Order to the OSC by over-night mail with a electronic copy by email to the OSC at the following address:

Harry Allen, Federal On-Scene Coordinator
Superfund Division, SFD-9-2
EPA, Region 9
75 Hawthorne Street
San Francisco, CA 94105
allen.harryl@epa.gov

Respondent shall submit two (2) paper copies of each document to EPA.

13. EPA and Respondent shall have the right, subject to Paragraph 11, to change their respective designated OSC or Project Coordinator. Respondent shall notify EPA 3 days before such a change is made. The initial notification may be made orally, but shall be promptly followed by a written notice.

VIII. WORK TO BE PERFORMED

14. Respondent shall perform, at a minimum, all actions necessary to implement the Action Memorandum. The actions to be implemented generally include, but are not limited to, the following:

a. Removal of surficial contamination by excavating soil within the existing sampling grids to achieve a concentration of 23 ppm arsenic or less at the excavation surface unless an alternative concentration is approved by EPA and documented in an amendment to the Action Memorandum.

b. Confirmation sampling and analysis using laboratory analyses.

c. Transport and disposal of excavated material on-site at an EPA approved location on the Ironite property or at an EPA approved off-site facility. Disposal of contaminated soils shall be at the direction of the OSC, and pursuant to the EPA approved Work Plan. Any off-site disposal shall be consistent with EPA's procedures for planning and implementing off-site response actions at 40 CFR 300.440.

d. Replacement of excavated material with clean fill and restoration of each property to pre-removal conditions replacing patios, fences, trees and shrubs if necessary.

e. Provide community relations support to the affected residents in coordination with EPA's community involvement program.

f. Provide EPA a weekly progress report that summarizes work performed and work planned for the upcoming period, and which includes copies of all documentation related to confirmation sampling, off-site disposal or other disposition of wastes including, but not limited to, manifests, waste profiles and analytical data, and disposal costs.

Under circumstances where special considerations are appropriate for the scope of the residential excavation, such as risk to property or significant duress for the resident, an alternative approach to the excavation extent may be deemed appropriate as determined by EPA.

15. Work Plan and Implementation.

a. Within 10 days after the Effective Date, Respondent shall submit to EPA for approval a draft Work Plan for performing the removal action generally described in Paragraph 14 above. The draft Work Plan shall provide a description of, and an expeditious schedule for, the actions required by this Order. Respondent shall prepare a Quality Assurance Project Plan ("QAPP") as part of the Work Plan. The QAPP should be prepared in accordance with "EPA Requirements for Quality Assurance Project Plans (QA/R-5)" (EPA/240/B-01/003, March 2001), and "EPA Guidance for Quality Assurance Project Plans (QA/G-5)" (EPA/600/R-98/018, February 1998).

b. EPA may approve, disapprove, require revisions to, or modify the draft Work Plan in whole or in part. If EPA requires revisions, Respondent shall submit a revised draft Work Plan within 3 days of receipt of EPA's notification of the required revisions. Respondent shall implement the Work Plan as approved in writing by EPA in accordance with the schedule approved by EPA. Once approved, or approved with modifications, the Work Plan, the schedule, and any subsequent modifications shall be incorporated into and become fully enforceable under this Order.

c. Respondent shall not commence any Work except in conformance with the terms of this Settlement Agreement. Respondent shall not commence implementation of the Work Plan developed hereunder until receiving written EPA approval pursuant to Paragraph 15(b).

16. Health and Safety Plan. Within 10 days after the Effective Date, Respondent shall submit for EPA review and comment a plan that ensures the protection of the public health and safety during performance of on-Site work under this Settlement Agreement. This plan shall be prepared in accordance with EPA's Standard Operating Safety Guide (PUB 9285.1-03, PB 92-963414, June 1992). In addition, the plan shall comply with all currently applicable Occupational Safety and Health Administration ("OSHA") regulations found at 29 C.F.R. Part 1910. If EPA

determines that it is appropriate, the plan shall also include contingency planning. Respondent shall incorporate all changes to the plan recommended by EPA and shall implement the plan during the pendency of the removal action.

17. Quality Assurance and Sampling.

a. All sampling and analyses performed pursuant to this Settlement Agreement shall conform to EPA direction, approval, and guidance regarding sampling, quality assurance/quality control ("QA/QC"), data validation, and chain of custody procedures. Respondents shall ensure that the laboratory used to perform the analyses participates in a QA/QC program that complies with the appropriate EPA guidance. Respondent shall follow, as appropriate, "Quality Assurance/Quality Control Guidance for Removal Activities: Sampling QA/QC Plan and Data Validation Procedures" (OSWER Directive No. 9360.4-01, April 1, 1990), EPA Guidance for Quality Assurance Project Plans (EPA QA/G-5), Preparation of a U.S. EPA Region 9 Field Sample Plan for EPA-Lead Superfund Projects (Document Control No. 9QA-05-93) and Guidance for the Data Quality Objectives Process (EPA QA/G-4). Soil sampling activities shall utilize proper soil assessment techniques as defined in EPA Document SW-846, Chapter 9 (EPA Environmental Response Team Standard Operating Procedures) or appropriate ASTM standards as guidance for QA/QC and sampling. Respondent shall only use laboratories that have a documented Quality System that complies with ANSI/ASQC E-4 1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (American National Standard, January 5, 1995), and "EPA Requirements for Quality Management Plans (QA/R-2) (EPA/240/B-01/002, March 2001)," or equivalent documentation as determined by EPA. EPA may consider laboratories accredited under the National Environmental Laboratory Accreditation Program ("NELAP") as meeting the Quality System requirements.

b. Upon request by EPA, Respondent shall have such a laboratory analyze samples submitted by EPA for QA monitoring. Respondents shall provide to EPA the QA/QC procedures followed by all sampling teams and laboratories performing data collection and/or analysis.

c. Upon request by EPA, Respondent shall allow EPA or its authorized representatives to take split and/or duplicate samples. Respondents shall notify EPA not less than 5 days in advance of any sample collection activity, unless shorter notice is agreed to by EPA. EPA shall have the right to take any additional samples that EPA deems necessary. Upon request, EPA shall allow Respondent to take split or duplicate samples of any samples it takes as part of its oversight of Respondent's implementation of the Work.

18. Post-Removal Site Control. In accordance with the Work Plan schedule, or as otherwise directed by EPA, Respondent shall submit a proposal for post-removal site control consistent with Section 300.415(*l*) of the NCP and OSWER Directive No. 9360.2-02. Upon EPA approval, Respondent shall implement such controls and shall provide EPA with documentation of all post-removal site control arrangements.

19. Reporting.

a. Respondent shall submit weekly written progress reports to EPA each Monday concerning actions undertaken pursuant to this Settlement Agreement after the date of receipt of EPA's approval of the Work Plan until termination of this Order, unless otherwise directed in writing by the OSC. These reports shall describe all significant developments during the preceding period, including the actions performed and any problems encountered, analytical data received during the reporting period, and the developments anticipated during the next reporting period, including a schedule of actions to be performed, anticipated problems, and planned resolutions of past or anticipated problems.

b. Respondent shall submit 2 copies of all plans, reports or other submissions required by this Settlement Agreement, or any approved work plan. Respondent shall also submit all documents in electronic form.

c. Any Respondent who owns or controls property at the Site shall, at least 30 days prior to the conveyance of any interest in real property at the Site, give written notice to the transferee that the property is subject to this Settlement Agreement and written notice to EPA and the State of the proposed conveyance, including the name and address of the transferee. Any Respondent who owns or controls property at the Site also agree to require that their successors comply with the immediately proceeding sentence and Sections IX (Site Access) and X (Access to Information).

20. Final Report. Within 60 days after completion of all Work required by this Settlement Agreement, Respondent shall submit for EPA review and approval a final report summarizing the actions taken to comply with this Settlement Agreement. The final report shall conform, at a minimum, with the requirements set forth in Section 300.165 of the NCP entitled "OSC Reports." The final report shall also conform with "Superfund Removal Procedures: Removal Response Reporting – POLREPS and OSC Reports" (OSWER Directive No. 9360.3-03, June 1, 1994). The final report shall include a good faith estimate of total costs or a statement of actual costs incurred in complying with the Settlement Agreement, a listing of quantities and types of materials removed off-Site or handled on-Site, a discussion of removal and disposal options considered for those materials, a listing of the ultimate destination(s) of those materials, a presentation of the analytical results of all sampling and analyses performed, and accompanying appendices containing all relevant documentation generated during the removal action (*e.g.*, manifests, invoices, bills, contracts, and permits). The final report shall also include the following certification signed by a person who supervised or directed the preparation of that report:

> "Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

21. Off-Site Shipments.

a. Respondent shall, prior to any off-Site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notification of such shipment of Waste Material to the appropriate state environmental official in the receiving facility's state and to the On-Scene Coordinator. However, this notification requirement shall not apply to any off-Site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

i. Respondent shall include in the written notification the following information: 1) the name and location of the facility to which the Waste Material is to be shipped; 2) the type and quantity of the Waste Material to be shipped; 3) the expected schedule for the shipment of the Waste Material: and 4) the method of transportation. Respondent shall notify the state in which the planned receiving facility is located of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

ii. The identity of the receiving facility and state will be determined by Respondent following the award of the contract for the removal action. Respondent shall provide the information required by Paragraph 21(a) and 21(b) as soon as practicable after the award of the contract and before the Waste Material is actually shipped.

b. Before shipping any hazardous substances, pollutants, or contaminants from the Site to an off-site location, Respondent shall obtain EPA's certification that the proposed receiving facility is operating in compliance with the requirements of CERCLA Section 121(d)(3), 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. Respondent shall only send hazardous substances, pollutants, or contaminants from the Chaparral Gulch residential area to an EPA approved location on-site or to an off-site facility that complies with the requirements of the statutory provision and regulation cited in the preceding sentence.

IX. SITE ACCESS

22. If the Site, or any other property where access is needed to implement this Settlement Agreement, is owned or controlled by the Respondent, the Respondent shall, commencing on the Effective Date, provide EPA and its representatives, including contractors, with access at all reasonable times to the Site, or such other property, for the purpose of conducting any activity related to this Settlement Agreement.

