



Closure Plan

Landmark Wood Treatment Site

BOISE NATIONAL FOREST, IDAHO



Prepared For:
USDA Forest Service
Region 4

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Contract No. AG-0261-P-14-0252

January 2016





TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 GENERAL SITE DESCRIPTION AND LOCATION	1
3.0 DESCRIPTION AND BACKGROUND OF THE WOOD TREATMENT FACILITY	1
4.0 SITE INVESTIGATION.....	2
5.0 OVERVIEW OF CLOSURE PROCEDURES	4
5.1 Contaminated Soil	4
5.2 Contaminated Materials	5
5.3 Transportation and Disposal.....	5
6.0 CLOSURE SAMPLING AND ANALYSES PLAN.....	5
7.0 QA/QC PLAN AND PROCEDURES	6
8.0 HEALTH AND SAFETY PLAN FOR CLOSURE ACTIVITIES.....	6
9.0 SITE MANAGEMENT	7
9.1 Erosion Control	7
9.2 Contaminated Soil Staging Areas	8
9.3 Decontamination Areas.....	8
9.4 Field Quality Control Samples	8
9.5 Site Restoration.....	8
10.0 SCHEDULE FOR CLOSURE	8
11.0 REFERENCES.....	9

FIGURES

- Figure 1. Vicinity Map
- Figure 2. Site Map
- Figure 3. Sample Areas
- Figure 4. Dip Tank Sampling Points
- Figure 5. Former Drum Location Sampling Points

TABLES

- Table 1. Soil Sample Results
- Table 2. Water Sample Results
- Table 3. Proposed Laboratory Analyses
- Table 4. Schedule for Site Closure Activities

APPENDICES

- Appendix 1. Sampling and Analysis Plan
- Appendix 2. Health and Safety Plan
- Appendix 3. Site Photographs
- Appendix 4. Hazardous Waste Manifests
- Appendix 5. Boring Logs



1.0 INTRODUCTION

This Closure Plan has been prepared by E W Wells Group, LLC (Wells) to address the permanent closure of a former wood post and pole treatment facility at the Landmark Guard Station (the "Site") in the Boise National Forest, Idaho. A Closure Plan is needed to comply with the Idaho Hazardous Waste Management Act (HWMA) and the Resource Conservation and Recovery Act (RCRA). This Closure Plan provides a description of investigation activities and details of how the Site will be cleaned up. Upon approval of the Closure Plan by the Idaho Department of Environmental Quality (IDEQ), Wells will implement the plan.

2.0 GENERAL SITE DESCRIPTION AND LOCATION

The Site is a USDA Forest Service (USFS) owned facility located at the Landmark Guard Station in the Boise National Forest, approximately 36 miles east of Cascade, Idaho (Figure 1). The Site is located at the intersection of Forest Roads 579 and 413 in Valley County, Idaho. The legal description is NE1/4 of Section 12, T15N, R7E, Boise Meridian with approximate coordinates of latitude 44° 39' 21" N, longitude 115° 32' 45" W (44.656, 115.546) and approximate elevation of 6,637 feet. The Site can be accessed from Forest Road 22 (Warm Lake Road). The Site is surrounded by land managed by the USFS and there are no residential or commercial properties in the vicinity of the Site. The Site consists of an office/administrative building, ranger's house, forester's cabin, and the south cabin (Figure 2).

3.0 DESCRIPTION AND BACKGROUND OF THE WOOD TREATMENT FACILITY

The Site was historically used as a guard station and ranger station as well as for treating wood posts. It is estimated that the USFS conducted post treatment activities at the current location from 1984 to 1990. During a safety inspection in June 2013, a wood treatment dipping vessel was discovered, approximately 120 yards southwest of the "South Cabin" in an area containing various piles of abandoned equipment and supplies (bone yard). Within 100 feet of the dipping vessel an older red/orange colored 55-gallon drum, approximately 1/3 full of liquid, was also discovered.

USFS personnel investigated the Site in July and September of 2013. At the time of investigation, the dipping vessel was covered with a plywood lid and was full of liquid to within 2 inches of overflow. The vessel was a 48-inch diameter by 4.5 foot deep steel container buried approximately 4 feet into the ground. Approximately 6 inches of the vessel protruded above ground level. The vessel was constructed of 1/2-inch thick steel and appeared to be competent enough to contain liquid.

Lodge pole pine seedlings, established trees, and grass like species were growing in close proximity to the dipping vessel location with no observed signs of stress. According to USFS personnel, the red/orange colored 55-gallon drum appeared to be intact with no noticeable leakage from the drum. A small depression/pond, measuring approximately 100 feet by 200 feet, is located about 175 feet from the dipping vessel and appears to impound runoff during spring snow melt. The depression/pond was reportedly dry during the September 2013 site visit.