23. Where any action under this Settlement Agreement is to be performed in areas owned by or in possession of someone other than Respondent, Respondent shall use its best efforts to obtain all necessary access agreements within 10 days after the Effective Date, or as otherwise specified in writing by the OSC. Respondent shall immediately notify EPA if after using their best efforts they are unable to obtain such agreements. For purposes of this Paragraph, "best efforts"

includes the payment of reasonable sums of money in consideration of access. Respondent shall describe in writing their efforts to obtain access. EPA may then assist Respondent in gaining access, to the extent necessary to effectuate the response actions described herein, using such means as EPA deems appropriate. Respondent shall reimburse EPA for all costs and attorney's fees incurred by the United States in obtaining such access, in accordance with the procedures in Section XV (Payment of Response Costs).

24. Notwithstanding any provision of this Settlement Agreement, EPA and the State retain all of their access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

X. ACCESS TO INFORMATION

25. Respondent shall provide to EPA and the State, upon request, copies of all documents and information within its possession or control or that of its contractors or agents relating to activities at the Site or to the implementation of this Settlement Agreement, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Respondent shall also make available to EPA and the State, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

26. Respondent may assert business confidentiality claims covering part or all of the documents or information submitted to EPA and the State under this Order to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when they are submitted to EPA and the State, or if EPA has notified Respondent that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such documents or information without further notice to Respondent.

27. Respondent may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Respondent asserts such a privilege in lieu of providing documents, it shall provide EPA and the State with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the contents of the document, record, or information; and 6) the privilege asserted by Respondent. However, no documents, reports or other information created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

28. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the Site.

XI. RECORD RETENTION

29. Until 10 years after Respondent's receipt of EPA's notification pursuant to Section XXIX (Notice of Completion of Work), each Respondent shall preserve and retain all non-identical copies of records and documents (including records or documents in electronic form) now in its possession or control or which come into its possession or control that relate in any manner to the performance of the Work or the liability of any person under CERCLA with respect to the Site, regardless of any corporate retention policy to the contrary. Until 10 years after Respondents's receipt of EPA's notification pursuant to Section XXIX (Notice of Completion of Work), Respondent shall also instruct their contractors and agents to preserve all documents, records, and information of whatever kind, nature or description relating to performance of the Work.

30. At the conclusion of this document retention period, Respondent shall notify EPA and the State at least 90 days prior to the destruction of any such records or documents, and, upon request by EPA or the State, Respondent shall deliver any such records or documents to EPA or the State. Respondent may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Respondent asserts such a privilege, it shall provide EPA or the State with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the subject of the document, record, or information; and 6) the privilege asserted by Respondent. However, no documents, reports or other information created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

31. Each Respondent hereby certifies individually that to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by EPA or the State or the filing of suit against it regarding the Site and that it has fully complied with any and all EPA requests for information pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927.

XII. COMPLIANCE WITH OTHER LAWS

32. Respondent shall perform all actions required pursuant to this Settlement Agreement in accordance with all applicable local, state, and federal laws and regulations except as provided in Section 121(e) of CERCLA, 42 U.S.C. § 6921(e), and 40 C.F.R. §§ 300.400(e) and 300.415(j). In accordance with 40 C.F.R. § 300.415(j), all on-Site actions required pursuant to this

Settlement Agreement shall, to the extent practicable, as determined by EPA, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements ("ARARs") under federal environmental or state environmental or facility siting laws. Respondent shall identify ARARs in the Work Plan subject to EPA approval.

XIII. EMERGENCY RESPONSE AND NOTIFICATION OF RELEASES

33. In the event of any action or occurrence during performance of the Work which causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Respondent shall immediately take all appropriate action. Respondent shall take these actions in accordance with all applicable provisions of this Settlement Agreement, including, but not limited to, the Health and Safety Plan, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. Respondent shall also immediately notify the OSC or, in the event of his/her unavailability, the Regional Duty Officer at the EPA Regional Emergency 24-hour telephone number (1-800-300-2193) of the incident or Site conditions. In the event that Respondent fail to take appropriate response action as required by this Paragraph, and EPA takes such action instead, Respondent shall reimburse EPA all costs of the response action not inconsistent with the NCP pursuant to Section XV (Payment of Response Costs).

34. In addition, in the event of any release of a hazardous substance from the Site, Respondent shall immediately notify the OSC at (415) 972-3063 and the National Response Center at (800) 424-8802. Respondent shall submit a written report to EPA within 5 days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103 of CERCLA, 42 U.S.C. § 9603, and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, *et seq.*

XIV. AUTHORITY OF ON-SCENE COORDINATOR

35. The OSC shall be responsible for overseeing Respondent's implementation of this Settlement Agreement. The OSC shall have the authority vested in an OSC by the NCP, including the authority to halt, conduct, or direct any Work required by this Settlement Agreement, or to direct any other removal action undertaken at the Site. Absence of the OSC from the Site shall not be cause for stoppage of work unless specifically directed by the OSC.

XV. PAYMENT OF RESPONSE COSTS

36. Payments for Future Response Costs.

a. Respondent shall pay EPA all Future Response Costs not inconsistent with the NCP. On a periodic basis, EPA will send Respondent a bill requiring payment that includes a Regionally-prepared cost summary, which includes direct and indirect costs incurred by EPA and its contractors. Respondent shall make all payments within 30 days of receipt of each bill requiring payment, except as otherwise provided in Paragraph 38 of this Settlement Agreement.

b. Respondents shall make all payments required by this Paragraph by a certified or cashier's check or checks made payable to "EPA Hazardous Substance Superfund," referencing the name and address of the party making payment and EPA Site/Spill ID number **09NU**. Respondent shall send the check(s) to the following address:.

U.S. Environmental Protection Agency
Region 9 Superfund
P.O. Box 371099M
Pittsburgh, PA 15251

c. At the time of payment, Respondents shall send a cover letter with any check and the letter shall identify the Iron King Mine Site by name and make reference to this Settlement Agreement, including the EPA docket number stated above (Docket No. 2000-13). Respondent shall send notification of any amount paid, including a photocopy of the check, simultaneously to the EPA OSC.

d. The total amount to be paid by Respondent pursuant to Paragraph 36(a) shall be deposited in the Iron King Mine - Humboldt Smelter Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

37. In the event that the payments for Future Response Costs are not made within 30 days of Respondent's receipt of a bill, Respondent shall pay Interest on the unpaid balance. The Interest on Future Response Costs shall begin to accrue on the date of the bill and shall continue to accrue until the date of payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondent's failure to make timely payments under this Section, including but not limited to, payment of stipulated penalties pursuant to Section XVIII.

38. Respondent may dispute all or part of a bill for Future Response Costs submitted under this Order, if Respondent alleges that EPA has made an accounting error, or if Respondent alleges that a cost item is inconsistent with the NCP. If any dispute over costs is resolved before payment is due, the amount due will be adjusted as necessary. If the dispute is not resolved before payment is due, Respondent shall pay the full amount of the uncontested costs to EPA as specified in Paragraph 36 on or before the due date. Within the same time period, Respondent shall pay the full amount of the contested costs into an interest-bearing escrow account. Respondent shall simultaneously transmit a copy of both checks to the persons listed in Paragraph 36 above. Respondent shall ensure that the prevailing party or parties in the dispute shall receive the amount upon which they prevailed from the escrow funds plus interest within 10 days after the dispute is resolved.

XVI. DISPUTE RESOLUTION

39. Unless otherwise expressly provided for in this Settlement Agreement, the dispute resolution procedures of this Section shall be the exclusive mechanism for resolving disputes arising under this Settlement Agreement. The Parties shall attempt to resolve any disagreements concerning this Settlement Agreement expeditiously and informally.

40. If Respondent objects to any EPA action taken pursuant to this Settlement Agreement, including billings for Future Response Costs, they shall notify EPA in writing of their objection(s) within 5 days of such action, unless the objection(s) has/have been resolved informally. EPA and Respondents shall have 10 days from EPA's receipt of Respondent's written objection(s) to resolve the dispute through formal negotiations (the "Negotiation Period"). The Negotiation Period may be extended at the sole discretion of EPA.

41. Any agreement reached by the parties pursuant to this Section shall be in writing and shall, upon signature by both parties, be incorporated into and become an enforceable part of this Settlement Agreement. If the Parties are unable to reach an agreement within the Negotiation Period, an EPA management official at the Section Chief level or higher will issue a written decision on the dispute to Respondent. EPA's decision shall be incorporated into and become an enforceable part of this Settlement Agreement. Respondent's obligations under this Settlement Agreement shall not be tolled by submission of any objection for dispute resolution under this Section. Following resolution of the dispute, as provided by this Section, Respondent shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with EPA's decision, whichever occurs.

XVII. FORCE MAJEURE

42. Respondent agrees to perform all requirements of this Settlement Agreement within the time limits established under this Settlement Agreement, unless the performance is delayed by a *force majeure*. For purposes of this Settlement Agreement, a *force majeure* is defined as any event arising from causes beyond the control of Respondent, or of any entity controlled by Respondent, including but not limited to its contractors and subcontractors, which delays or prevents performance of any obligation under this Settlement Agreement despite Respondent's best efforts to fulfill the obligation. *Force majeure* does not include financial inability to complete the Work, or increased cost of performance, or a failure to attain action levels set forth in the Action Memorandum.

43. If any event occurs or has occurred that may delay the performance of any obligation under this Settlement Agreement, whether or not caused by a *force majeure* event, Respondent shall notify EPA orally within 24 hours of when Respondent first knew that the event might cause a delay. Within 3 days thereafter, Respondent shall provide to EPA in writing an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Respondent's rationale for attributing such delay to a *force majeure* event if it intends to assert such a claim; and a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health, welfare or the environment. Failure to comply with the above requirements shall preclude Respondent from asserting any claim of *force majeure* for that event for the period of time of such failure to comply and for any additional delay caused by such failure.

44. If EPA agrees that the delay or anticipated delay is attributable to a *force majeure* event, the time for performance of the obligations under this Settlement Agreement that are affected by the *force majeure* event will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the *force majeure* event shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a *force majeure* event, EPA will notify Respondent in writing of its decision. If EPA agrees that the delay is attributable to a *force majeure* event, EPA will notify Respondent in writing of the length of the extension, if any, for performance of the obligations affected by the *force majeure* event.

XVIII. STIPULATED PENALTIES

45. Respondent shall be liable to EPA for stipulated penalties in the amounts set forth in Paragraphs 46 and 47 for failure to comply with the requirements of this Settlement Agreement specified below, unless excused under Section XVII (*Force Majeure*). "Compliance" by Respondent shall include completion of the activities under this Settlement Agreement or any work plan or other plan approved under this Settlement Agreement identified below in accordance with all applicable requirements of law, this Settlement Agreement, and any plans or other documents

approved by EPA pursuant to this Settlement Agreement and within the specified time schedules established by and approved under this Settlement Agreement.

46. Stipulated Penalty Amounts - Work.

a. The following stipulated penalties shall accrue per violation per day for any noncompliance identified in Paragraph 46(b):

Penalty Per Violation Per Day	Period of Noncompliance
$ 1,000.00	1st through 14th day
$ 5,000.00	15th through 30th day
$ 10,000.00	31st day and beyond

b. Compliance Milestones:

I. The Respondent shall prepare and submit the Work Plan by 10 days after the Effective Date.

ii. The Respondent shall mobilize to the Site one week after EPA approval of the Work Plan.

iii. All work on the Site shall be completed by August 1, 2006 unless EPA at its sole discretion extends the period in writing.

iv. A final report for the Site shall be completed and submitted by 60 days after the Work is completed.

47. Stipulated Penalty Amounts - Reports.

The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate reports or other written documents pursuant to Paragraphs 14, 15,16,19, 20, 21, 30, 33 and 34:

Penalty Per Violation Per Day	Period of Noncompliance
$ 1,000.00	1st through 14th day
$ 5,000.00	15th through 30th day
$ 10,000.00	31st day and beyond

48. In the event that EPA assumes performance of a portion or all of the Work pursuant to Paragraph 58 of Section XX, Respondents shall be liable for a stipulated penalty in the amount of $500,000.00.

49. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. However, stipulated penalties shall not accrue: 1) with respect to a deficient submission under Section VIII (Work to be Performed), during the period, if any, beginning on the 31st day after EPA's receipt of such submission until the date that EPA notifies Respondent of any deficiency; and 2) with respect to a decision by the EPA Management Official at the Section Chief level or higher, under Paragraph 41 of Section XVI (Dispute Resolution), during the period, if any, beginning on the 21st day after the Negotiation Period begins until the date that the EPA management official issues a final decision regarding such dispute. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Settlement Agreement.

50. Following EPA's determination that Respondent has failed to comply with a requirement of this Settlement Agreement, EPA may give Respondent written notification of the failure and describe the noncompliance. EPA may send Respondent a written demand for payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraphs regardless of whether EPA has notified Respondent of a violation.

51. All penalties accruing under this Section shall be due and payable to EPA within 30 days of Respondent's receipt from EPA of a demand for payment of the penalties, unless Respondent invoke the dispute resolution procedures under Section XVI (Dispute Resolution). All payments to EPA under this Section shall be paid by certified or cashier's check(s) made payable to "EPA Hazardous Substances Superfund," shall be mailed to [insert the Regional Lockbox number and address], shall indicate that the payment is for stipulated penalties, and shall reference the EPA Region and Site/Spill ID Number 09NU, the EPA Docket Number 2006-13, and the name and address of the party making payment. Copies of check(s) paid pursuant to this Section, and any accompanying transmittal letter(s), shall be sent to EPA as provided in Paragraph 12, and to the OSC.

52. The payment of penalties shall not alter in any way Respondent's obligation to complete performance of the Work required under this Settlement Agreement.

53 Penalties shall continue to accrue during any dispute resolution period, but need not be paid until 15 days after the dispute is resolved by agreement or by receipt of EPA's decision.

54. If Respondent fail to pay stipulated penalties when due, EPA may institute proceedings to collect the penalties, as well as Interest. Respondent shall pay Interest on the unpaid balance, which shall begin to accrue on the date of demand made pursuant to Paragraph 50. Nothing in this Order shall be construed as prohibiting, altering, or in any way limiting the ability of EPA to seek any other remedies or sanctions available by virtue of Respondent's violation of this Order or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Sections 106(b) and 122(*l*) of CERCLA, 42 U.S.C. §§ 9606(b) and 9622(*l*), and punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Provided, however, that EPA shall not seek civil penalties pursuant to Section 106(b) or 122(*l*) of CERCLA or punitive damages pursuant to Section 107(c)(3) of CERCLA for any violation for which a stipulated penalty is provided herein, except in the case of a willful violation of this Settlement Agreement or in the event that EPA assumes performance of a portion or all of the Work pursuant to Section XX, Paragraph 58. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Settlement Agreement.

XIX. COVENANT NOT TO SUE BY EPA

55. In consideration of the actions that will be performed and the payments that will be made by Respondent under the terms of this Settlement Agreement, and except as otherwise specifically provided in this Settlement Agreement, EPA covenants not to sue or to take administrative action against Respondent pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), for the Work and for Future Response Costs. This covenant not to sue shall take effect upon the Effective Date and is conditioned upon the complete and satisfactory performance by Respondent of all obligations under this Settlement Agreement, including, but not limited to, payment of Future Response Costs pursuant to Section XV. This covenant not to sue extends only to Respondent and does not extend to any other person.

XX. RESERVATIONS OF RIGHTS BY EPA

56. Except as specifically provided in this Settlement Agreement, nothing herein shall limit the power and authority of EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing herein shall prevent EPA from seeking legal or equitable relief to enforce the terms of this Settlement Agreement, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring Respondent in the future to perform additional activities pursuant to CERCLA or any other applicable law.

57. The covenant not to sue set forth in Section XIX above does not pertain to any matters other than those expressly identified therein. EPA reserves, and this Settlement Agreement is without prejudice to, all rights against Respondent with respect to all other matters, including, but not limited to:

a. claims based on a failure by Respondent to meet a requirement of this Settlement Agreement;

b. liability for costs not included within the definition of Future Response Costs;

c. liability for performance of response actions other than the Work;

d. criminal liability;

e. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;

f. liability arising from the past, present, or future disposal, release or threat of release of Waste Materials outside of the Site; and

g. liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Site.

58. Work Takeover. In the event EPA determines that Respondent has ceased implementation of any portion of the Work, are seriously or repeatedly deficient or late in their performance of the Work, or are implementing the Work in a manner which may cause an endangerment to human health or the environment, EPA may assume the performance of all or any portion of the Work as EPA determines necessary. Respondent may invoke the procedures set forth in Section XVI (Dispute Resolution) to dispute EPA's determination that takeover of the Work is warranted under this Paragraph. Costs incurred by the United States in performing the Work pursuant to this Paragraph shall be considered Future Response Costs that Respondent shall pay pursuant to Section XV (Payment of Response Costs). Notwithstanding any other provision of this Settlement Agreement, EPA retains all authority and reserves all rights to take any and all response actions authorized by law.

XXI. COVENANT NOT TO SUE BY RESPONDENTS

59. Respondent covenants not to sue and agrees not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to the Work, Future Response Costs, or this Settlement Agreement, including, but not limited to:

a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund established by 26 U.S.C. § 9507, based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;

b. any claim arising out of response actions at or in connection with the Site, including any claim under the United States Constitution, the State Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law; or

c. any claim against the United States pursuant to Sections 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, relating to the Site.

Except as provided in Paragraph 61 (Waiver of Claims), these covenants not to sue shall not apply in the event the United States brings a cause of action or issues an order pursuant to the reservations set forth in Paragraphs 57 (b),©, and (e) - (g), but only to the extent that Respondent's claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

60. Nothing in this Agreement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

61. Respondents agree not to assert any claims and to waive all claims or causes of action that they may have for all matters relating to the Site, including for contribution, against any person where the person's liability to Respondent with respect to the Site is based solely on having arranged for disposal or treatment, or for transport for disposal or treatment, of hazardous substances at the Site, or having accepted for transport for disposal or treatment of hazardous substances at the Site, if

a. the materials contributed by such person to the Site containing hazardous substances did not exceed the greater of I) 0.002% of the total volume of waste at the Site, or ii) 110 gallons of liquid materials or 200 pounds of solid materials.

b. This waiver shall not apply to any claim or cause of action against any person meeting the above criteria if EPA has determined that the materials contributed to the Site by such person contributed or could contribute significantly to the costs of response at the Site.

XXII. OTHER CLAIMS

62. By issuance of this Settlement Agreement, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondent. The United States or EPA shall not be deemed a party to any contract entered into by Respondent or their directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out actions pursuant to this Settlement Agreement.

63. Except as expressly provided in Section XXI, and Section XIX (Covenant Not to Sue by EPA), nothing in this Settlement Agreement constitutes a satisfaction of or release from any claim or cause of action against Respondent or any person not a party to this Order, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106 and 107 of CERCLA. 42 U.S.C. §§ 9606 and 9607.

64. No action or decision by EPA pursuant to this Settlement Agreement shall give rise to any right to judicial review, except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XXIII. CONTRIBUTION

65.

a. The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(2) of CERCLA, 42 U.S.C. § 9613 (f)(2), and that Respondent is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), for "matters addressed" in this Settlement Agreement. The "matters addressed" in this Settlement Agreement are the Work and Future Response Costs.

b. The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(3)(B)of CERCLA, 42 U.S.C. § 9613 (f)(3)(B), pursuant to which Respondent has, as of the Effective Date, resolved its liability to the United States for the Work and Future Response Costs.

c. Except as provided in Section XXI of this Settlement Agreement, nothing in this Settlement Agreement precludes the United States or Respondent from asserting any claims, causes of action, or demands for indemnification, contribution or cost recovery against any persons not parties to this Settlement Agreement. Nothing herein diminishes the right of the United States, pursuant to Sections 113(f)(2) and (3) of CERCLA, 42 U.S.C. § 9613 (f)(2)-(3), to pursue any such persons to obtain additional response costs or response action and to enter into settlements that give rise to contribution protection pursuant to Section 113(f)(2).

XXIV. INDEMNIFICATION

66. Respondent shall indemnify, save and hold harmless the United States, its officials, agents, contractors, subcontractors, employees and representatives from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Respondents, their officers, directors, employees, agents, contractors, or subcontractors, in carrying out actions pursuant to this Settlement Agreement. In addition, Respondent agrees to pay the United States all costs incurred by the United States, including but not limited to attorneys fees and other expenses of litigation and settlement, arising from or on account of claims made against the United States based on negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, subcontractors and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Settlement Agreement. The United States shall not be held out as a party to any contract entered into by or on behalf of Respondent in carrying out activities pursuant to this Settlement Agreement. Neither Respondent nor any such contractor shall be considered an agent of the United States.

67. The United States shall give Respondent notice of any claim for which the United States plans to seek indemnification pursuant to this Section and shall consult with Respondent prior to settling such claim.

68. Respondents waive all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between any one or more of Respondents and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Respondents shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more of Respondents and any person for performance of Work on or relating

to the Site, including, but not limited to, claims on account of construction delays.