On July 23, 2013, a contractor was commissioned by the USFS to sample both the contents of the dipping vessel and the red/orange colored 55-gallon drum. The analysis of the liquid in the dipping vessel showed low levels of volatile organic compounds (VOCs) and polynuclear aromatic hydrocarbons (PAHs). Pentachlorophenol (PCP), at 9,600 micrograms per liter ($\mu\text{g/L}$), was also detected in the dipping vessel contents. The analysis of the red/orange colored 55-gallon drum showed high levels of VOCs and PAHs. PCP, at 18,000 $\mu\text{g/L}$, was also detected in the contents of the red/orange drum.

In September 2013, IDEQ was alerted to the discovery of this Site. In an effort to reduce the potential for a release of contaminants, IDEQ advised the USFS to containerize and transport the liquid contents of the dipping vessel to a RCRA-permitted hazardous waste treatment, storage, and disposal facility (TSDF). IDEQ also advised that the red/orange colored 55-gallon drum be transported to a similar facility. On November 6, 2013, the contents of the dipping vessel were transferred into seven 55-gallon drums, and the red/orange colored 55-gallon drum was placed into an overpack container. All of the drums were transported by a licensed hazardous waste transporter to a permitted TSDF (Clean Harbors in Aragonite, Utah) for final disposal.

On November 6, 2013 the dipping vessel was drained. It was noted that the bottom of the vessel appeared to be intact with no noticeable points of leakage or drain apparatus. A small amount of sludge remained on the bottom of the vessel. A fiberglass hood was placed over the top to keep the tank from refilling with meteoric water.

4.0 SITE INVESTIGATION

On June 16, 2015, Wells conducted a site characterization to investigate soil adjacent to and beneath the dip tank, and soil beneath the previously removed 55-gallon drum. Wells also characterized water and sediment in the small depression/pond located approximately 175 feet downslope of the dip tank (see Figure 3). Sample collection followed guidelines outlined in the Sampling and Analysis Plan (SAP) located in Appendix 1. All work activities followed the site specific Health and Safety Plan (HSP) included in Appendix 2. A photographic log of the site characterization activities is provided in Appendix 3.

Soil samples were collected from two borings located approximately one foot from the sidewalls of the dip tank at 5, 10, and 15 feet below ground surface (bgs) using a direct push rig (Landmark DT-DP1-5ft through Landmark DT-DP2-15ft). Surficial soil samples were also collected at approximately 6 inches bgs from locations 5 and 10 feet laterally to the north, south, east and west of the dip tank (Landmark DT-S1-N1 through Landmark DT-S8-W1)(Figure 4). A single water sample (Landmark DT-Pondwater), and one composite and one grab soil sample (Landmark DT-S12-Pond 1; Landmark DT-S13-Pond 1) were also collected from the small depression/pond area located approximately 175 feet downslope from the dip tank. A single surficial composite soil sample was also collected at the location of the previously removed 55-gallon drum (Landmark DT-S9-Drum 1, see Figure 5).

One background soil sample was collected from approximately 9 to 12 inches bgs approximately 100 feet from the dip tank (Landmark DT-S14-BG).



Following collection of the soil samples, the USFS removed the dip tank using a trac-hoe. After the tank was removed and placed on the ground surface, Wells' subcontractor (H2O Environmental) removed and containerized the residual liquids and sludge for off-site disposal. The tank was cleaned and macro-encapsulated for disposal as hazardous waste.

One composite soil sample was collected from the sidewalls of the dip tank excavation (Landmark DT-S10-Tankside) and one composite sample was collected from the floor of the excavation (Landmark DT-S11-Tankfloor).

Latitude and longitude of each sampling location were measured using a resource-grade Global Positioning System (GPS) and are included on Figure 3. All used sampling equipment, personal protective equipment (PPE), and other investigation derived waste (IDW) were placed in a 25-gallon drum for proper disposal as F032 listed waste. Copies of hazardous waste manifests are included in Appendix 4.

Results of the site investigation indicated that subsurface conditions were comprised of fine to course-grained unconsolidated sand with saturated conditions encountered approximately 15 feet bgs. Boring logs for the two direct-push locations are provided in Appendix 5.

Table 1 provides a summary of soil sample results and Table 2 provides a summary of the water sample results. Results were compared to US Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) with an excess lifetime cancer risk of 1×10^{-5} and hazard index of 1. Only one contaminant of concern (COC), PCP, exceeded the EPA RSL of 10.2 mg/kg at one sample location, Landmark DT-S9 Drum 1. Similarly, arsenic was the only COC in the water sample that exceeded its EPA RSL, 0.00052 mg/L; however, based on the distance from the dip tank area and lack of any significant release, the arsenic is likely representative of natural background levels.

Quality Assurance

Quality assurance/ quality control (QA/QC) procedures employed as part of this project included field and laboratory QA/QC activities as detailed in Section 3 of the SAP.