XXV. INSURANCE

69. At least 7 days prior to commencing any on-Site work under this Order, Respondent shall secure, and shall maintain for the duration of this Order, comprehensive general liability insurance and automobile insurance with limits of one million dollars, combined single limit. Within the same time period, Respondent shall provide EPA with certificates of such insurance and a copy of each insurance policy. In addition, for the duration of the Settlement Agreement, Respondent shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Respondent in furtherance of this Settlement Agreement. If Respondent demonstrates by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the same risks but in an equal or lesser amount, then Respondent need provide only that portion of the insurance described above which is not maintained by such contractor or subcontractor.

XXVI. FINANCIAL ASSURANCE

70. Within 10 days of the Effective Date, Respondent shall establish and maintain financial security in the amount of $ 250,000.00 in one or more of the following forms:

a. A surety bond guaranteeing performance of the Work;

b. One or more irrevocable letters of credit equaling the total estimated cost of the Work;

c. A trust fund;

d. A guarantee to perform the Work by one or more parent corporations or subsidiaries, or by one or more unrelated corporations that have a substantial business relationship with at least one of Respondents; or

e. A demonstration that Respondent satisfies the requirements of 40 C.F.R. Part 264.143(f)

71. If Respondents seek to demonstrate the ability to complete the Work through a guarantee by a third party pursuant to Paragraph 70(a) of this Section, Respondent shall demonstrate that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f). If Respondent seek to demonstrate their ability to complete the Work by means of the financial test or the corporate guarantee pursuant to Paragraph 70(d) or (e) of this Section, they shall resubmit sworn statements conveying the information required by 40 C.F.R. Part 264.143(f) annually, on the anniversary of the Effective Date. In the event that EPA determines at any time that the financial assurances provided pursuant to this Section are inadequate, Respondent shall, within 30 days of receipt of notice of EPA's determination, obtain and present to EPA for approval one of the other forms of financial assurance listed in Paragraph 70 of this Section. Respondent's inability to demonstrate financial ability to complete the Work shall not excuse performance of any activities required under this Order.

72. If, after the Effective Date, Respondent can show that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph 70 of this Section, Respondent may reduce the amount of the financial security provided under this Section to the estimated cost of the remaining Work to be performed. Respondent shall submit a proposal for such reduction to EPA, in accordance with the requirements of this Section, and may reduce the amount of the security upon approval by EPA. In the event of a dispute, Respondent may reduce the amount of the security in accordance with the written decision resolving the dispute.

73. Respondent may change the form of financial assurance provided under this Section at any time, upon notice to and approval by EPA, provided that the new form of assurance meets the requirements of this Section. In the event of a dispute, Respondent may change the form of the financial assurance only in accordance with the written decision resolving the dispute.

XXVII. MODIFICATIONS

74. The OSC may make modifications to any plan or schedule in writing or by oral direction. Any oral modification will be memorialized in writing by EPA promptly, but shall have as its effective date the date of the OSC's oral direction. Any other requirements of this Settlement may be modified in writing by mutual agreement of the parties.

75. If Respondent seek permission to deviate from any approved work plan or schedule, Respondent's Project Coordinator shall submit a written request to EPA for approval outlining the proposed modification and its basis. Respondent may not proceed with the requested deviation until receiving oral or written approval from the OSC pursuant to Paragraph 74.

76. No informal advice, guidance, suggestion, or comment by the OSC or other EPA representatives regarding reports, plans, specifications, schedules, or any other writing submitted by Respondents shall relieve Respondents of their obligation to obtain any formal approval required by this Settlement Agreement, or to comply with all requirements of this Settlement Agreement, unless it is formally modified.

XXVIII. ADDITIONAL REMOVAL ACTION

77. If EPA determines that additional removal actions not included in an approved plan are necessary to protect public health, welfare, or the environment, EPA will notify Respondent of that determination. Unless otherwise stated by EPA, within 30 days of receipt of notice from EPA that additional removal actions are necessary to protect public health, welfare, or the environment, Respondents shall submit for approval by EPA a Work Plan for the additional removal actions. The plan shall conform to the applicable requirements of Section VIII (Work to Be Performed) of this Settlement Agreement. Upon EPA's approval of the plan pursuant to Section VIII, Respondent shall implement the plan for additional removal actions in accordance with the provisions and schedule contained therein. This Section does not alter or diminish the OSC's authority to make oral modifications to any plan or schedule pursuant to Section XXVII (Modifications).

XXIX. NOTICE OF COMPLETION OF WORK

78. When EPA determines, after EPA's review of the Final Report, that all Work has been fully performed in accordance with this Settlement Agreement, with the exception of any continuing obligations required by this Settlement Agreement, including payment of Future Response Costs, or record retention, EPA will provide written notice to Respondent. If EPA determines that any such Work has not been completed in accordance with this Settlement Agreement, EPA will notify Respondent, provide a list of the deficiencies, and require that Respondent modify the Work Plan if appropriate in order to correct such deficiencies. Respondent shall implement the modified and approved Work Plan and shall submit a modified Final Report in accordance with the EPA notice. Failure by Respondents to implement the approved modified Work Plan shall be a violation of this Settlement Agreement.

XXX. SEVERABILITY/INTEGRATION/APPENDICES

79. If a court issues an order that invalidates any provision of this Settlement Agreement or finds that Respondent has sufficient cause not to comply with one or more provisions of this Settlement Agreement, Respondent shall remain bound to comply with all provisions of this Settlement Agreement not invalidated or determined to be subject to a sufficient cause defense by the court's order.

80. This Settlement Agreement constitutes the final, complete and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Settlement Agreement. The parties acknowledge that there are no representations, agreements or understandings relating to the settlement other than those expressly contained in this Settlement Agreement. The following appendices are attached to and incorporated into this Order:

Appendix 1: The Action Memorandum entitled "Request for a Time-Critical Removal Action at the Chaparral Gulch Residential Site. Dewey-Humboldt, Yavapai County, Arizona," dated April 11, 2006.

Appendix 2: Site Map

XXXI. EFFECTIVE DATE

81. This Settlement Agreement shall be effective upon signature by the Regional Administrator or his delegatee.

The undersigned representative of Respondent certifies that it is fully authorized to enter into the terms and conditions of this Settlement Agreement and to bind the party it represents to this document.

Agreed this 12th day of May , 2006.

For Respondent, Ironite Products Company by

Title

It is so ORDERED and Agreed this 12th day of May, 2006.

BY: James E. Taylor

for Daniel Meer, Chief
Response, Planning and Assessment Branch
Superfund Division
Region 9
U.S. Environmental Protection Agency

APPENDIX B

ADEQ Letter dated April 3, 2006

Janet Napolitano
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov

Stephen A. Owens
Director

April 3, 2006

Mr. Keith Takata, Director
Superfund Division
Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105

Re: Proposed EPA Removal at Iron King Mine Site in Humboldt, Arizona

Dear Mr. Takata:

The Arizona Department of Environmental Quality (ADEQ) received a letter dated December 13, 2005 from Mr. Peter Guria regarding a removal assessment that the Environmental Protection Agency (EPA) Region IX conducted in August of 2005 at the Iron King Mine site in Humboldt, Arizona. In his letter, Mr. Guria indicated that elevated arsenic concentrations pose an imminent and substantial human health risk to residents occupying four parcels, and recommended that ADEQ request EPA to mitigate the risks through a removal action under CERCLA. This request was reiterated in a January 11, 2006 letter from you.

Based on the analysis you provided, ADEQ agrees that a removal action is warranted at the four parcels with the highest risk to the residents due to the arsenic concentrations in soil. However, since a complete assessment of risk has not been conducted, ADEQ recommends that the remediation remove the contaminated soil to either a concentration equal to the natural background concentration of arsenic, or at least to a depth of four feet to prevent future exposure to residents. This will ensure that additional removal actions will not be necessary in the future, based on new date or conclusions reached in a future risk assessment.

We look forward to working closely with you and your staff prior to the removal action to ensure that all potentially impacted residents and community representatives are notified. Please contact me at (602) 771-4567 if you have any questions or concerns.

Sincerely,

Amanda E. Stone, Director
Waste Programs Division

APPENDIX C

Copies of Brown and Caldwell Daily Site Safety Briefings

BROWN AND CALDWELL

Attachment 2—Field Work Safety Plan Implementation Checklist

Project Name	Project Location (city and state)	Date
Ironite URP Soil Sampling	Humboldt AZ	6/26/06 - 27
Name of Site Safety Coordinator	**Weather Conditions**	**Project Number**
M. Natan	Sunny, Warm	130568

BC Staff Present	Name	Office
	M. Natan	Phoenix
	M. Smith	Phoenix
	P. Fishaugh - initial setup	Phoenix

Indicate the status of each of the following:

1. Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2. Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3. Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4. Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5. Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6. Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7. Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8. Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9. Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☐ YES	☐ NO	☒ N/A
10. Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☒ N/A
11. Have the trenches and excavations been clearly marked?	☐ YES	☐ NO	☒ N/A
12. Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO	☒ N/A
13. Are dust suppression measures being used?	☐ YES	☐ NO	☒ N/A
14. Has a confined space been identified as part of this project?	☐ YES	☐ NO	☒ N/A
15. Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☒ N/A
16. Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A

TIME ON (minutes): 60 **TIME OFF** (minutes): 5

NOTE: Place completed form in project file.

BROWN AND CALDWELL	**Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing**

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
M. Natin	[signature]	9/28/06
Project Name	**Project Location**	**Project Number**
Ironite URP Soil Sampling	Humbolt AZ	150508

Who attended the briefing?

Names of Brown and Caldwell Employees	**Names of Subcontractor(s) Employees**
M. Natin [signature]	Joshua Velten P.S.L.
Meredith Smith [signature]	

What items were discussed?

- [x] Field Work Safety Plan
- [ ] Specific Accident/Incident
- [x] Protective Equipment to be Used
- [x] Emergency Hospital Route
- [ ] Other _____
- [x] Hazardous Site Conditions/Activities
- [ ] Changes/Solutions to Specific Accident(s)
- [x] Location of Emergency Telephone Number
- [x] Work Schedule

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

- [ ] YES
- [x] NO

NOTE: Send completed form to Health and Safety Director. Also place a copy in the project file.

HS—12 REV. 06/98

BROWN AND CALDWELL

Attachment 2—Field Work Safety Plan Implementation Checklist

Project Name	Project Location (city and state)	Date
Ironite VRP Soil Sampling	Humboldt AZ	6/28/06
Name of Site Safety Coordinator	**Weather Conditions**	**Project Number**
M. Natton	Sunny Warm	130508

BC Staff Present	Name	Office
	M. Natton	Phoenix
	M. Smith	Phoenix

Indicate the status of each of the following:

1. Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2. Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3. Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4. Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5. Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6. Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7. Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8. Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9. Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☐ YES	☐ NO	☒ N/A
10. Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☒ N/A
11. Have the trenches and excavations been clearly marked?	☒ YES	☐ NO	☐ N/A
12. Have trenches and excavations been shored or sloped as required by soil type and work activities?	☒ YES	☐ NO	☐ N/A
13. Are dust suppression measures being used?	☒ YES	☐ NO	☐ N/A
14. Has a confined space been identified as part of this project?	☐ YES	☐ NO	☒ N/A
15. Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☒ N/A
16. Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A

TIME ON (minutes): 60 **TIME OFF** (minutes): 5

NOTE: Place completed form in project file.

BROWN AND CALDWELL

Attachment B—Site Safety and Health Plan Site Activity and Safety Briefing

Name of Site Safety Officer	Signature of Site Safety Officer	Date
Mathew Natem		6/29/06
Project Name	**Project Location**	**Project Number**
Ironite URP	Humboldt AZ	130508

Who attended the briefing?

Names of Brown and Caldwell Employees	**Names of Subcontractor(s) Employees**
M. Natem	Gary Moore
M. Smith	

What items were discussed?

- [x] Site Safety and Health Plan
- [x] Specific Accident/Incident
- [x] Protective Equipment to be Used
- [x] Emergency Hospital Route
- [ ] Other _____
- [x] Hazardous Site Conditions/Activities
- [ ] Changes/Solutions to Specific Accident(s)
- [x] Location of Emergency Telephone Number
- [x] Work Schedule

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

- [ ] YES
- [x] NO

NOTE: Place a copy of the completed form in the project file.

HS—17 REV. 06/98

BROWN AND CALDWELL	**Attachment C—Site Safety and Health Plan Safety Plan Implementation Checklist**

Project Name	Project Location (city and state)	Date
Finite VRP	Hunlolt AZ	6/29/06
Name of Site Safety Coordinator	**Weather Conditions**	**Project Number**
M. Nolan	Sunny	130508

BC Staff Present	Name	Office
	M. Nolan	Phoenix
	M Smith	"

Indicate the status of each of the following:

1. Is a copy of the Site Safety and Health Plan (SSHP) on site?	☒ YES	☐ NO	☐ N/A
2. Is the personal protective equipment required by the SSHP available and being used correctly?	☒ YES	☐ NO	☐ N/A
3. Have the work zones been delineated?	☒ YES	☐ NO	☐ N/A
4. Has a decontamination station been set up as required by the SSHP?	☒ YES	☐ NO	☐ N/A
5. Are the decontamination procedures being followed?	☒ YES	☐ NO	☐ N/A
6. Is access to the exclusion zone being controlled?	☒ YES	☐ NO	☐ N/A
7. Has the site activities briefing and tailgate safety meeting been provided?	☒ YES	☐ NO	☐ N/A
8. Is the list of emergency telephone numbers posted at the support zone?	☒ YES	☐ NO	☐ N/A
9. Are directions to nearest emergency medical assistance posted at support zone?	☒ YES	☐ NO	☐ N/A
10. Is emergency equipment available and functional, as required by the SSHP?	☒ YES	☐ NO	☐ N/A
11. Has the nearest toilet facility been identified or a portable facility been set up?	☒ YES	☐ NO	☐ N/A
12. Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
13. Has water for decontamination been provided?	☒ YES	☐ NO	☐ N/A
14. Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the SSHP?	☐ YES	☐ NO	☒ N/A
15. Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☒ N/A
16. Have the trenches and excavations been clearly marked?	☒ YES	☐ NO	☐ N/A
17. Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO	☒ N/A
18. Are dust suppression measures being used?	☒ YES	☐ NO	☐ N/A
19. Is food and tobacco consumption being restricted to the support zone?	☒ YES	☐ NO	☐ N/A
20. Has a confined space been identified as part of this project?	☐ YES	☐ NO	☒ N/A
21. Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☒ N/A
22. Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A
TIME ON (minutes): 60 TIME OFF (minutes): 5			
23. Has a shaded rest area been set up in the support zone?	☒ YES	☐ NO	☐ N/A

NOTE: Place completed form in project file.

BROWN AND CALDWELL	**Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing**

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
M. Nathan		
Project Name	**Project Location**	**Project Number**
Ironite URP 6/30/06	Humboldt AZ	130508

Who attended the briefing?

Names of Brown and Caldwell Employees	**Names of Subcontractor(s) Employees**
Matthew Nathan	Joshua Velten P.S.C.
Meredith Smith	

What items were discussed?

- [x] Field Work Safety Plan
- [ ] Specific Accident/Incident
- [x] Protective Equipment to be Used
- [x] Emergency Hospital Route
- [ ] Other _____
- [x] Hazardous Site Conditions/Activities
- [ ] Changes/Solutions to Specific Accident(s)
- [ ] Location of Emergency Telephone Number
- [x] Work Schedule

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

- [ ] YES
- [x] NO

NOTE: Send completed form to Health and Safety Director.
Also place a copy in the project file.

HS—12 REV. 06/98

BROWN AND CALDWELL

Attachment 2—Field Work Safety Plan Implementation Checklist

Project Name	Project Location (city and state)	Date
Finish URP	Humboldt AZ	6/30/06
Name of Site Safety Coordinator	**Weather Conditions**	**Project Number**
Matthew Nathan	Sunny	130508

BC Staff Present

Name	Office
Matthew Nathan	Phoenix
Meredith Smith	"

Indicate the status of each of the following:

1. Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2. Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3. Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4. Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5. Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6. Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7. Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8. Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9. Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☐ YES	☐ NO	☒ N/A
10. Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☒ N/A
11. Have the trenches and excavations been clearly marked?	☒ YES	☐ NO	☐ N/A
12. Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO	☒ N/A
13. Are dust suppression measures being used?	☒ YES	☐ NO	☐ N/A
14. Has a confined space been identified as part of this project?	☐ YES	☐ NO	☒ N/A
15. Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☒ N/A
16. Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A

TIME ON (minutes): 60 **TIME OFF** (minutes): 5

NOTE: Place completed form in project file.

HS—11 REV. 06/98

BROWN AND CALDWELL	**Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing**

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
Matt Nation		7/5/06
Project Name	**Project Location**	**Project Number**
Ironite Humboldt	Humboldt, AZ	130508

Who attended the briefing?

Names of Brown and Caldwell Employees	**Names of Subcontractor(s) Employees**
Meredith Smith	
Matt Nation	
Greg Adams	

What items were discussed?

- [x] Field Work Safety Plan
- [ ] Specific Accident/Incident
- [x] Protective Equipment to be Used
- [ ] Emergency Hospital Route
- [ ] Other _____
- [x] Hazardous Site Conditions/Activities
- [ ] Changes/Solutions to Specific Accident(s)
- [ ] Location of Emergency Telephone Number
- [x] Work Schedule

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

- [ ] YES
- [x] NO

NOTE: Send completed form to Health and Safety Director.
Also place a copy in the project file.

HS—12 REV. 06/98

BROWN AND CALDWELL	**Attachment 2—Field Work Safety Plan Implementation Checklist**

Project Name	Project Location (city and state)	Date
Ironite Humboldt	Humboldt, AZ	7/5/06
Name of Site Safety Coordinator	**Weather Conditions**	**Project Number**
Matt Nation	Cloudy rainy	130508

BC Staff Present	Name	Office
	Matt Nation	Phoenix
	Meredith Smith	Phoenix

Indicate the status of each of the following:

1. Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2. Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3. Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4. Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5. Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6. Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7. Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8. Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9. Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☒ YES	☐ NO	☐ N/A
10. Are the instruments being used properly and periodically checked during the shift for battery charge status?	☒ YES	☐ NO	☐ N/A
11. Have the trenches and excavations been clearly marked?	☒ YES	☐ NO	☐ N/A
12. Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO	☒ N/A
13. Are dust suppression measures being used?	☒ YES	☐ NO	☒ N/A
14. Has a confined space been identified as part of this project?	☐ YES	☐ NO	☒ N/A
15. Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☒ N/A
16. Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A

TIME ON (minutes): 60 **TIME OFF** (minutes): 5

NOTE: Place completed form in project file.

HS—11 REV. 06/98

BROWN AND CALDWELL	**Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing**

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
Matt Nation	[signature] 7/6/06	
Project Name	**Project Location**	**Project Number**
Ironite Humboldt	Humboldt AZ	130508

Who attended the briefing?

Names of Brown and Caldwell Employees	**Names of Subcontractor(s) Employees**
Matthew Nation [signature]	
[signature]	
Meredith Smith	

What items were discussed?

- ☐ Field Work Safety Plan
- ☐ Specific Accident/Incident
- ☒ Protective Equipment to be Used
- ☒ Emergency Hospital Route
- ☐ Other _____
- ☒ Hazardous Site Conditions/Activities
- ☐ Changes/Solutions to Specific Accident(s)
- ☐ Location of Emergency Telephone Number
- ☒ Work Schedule

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

☐ YES ☒ NO

NOTE: Send completed form to Health and Safety Director.
Also place a copy in the project file.

BROWN AND CALDWELL

Attachment 2—Field Work Safety Plan Implementation Checklist

Project Name	Project Location (city and state)	Date
Ironite Humboldt	Humboldt, AZ	7/6/06
Name of Site Safety Coordinator	**Weather Conditions**	**Project Number**
Matt Nation	Sunny Warm	130508

BC Staff Present	Name	Office
	Matt Nation	Phoenix
	Meredith Smith	Phoenix

Indicate the status of each of the following:

1.	Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2.	Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3.	Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4.	Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5.	Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6.	Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7.	Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8.	Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9.	Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☐ YES	☐ NO	☒ N/A
10.	Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☒ N/A
11.	Have the trenches and excavations been clearly marked?	☒ YES	☐ NO	☐ N/A
12.	Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO	☒ N/A
13.	Are dust suppression measures being used?	☒ YES	☐ NO	☐ N/A
14.	Has a confined space been identified as part of this project?	☐ YES	☐ NO	☒ N/A
15.	Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☒ N/A
16.	Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A

TIME ON (minutes): 60 **TIME OFF** (minutes): 5

NOTE: Place completed form in project file.

BROWN AND CALDWELL	**Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing**

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
Matthew Nation	[signature] 7/7/06	
Project Name	**Project Location**	**Project Number**
Fruita VRP	Humbolt AZ	130505

Who attended the briefing?

Names of Brown and Caldwell Employees	**Names of Subcontractor(s) Employees**
Matthew Nation	
Meredith Smith	
Greg Adams	

What items were discussed?

- ☐ Field Work Safety Plan
- ☒ Hazardous Site Conditions/Activities
- ☐ Specific Accident/Incident
- ☐ Changes/Solutions to Specific Accident(s)
- ☒ Protective Equipment to be Used
- ☐ Location of Emergency Telephone Number
- ☐ Emergency Hospital Route
- ☒ Work Schedule
- ☐ Other _____

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

☐ YES ☒ NO

NOTE: Send completed form to Health and Safety Director. Also place a copy in the project file.

HS—12 REV. 06/98

BROWN AND CALDWELL

Attachment 2—Field Work Safety Plan Implementation Checklist

Project Name	Project Location (city and state)	Date
Tinite URP	Humboldt AZ	7/7/08
Name of Site Safety Coordinator	**Weather Conditions**	**Project Number**
Matthew Nation	Rain / High Clouds	130508

BC Staff Present

Name	Office
Matthew Nation	Phoenix
Meredith Smith	Phoenix

Indicate the status of each of the following:

1.	Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2.	Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3.	Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4.	Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5.	Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6.	Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7.	Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8.	Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9.	Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☐ YES	☐ NO	☒ N/A
10.	Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☒ N/A
11.	Have the trenches and excavations been clearly marked?	☒ YES	☐ NO	☐ N/A
12.	Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO	☒ N/A
13.	Are dust suppression measures being used?	☐ YES	☒ NO	☒ N/A
14.	Has a confined space been identified as part of this project?	☐ YES	☐ NO	☒ N/A
15.	Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☒ N/A
16.	Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A

TIME ON (minutes): 60 **TIME OFF** (minutes): 5

NOTE: Place completed form in project file.

HS—11 REV. 06/98

BROWN AND CALDWELL	**Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing**

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
Mathew Nation	[signature] 7/10/08	
Project Name	**Project Location**	**Project Number**
Ivanhoe VRP Soil Sampling	Humboldt AZ Property # 4	130505

Who attended the briefing?

Names of Brown and Caldwell Employees	**Names of Subcontractor(s) Employees**
Mathew Nation	
Gary Adams	
Meredith Smith	

What items were discussed?

- ☐ Field Work Safety Plan
- ☒ Hazardous Site Conditions/Activities
- ☐ Specific Accident/Incident
- ☐ Changes/Solutions to Specific Accident(s)
- ☒ Protective Equipment to be Used
- ☐ Location of Emergency Telephone Number
- ☐ Emergency Hospital Route
- ☐ Work Schedule
- ☐ Other _____

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

☐ YES ☒ NO

NOTE: Send completed form to Health and Safety Director.
Also place a copy in the project file.

HS—12 REV. 06/98

BROWN AND CALDWELL

Attachment 2—Field Work Safety Plan Implementation Checklist

Project Name	Project Location (city and state)	Date
Fraike VRP	Humboldt AZ	7/10/08
Name of Site Safety Coordinator	**Weather Conditions**	**Project Number**
Matthew Nafzan	Sunny	130508

BC Staff Present — Name: Matthew Nafzan — Office:

Indicate the status of each of the following:

1. Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2. Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3. Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4. Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5. Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6. Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7. Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8. Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9. Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☐ YES	☐ NO	☒ N/A
10. Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☒ N/A
11. Have the trenches and excavations been clearly marked?	☒ YES	☐ NO	☐ N/A
12. Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO	☒ N/A
13. Are dust suppression measures being used?	☐ YES	☐ NO	☒ N/A
14. Has a confined space been identified as part of this project?	☐ YES	☐ NO	☒ N/A
15. Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☒ N/A
16. Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A

TIME ON (minutes): 60 **TIME OFF** (minutes): 5

NOTE: Place completed form in project file.

BROWN AND CALDWELL	**Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing**

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
Matthew Nation	[signature] 7/11/08	
Project Name	**Project Location**	**Project Number**
Ironwk URP Soil Sampling	Hanbalt AZ	170508

Who attended the briefing?

Names of Brown and Caldwell Employees	**Names of Subcontractor(s) Employees**
Matthew Nation	Marshall Seewert
Meredith Smith	

What items were discussed?

- [x] Field Work Safety Plan
- [x] Hazardous Site Conditions/Activities
- [ ] Specific Accident/Incident
- [ ] Changes/Solutions to Specific Accident(s)
- [x] Protective Equipment to be Used
- [ ] Location of Emergency Telephone Number
- [x] Emergency Hospital Route
- [x] Work Schedule
- [ ] Other _____

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

- [ ] YES
- [x] NO

NOTE: Send completed form to Health and Safety Director.
Also place a copy in the project file.

BROWN AND CALDWELL	**Attachment 2—Field Work Safety Plan Implementation Checklist**	
Project Name: Ironite VRP Soil Sampling	Project Location (city and state): Humboldt AZ Property #41	Date: 7/14/05
Name of Site Safety Coordinator: Matthew Nathan	Weather Conditions:	Project Number: 130508

BC Staff Present

Name	Office
Matthew Nathan	Phoenix
Meredith Smith	" "

Indicate the status of each of the following:

1. Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2. Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3. Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4. Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5. Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6. Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7. Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8. Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9. Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☐ YES	☐ NO	☒ N/A
10. Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☒ N/A
11. Have the trenches and excavations been clearly marked?	☒ YES	☐ NO	☐ N/A
12. Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO	☒ N/A
13. Are dust suppression measures being used?	☐ YES	☒ NO	☐ N/A
14. Has a confined space been identified as part of this project?	☐ YES	☐ NO	☒ N/A
15. Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☒ N/A
16. Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A

TIME ON (minutes): 60 **TIME OFF** (minutes): 5

NOTE: Place completed form in project file.

BROWN AND CALDWELL	**Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing**

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
Matthew Nation		7/24/08
Project Name	**Project Location**	**Project Number**
Franke VRP	Property #2 Humboldt AZ	130508

Who attended the briefing?

Names of Brown and Caldwell Employees	**Names of Subcontractor(s) Employees**
Mogelio Lopez	
	VALENTE BROWN
	Jose H Gonzalez

What items were discussed?

☒	Field Work Safety Plan	☒	Hazardous Site Conditions/Activities
☐	Specific Accident/Incident	☐	Changes/Solutions to Specific Accident(s)
☒	Protective Equipment to be Used	☒	Location of Emergency Telephone Number
☒	Emergency Hospital Route	☒	Work Schedule
☐	Other Excavation procedures / Equipment safety		

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

☐ YES ☒ NO

NOTE: Send completed form to Health and Safety Director. Also place a copy in the project file.

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BROWN AND CALDWELL

Attachment 2—Field Work Safety Plan Implementation Checklist

Project Name	Project Location (city and state)	Date
Ironite URP	Property #2 Humboldt AZ	7/24/06
Name of Site Safety Coordinator	**Weather Conditions**	**Project Number**
Matthew Nafziger	Sunny	130508

BC Staff Present

Name	Office
Matthew Nafziger	BC Phoenix
Meredith Smith	

Indicate the status of each of the following:

1. Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2. Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3. Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4. Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5. Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6. Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7. Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8. Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9. Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☐ YES	☐ NO	☒ N/A
10. Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☒ N/A
11. Have the trenches and excavations been clearly marked?	☒ YES	☐ NO	☐ N/A
12. Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO	☒ N/A
13. Are dust suppression measures being used?	☒ YES	☐ NO	☐ N/A
14. Has a confined space been identified as part of this project?	☐ YES	☐ NO	☒ N/A
15. Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☒ N/A
16. Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A

TIME ON (minutes): 60 **TIME OFF** (minutes): 5

NOTE: Place completed form in project file.

BROWN AND CALDWELL

Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
Matthew Nation	[signature]	7/25/06

Project Name	Project Location	Project Number
Ironite URP	Property #2 Humboldt AZ	130508

Who attended the briefing?

Names of Brown and Caldwell Employees	Names of Subcontractor(s) Employees
Matthew Nation	PSC Richard Gunn
Meredith Smith	[signature]

What items were discussed?

- ☐ Field Work Safety Plan
- ☒ Hazardous Site Conditions/Activities
- ☐ Specific Accident/Incident
- ☐ Changes/Solutions to Specific Accident(s)
- ☒ Protective Equipment to be Used
- ☐ Location of Emergency Telephone Number
- ☐ Emergency Hospital Route
- ☒ Work Schedule
- ☐ Other _____

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

☐ YES ☒ NO

NOTE: Send completed form to Health and Safety Director.
Also place a copy in the project file.

BROWN AND CALDWELL

Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
Matthew Nation	[signature]	7/21/06

Project Name	Project Location	Project Number
Ironite VRP	Property #2 Humbolt AZ	130528

Who attended the briefing?

Names of Brown and Caldwell Employees	Names of Subcontractor(s) Employees
Matthew Nation [signature]	Joel Nave
Gary Adams	
Richard Davis [signature]	
Meredith Smith	
[signature]	

What items were discussed?

- ☐ Field Work Safety Plan
- ☐ Specific Accident/Incident
- ☒ Protective Equipment to be Used
- ☐ Emergency Hospital Route
- ☐ Other _____
- ☒ Hazardous Site Conditions/Activities
- ☐ Changes/Solutions to Specific Accident(s)
- ☐ Location of Emergency Telephone Number
- ☒ Work Schedule

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

☐ YES ☒ NO

NOTE: Send completed form to Health and Safety Director. Also place a copy in the project file.

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BROWN AND CALDWELL

Attachment 2—Field Work Safety Plan Implementation Checklist

Project Name	Project Location (city and state)	Date
Ironite VRP	Property #2 Humboldt AZ	7/26/06
Name of Site Safety Coordinator	**Weather Conditions**	**Project Number**
Matthew Nation	Cloudy	130508

BC Staff Present — Name: M. Nation, M. Smith — Office: Phoenix

Indicate the status of each of the following:

1. Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2. Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3. Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4. Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5. Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6. Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7. Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8. Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9. Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☐ YES	☐ NO	☒ N/A
10. Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☒ N/A
11. Have the trenches and excavations been clearly marked?	☒ YES	☐ NO	☐ N/A
12. Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO	☒ N/A
13. Are dust suppression measures being used?	☒ YES	☐ NO	☐ N/A
14. Has a confined space been identified as part of this project?	☐ YES	☐ NO	☒ N/A
15. Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☒ N/A
16. Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A

TIME ON (minutes): 60 **TIME OFF** (minutes): 5

NOTE: Place completed form in project file.

BROWN AND CALDWELL	**Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing**

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
Matthew Nation	[signature] 7/24/06	
Project Name	**Project Location**	**Project Number**
Ironite URP	Property #2 Humboldt AZ	130508

Who attended the briefing?

Names of Brown and Caldwell Employees	**Names of Subcontractor(s) Employees**
Matthew Nation [signature]	[signature]
Meredith Smith	[signature]
	[signature]

What items were discussed?

- ☐ Field Work Safety Plan
- ☐ Specific Accident/Incident
- ☒ Protective Equipment to be Used
- ☐ Emergency Hospital Route
- ☐ Other _____
- ☒ Hazardous Site Conditions/Activities
- ☐ Changes/Solutions to Specific Accident(s)
- ☐ Location of Emergency Telephone Number
- ☐ Work Schedule

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

☐ YES ☒ NO

NOTE: Send completed form to Health and Safety Director.
Also place a copy in the project file.

HS—12 REV. 06/98

BROWN AND CALDWELL

Attachment 2—Field Work Safety Plan Implementation Checklist

Project Name	Project Location (city and state)	Date
Fronte VRP	Property #2 Humboldt AZ	7/27/06
Name of Site Safety Coordinator	**Weather Conditions**	**Project Number**
Matthew Mattson	Cloudy	130508

BC Staff Present

Name	Office
Matthew Mattson	

Indicate the status of each of the following:

1. Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2. Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3. Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4. Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5. Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6. Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7. Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8. Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9. Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☐ YES	☐ NO	☒ N/A
10. Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☒ N/A
11. Have the trenches and excavations been clearly marked?	☒ YES	☐ NO	☐ N/A
12. Have trenches and excavations been shored or sloped as required by soil type and work activities?	☒ YES	☐ NO	☐ N/A
13. Are dust suppression measures being used?	☒ YES	☐ NO	☐ N/A
14. Has a confined space been identified as part of this project?	☐ YES	☐ NO	☒ N/A
15. Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☒ N/A
16. Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A

TIME ON (minutes): 60 **TIME OFF** (minutes): 5

NOTE: Place completed form in project file.

BROWN AND CALDWELL	**Attachment 2—Field Work Safety Plan Implementation Checklist**

Project Name	Project Location (city and state)	Date
Franke URP	Property #2	7/28/06
Name of Site Safety Coordinator	**Weather Conditions**	**Project Number**
Martha Nation	Cloudy, humid	120508

BC Staff Present	Name	Office
	Martha Nation	BC Phoenix
	Meredith Smith	" "

Indicate the status of each of the following:

1. Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2. Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3. Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4. Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5. Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6. Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7. Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8. Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9. Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☐ YES	☐ NO	☒ N/A
10. Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☒ N/A
11. Have the trenches and excavations been clearly marked?	☒ YES	☐ NO	☐ N/A
12. Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO	☒ N/A
13. Are dust suppression measures being used?	☒ YES	☐ NO	☐ N/A
14. Has a confined space been identified as part of this project?	☐ YES	☐ NO	☒ N/A
15. *Are the confined space entry procedures being correctly implemented?*	☐ YES	☐ NO	☒ N/A
16. Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A

TIME ON (minutes): 60 **TIME OFF** (minutes): 5

NOTE: Place completed form in project file.

BROWN AND CALDWELL	**Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing**

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
Matthew Nation	[signature] 7/31/06	
Project Name	**Project Location**	**Project Number**
Imite URP	Property #2 Humboldt AZ	130508

Who attended the briefing?

Names of Brown and Caldwell Employees	Names of Subcontractor(s) Employees
[signature]	Dave Michaud PSC
Meredith Smith	Greg Adams PSC
[signature]	VALENTE BROWN
Pedro [illegible]	Richard [illegible] PSC
Rogelio Lopez	Jose [illegible] Gonzales
	[signature]

What items were discussed?

- ☐ Field Work Safety Plan
- ☒ Hazardous Site Conditions/Activities
- ☐ Specific Accident/Incident
- ☐ Changes/Solutions to Specific Accident(s)
- ☒ Protective Equipment to be Used
- ☐ Location of Emergency Telephone Number
- ☐ Emergency Hospital Route
- ☒ Work Schedule
- ☐ Other ______

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

☐ YES ☐ NO

NOTE: Send completed form to Health and Safety Director.
Also place a copy in the project file.

HS—12 REV. 06/98

BROWN AND CALDWELL	**Attachment 2—Field Work Safety Plan Implementation Checklist**

Project Name	Project Location (city and state)	Date
Ironite VRP	Property #2 Hanbolt AZ	7/31/08
Name of Site Safety Coordinator	**Weather Conditions**	**Project Number**
Matthew Natter	Cloudy to Sunny	170508

BC Staff Present	Name	Office
	M. Natter	BC Phoenix
	M. Smith	"

Indicate the status of each of the following:

1. Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2. Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3. Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4. Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5. Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6. Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7. Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8. Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9. Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☐ YES	☐ NO	☒ N/A
10. Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☒ N/A
11. Have the trenches and excavations been clearly marked?	☒ YES	☐ NO	☐ N/A
12. Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO	☒ N/A
13. Are dust suppression measures being used?	☒ YES	☐ NO	☐ N/A
14. Has a confined space been identified as part of this project?	☐ YES	☐ NO	☒ N/A
15. Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☒ N/A
16. Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A

TIME ON (minutes): 60 **TIME OFF** (minutes): 5

NOTE: Place completed form in project file.

BROWN AND CALDWELL	**Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing**	
Name of Site Safety Coordinator: Matthew Nation	Signature of Site Safety Coordinator: [signature] 8/1/06	
Project Name: Inscripta URP	Project Location: Property #2 Humboldt AZ	Project Number: 130508

Who attended the briefing?

Names of Brown and Caldwell Employees	**Names of Subcontractor(s) Employees**
Matthew Nation	Joel [signature]
Meredith Smith	Dave [signature]
	Richard [signature]
	[signature]

What items were discussed?

- [x] Field Work Safety Plan
- [ ] Specific Accident/Incident
- [ ] Protective Equipment to be Used
- [ ] Emergency Hospital Route
- [ ] Other ____________
- [x] Hazardous Site Conditions/Activities
- [ ] Changes/Solutions to Specific Accident(s)
- [x] Location of Emergency Telephone Number
- [ ] Work Schedule

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

☐ YES ☐ NO

NOTE: Send completed form to Health and Safety Director.
Also place a copy in the project file.

HS—12 REV. 06/98

BROWN AND CALDWELL

Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
Matthew Nation	[signature]	8/2/06

Project Name	Project Location	Project Number
Ironside URP	Property #2 and #3 Humble, HAZ	130508

Who attended the briefing?

Names of Brown and Caldwell Employees	Names of Subcontractor(s) Employees
Matthew Nation	D. Michael PSC
Meredith Smith	R. Davies PSC

What items were discussed?

- [x] Field Work Safety Plan
- [ ] Specific Accident/Incident
- [x] Protective Equipment to be Used
- [x] Emergency Hospital Route
- [ ] Other _____
- [x] Hazardous Site Conditions/Activities
- [ ] Changes/Solutions to Specific Accident(s)
- [ ] Location of Emergency Telephone Number
- [x] Work Schedule

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

- [ ] YES
- [x] NO

NOTE: Send completed form to Health and Safety Director. Also place a copy in the project file.

HS—12 REV. 06/98

BROWN AND CALDWELL	**Attachment 2—Field Work Safety Plan Implementation Checklist**

Project Name	Project Location (city and state)	Date
Trunk URP	Humboldt AZ	5/2/06
Name of Site Safety Coordinator	**Weather Conditions**	**Project Number**
Matthew Nelson	Partly Cloudy	130568

BC Staff Present	Name	Office
	Matthew Nelson	Phoenix
	Meredith Smith	"

Indicate the status of each of the following:

1. Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2. Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3. Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4. Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5. Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6. Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7. Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8. Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9. Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☐ YES	☐ NO	☒ N/A
10. Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☒ N/A
11. Have the trenches and excavations been clearly marked?	☒ YES	☐ NO	☐ N/A
12. Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO	☒ N/A
13. Are dust suppression measures being used?	☒ YES	☐ NO	☐ N/A
14. Has a confined space been identified as part of this project?	☐ YES	☐ NO	☒ N/A
15. Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☒ N/A
16. Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A

TIME ON (minutes): 60 **TIME OFF** (minutes): 5

NOTE: Place completed form in project file.

BROWN AND CALDWELL	**Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing**

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
Meredith Smith	[signature]	8/3/06
Project Name	**Project Location**	**Project Number**
Tronite AEP	Property #2 + #3 Humboldt, AZ	130508

Who attended the briefing?

Names of Brown and Caldwell Employees	**Names of Subcontractor(s) Employees** (PSC)
M. Smith	Dave Michaud
M. Nation	PEDRO GONZALES
M. Orcutt	GARY ADAMS
	[signature]

What items were discussed?

☒	Field Work Safety Plan	☒	Hazardous Site Conditions/Activities
☐	Specific Accident/Incident	☐	Changes/Solutions to Specific Accident(s)
☒	Protective Equipment to be Used	☐	Location of Emergency Telephone Number
☒	Emergency Hospital Route	☒	Work Schedule
☐	Other _____		

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

☐ YES ☒ NO

NOTE: Send completed form to Health and Safety Director.
Also place a copy in the project file.

HS—12 REV. 06/98

BROWN AND CALDWELL	**Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing**

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
Mike Orcutt		8/4/06
Project Name	**Project Location**	**Project Number**
Ironite	prop #2, #3 Hornbrook, AR	13058

Who attended the briefing?

Names of Brown and Caldwell Employees	Names of Subcontractor(s) Employees
M. Orcutt	PEDRO GONZALES
Meredith Smith	GARY ADAMS
	D. Michaud

What items were discussed?

☒	Field Work Safety Plan	☒	Hazardous Site Conditions/Activities
☐	Specific Accident/Incident	☐	Changes/Solutions to Specific Accident(s)
☒	Protective Equipment to be Used	☐	Location of Emergency Telephone Number
☒	Emergency Hospital Route	☒	Work Schedule
☐	Other		

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

☐ YES ☒ NO

NOTE: Send completed form to Health and Safety Director.
Also place a copy in the project file.

BROWN AND CALDWELL

Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
Matthew Natin	[signature] 8/7/06	
Project Name	**Project Location**	**Project Number**
Ironite URP	Property #4 Humboldt AZ	130508

Who attended the briefing?

Names of Brown and Caldwell Employees	**Names of Subcontractor(s) Employees**
[signature]	Joshua Wilson
Meredith Smith	[illegible]
	[signature]
	[signature]

What items were discussed?

- ☐ Field Work Safety Plan
- ☐ Specific Accident/Incident
- ☒ Protective Equipment to be Used
- ☐ Emergency Hospital Route
- ☐ Other _____
- ☒ Hazardous Site Conditions/Activities
- ☐ Changes/Solutions to Specific Accident(s)
- ☐ Location of Emergency Telephone Number
- ☒ Work Schedule

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

☐ YES ☒ NO

NOTE: Send completed form to Health and Safety Director.
Also place a copy in the project file.

HS—12 REV. 06/98

BROWN AND CALDWELL	**Attachment 2—Field Work Safety Plan Implementation Checklist**	
Project Name: Ironite URP	Project Location (city and state): Property #4 Humboldt AZ	Date: 8/7/06
Name of Site Safety Coordinator: Matthew Nation	Weather Conditions: Sunny - Partly Cloudy	Project Number: 130508

BC Staff Present

Name	Office
Matthew Nation	Phoenix
Meredyth Smyth	" "

Indicate the status of each of the following:

1.	Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2.	Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3.	Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4.	Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5.	Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6.	Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7.	Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8.	Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9.	Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☐ YES	☐ NO	☒ N/A
10.	Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☒ N/A
11.	Have the trenches and excavations been clearly marked?	☒ YES	☐ NO	☐ N/A
12.	Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO	☒ N/A
13.	Are dust suppression measures being used?	☒ YES	☐ NO	☐ N/A
14.	Has a confined space been identified as part of this project?	☐ YES	☐ NO	☒ N/A
15.	Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☒ N/A
16.	Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A

TIME ON (minutes): 60 **TIME OFF** (minutes): 5

NOTE: Place completed form in project file.

BROWN AND CALDWELL

Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
Matthew Nutter	[signature] 5/5/06	
Project Name	**Project Location**	**Project Number**
Ironite VRP	Property # 4 Humboldt AZ	130808

Who attended the briefing?

Names of Brown and Caldwell Employees	Names of Subcontractor(s) Employees
[signature]	Richard DAVIES PSC
Meredith Smith	Gary Adams
	[signature]
	[signature]
	Joshua Tebbe

What items were discussed?

- ☐ Field Work Safety Plan
- ☐ Specific Accident/Incident
- ☒ Protective Equipment to be Used
- ☐ Emergency Hospital Route
- ☒ Other Traffic control / Logistics
- ☒ Hazardous Site Conditions/Activities
- ☐ Changes/Solutions to Specific Accident(s)
- ☐ Location of Emergency Telephone Number
- ☒ Work Schedule

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

☐ YES ☒ NO

NOTE: Send completed form to Health and Safety Director. Also place a copy in the project file.

HS—12 REV. 06/98

BROWN AND CALDWELL	**Attachment 2—Field Work Safety Plan Implementation Checklist**

Project Name	Project Location (city and state)	Date
Fronte URP	Property #4 Humboldt AZ	8/8/06
Name of Site Safety Coordinator	**Weather Conditions**	**Project Number**
Matthew Nation	Sunny	130508

BC Staff Present	Name	Office
	Matthew Nation	Phoenix
	Meredith Smith	" "

Indicate the status of each of the following:

1.	Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2.	Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3.	Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4.	Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5.	Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6.	Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7.	Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8.	Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9.	Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☐ YES	☐ NO	☒ N/A
10.	Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☒ N/A
11.	Have the trenches and excavations been clearly marked?	☒ YES	☐ NO	☐ N/A
12.	Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO	☒ N/A
13.	Are dust suppression measures being used?	☒ YES	☐ NO	☐ N/A
14.	Has a confined space been identified as part of this project?	☐ YES	☐ NO	☒ N/A
15.	Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☒ N/A
16.	Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A

TIME ON (minutes): 60 **TIME OFF** (minutes): 5

NOTE: Place completed form in project file.

BROWN AND CALDWELL

Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
Matthew Nielsen	[signature] 8/4/00	
Project Name	**Project Location**	**Project Number**
Tronox VRP	Property #4 Henderson NV	130508

Who attended the briefing?

Names of Brown and Caldwell Employees	Names of Subcontractor(s) Employees
Matthew Nielsen [signature]	[signature]
Meredith Smith	[signature]
	[signature]
	[signature]
	[signature]

What items were discussed?

☐	Field Work Safety Plan	☒	Hazardous Site Conditions/Activities
☐	Specific Accident/Incident	☐	Changes/Solutions to Specific Accident(s)
☒	Protective Equipment to be Used	☐	Location of Emergency Telephone Number
☐	Emergency Hospital Route	☒	Work Schedule
☒	Other Traffic control / logistics for hauling		

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

☐ YES ☒ NO

NOTE: Send completed form to Health and Safety Director. Also place a copy in the project file.

HS—12 REV. 06/98

BROWN AND CALDWELL	**Attachment 2—Field Work Safety Plan Implementation Checklist**

Project Name	Project Location (city and state)	Date
Ironite URP	Property #4 Humboldt AZ	8/4/16
Name of Site Safety Coordinator	**Weather Conditions**	**Project Number**
Matthew Nuckles	Cloudy	130508

BC Staff Present	Name	Office
	Matthew Nuckles	
	Meredith Smith	

Indicate the status of each of the following:

1. Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2. Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3. Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4. Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5. Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6. Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7. Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8. Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9. Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☐ YES	☐ NO	☒ N/A
10. Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☐ N/A
11. Have the trenches and excavations been clearly marked?	☐ YES	☐ NO	☐ N/A
12. Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO	☐ N/A
13. Are dust suppression measures being used?	☐ YES	☐ NO	☐ N/A
14. Has a confined space been identified as part of this project?	☐ YES	☐ NO	☐ N/A
15. Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☐ N/A
16. Has the work/rest cycle for the shift been established?	☐ YES	☐ NO	☐ N/A

TIME ON (minutes): _____ **TIME OFF** (minutes): _____

NOTE: Place completed form in project file.

BROWN AND CALDWELL

Attachment 3—Field Work Safety Plan Site Activity and Safety Briefing

Name of Site Safety Coordinator	Signature of Site Safety Coordinator	
Matthew Nation	[signature] 8/10/06 — 8/11/06	
Project Name	**Project Location**	**Project Number**
Franik URP	Property #4 Humboldt A2	130508

Who attended the briefing?

Names of Brown and Caldwell Employees	Names of Subcontractor(s) Employees
[signature]	[signature]
Meredith Smith	Richard Davis P3C
	[signature]
	Joshua Vetter

What items were discussed?

- ☐ Field Work Safety Plan
- ☒ Hazardous Site Conditions/Activities
- ☐ Specific Accident/Incident
- ☐ Changes/Solutions to Specific Accident(s)
- ☒ Protective Equipment to be Used
- ☐ Location of Emergency Telephone Number
- ☐ Emergency Hospital Route
- ☒ Work Schedule
- ☒ Other Traffic control, heavy equipment safety, clearing tasks

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

☐ YES ☒ NO

NOTE: Send completed form to Health and Safety Director.
Also place a copy in the project file.

BROWN AND CALDWELL	**Attachment B—Site Safety and Health Plan Site Activity and Safety Briefing**

Name of Site Safety Officer	Signature of Site Safety Officer	Date
Meredith Smith		5/15/07
Project Name	**Project Location**	**Project Number**
Ironite Removal Action Plan	Humboldt, AZ	130508

Who attended the briefing?

Names of Brown and Caldwell Employees	Names of Subcontractor(s) Employees
Meredith Smith	Gary Adair
~~GARY ADAIR~~	Joel NAver
	Gary Moore
	Richard Davies PSC

What items were discussed?

- [x] Site Safety and Health Plan
- [ ] Specific Accident/Incident
- [x] Protective Equipment to be Used
- [x] Emergency Hospital Route
- [ ] Other _____
- [x] Hazardous Site Conditions/Activities
- [ ] Changes/Solutions to Specific Accident(s)
- [x] Location of Emergency Telephone Number
- [x] Work Schedule

Do any items require assistance from BC Health and Safety staff? (If yes, describe the item and type of assistance required and contact the Health and Safety staff directly.)

- [ ] YES
- [x] NO

NOTE: Place a copy of the completed form in the project file.

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BROWN AND CALDWELL	**Attachment 2 - Field Work Safety Plan Implementation Checklist**	
Project Name: Iron Ite Removal Action Plan	Project Location (city and state): Humboldt, AZ.	Date: 5/15/07
Name of Site Safety Coordinator: Meredith Smith	Weather Conditions: Warm, breezy, clear	Project Number: 130508

BC Staff Present	Name	Office
	Meredith Smith	Phoenix
	Pejman Eshraghi	Phoenix

Indicate the status of each of the following:

1. Is a copy of the Field Work Safety Plan (FWSP) on site?	☒ YES	☐ NO	☐ N/A
2. Has access to the facility been coordinated with on-site contract?	☒ YES	☐ NO	☐ N/A
3. Is the personal protective equipment required by the FWSP available and being used correctly?	☒ YES	☐ NO	☐ N/A
4. Has the safety briefing been provided?	☒ YES	☐ NO	☐ N/A
5. Is the list of emergency telephone numbers posted or readily available?	☒ YES	☐ NO	☐ N/A
6. Are directions to the nearest emergency medical assistance posted or readily available?	☒ YES	☐ NO	☐ N/A
7. Is emergency equipment available and functional, as required by the FWSP?	☒ YES	☐ NO	☐ N/A
8. Has an adequate supply of drinking water been provided?	☒ YES	☐ NO	☐ N/A
9. Have the instruments for environmental and exposure monitoring been calibrated and set up as required by the FWSP?	☐ YES	☐ NO	☒ N/A
10. Are the instruments being used properly and periodically checked during the shift for battery charge status?	☐ YES	☐ NO	☒ N/A
11. Have the trenches and excavations been clearly marked?	☒ YES	☐ NO	☐ N/A
12. Have trenches and excavations been shored or sloped as required by soil type and work activities?	☐ YES	☐ NO	☒ N/A
13. Are dust suppression measures being used?	☒ YES	☐ NO	☐ N/A
14. Has a confined space been identified as part of this project?	☐ YES	☒ NO	☐ N/A
15. Are the confined space entry procedures being correctly implemented?	☐ YES	☐ NO	☒ N/A
16. Has the work/rest cycle for the shift been established?	☒ YES	☐ NO	☐ N/A

TIME ON (minutes): _____ **TIME OFF** (minutes): _____

NOTE: Place completed form in project file.

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