Field procedures included:

- Standard operating procedures for consistent sample collection.
- Use of disposable sampling and compositing equipment to minimize cross-contamination.
- Proper handling procedures to avoid compromising sample integrity during collection and shipping. These included use of appropriate sample containers, labeling, preservation and meeting holding time requirements.

Laboratory QC procedures for this project followed the Quality Assurance Manual (QA Manual) by ESC Lab Sciences. The QA Manual documents the laboratory's management system and demonstrates the ability to execute the indicated tests and/or procedures and to meet regulatory



requirements. The QA Manual establishes compliance with ISO 17025, NELAC, DOD, and AIHA. The laboratory provided the following summary of their internal QA/QC review:

“All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All Method and Batch QC are within established criteria except where properly qualified within the sample results.”

Data qualifiers generated by the laboratory are included with analytical results in Tables 1 and 2. The ‘J’ qualifiers indicate some uncertainty in the reported concentrations of specific analytes; however, the concentrations in these samples were all well below the RSL. Therefore, the potential for variability in the reported concentrations does not have potential to impact the results of the project.

QA/QC activities for this project were reviewed and found to be consistent with Section 3.0 of the approved SAP.

5.0 OVERVIEW OF CLOSURE PROCEDURES

To close the wood treatment facility, the USFS intends to remove all hazardous waste from the site. Precautions will be taken to minimize, control, or eliminate the escape and migration of hazardous waste, hazardous constituents, leachate, contaminated runoff or hazardous decomposition products to the ground surface, surface water, groundwater and atmosphere.

It is anticipated that all hazardous wastes and contaminated materials generated during the closure activities will be properly packaged, labeled and transported under a Uniform Hazardous Waste Manifest to a permitted RCRA hazardous waste disposal facility. Therefore, post closure care will not be required. However, if contaminated materials cannot be practically removed, a contingency plan will be prepared to describe alternate closure and post closure care requirements needed to comply with relevant or applicable regulations. The following materials are anticipated to require removal during closure activities.

5.1 Contaminated Soil

The results of sampling activities conducted on June 16, 2015 indicate that soil contamination remains in the area of the previously removed 55-gal drum. This one sample contained PCP greater than the EPA RSL. The soil will be classified as F032 hazardous. Additional laboratory analysis will be required to profile this material for disposal.

Contaminated subsoils potentially present beneath the previously removed 55-gal drum area will be removed by excavating an area approximately 5 feet by 5 feet to an estimated depth of 2 feet bgs (Figure 5). Soil samples will be collected after removing these materials to confirm that the former drum storage area is free of wood treatment chemicals. Confirmation samples will be analyzed for COCs presented on Table 3 in Section 6.0.



It is difficult to accurately predict the quantity of soil requiring excavation. Based on the site characterization data, it appears that wood preservative contamination extends to depths of at least 6 inches below ground surface beneath the previously removed 55-gal drum area. A very rough volume calculation suggests that approximately 1.85 cubic yards of contaminated soil from this area may require excavation and disposal. Soil samples will be collected after excavating contaminated soil to confirm that the excavation area is free of wood treatment chemicals. Sampling procedures, analytical test methods and detection limits are addressed in the SAP included in Appendix 1.

5.2 Contaminated Materials

Contaminated PPE and disposable sampling tools and decontamination equipment will be handled in the same manner as excavated material. These materials will be included in the excavation material containers and disposed of at a permitted hazardous waste disposal facility. It is anticipated that these materials will be classified as F032 debris.

5.3 Transportation and Disposal

Hazardous waste soils will be profiled as hazardous waste based on previous disposal activities conducted by the USFS. The contaminated materials will be classified as hazardous debris. U.S. Ecology, a permitted RCRA hazardous waste disposal facility located in Grandview, Idaho, has been preliminarily identified for disposal of these materials. However, there is some uncertainty as to whether the hazardous waste soil will be accepted for land disposal. In order to make this determination, representative samples of excavated soil will be analyzed for profiling parameters specified by the disposal facility.

The closure activities are envisioned as a 3-stage process: 1) mobilizing excavation equipment to the site to remove and containerize contaminated soil so that representative samples of these waste streams can be collected and analyzed; 2) profiling wastes for land disposal upon receipt of analytical data, assuming RCRA universal or alternate treatment standards are met; and 3) remobilizing to the site to load hazardous wastes and debris for transportation by a licensed hazardous waste hauler to the disposal facility. If the profiled waste does not meet the universal treatment standards or alternate treatment standards, incineration may be required.

6.0 CLOSURE SAMPLING AND ANALYSES PLAN

Closure sampling and analysis will follow procedures identified in the SAP that was prepared for the site characterization (Appendix 1). The SAP describes COCs, sampling procedures, analytical test methods, sample handling and QA/QC procedures. However, closure sampling assumptions differ from the site investigation sampling assumptions in the following ways:

- Conceptually, the area requiring excavation is a square measuring 5 feet by 5 feet with its origin at the center of the former drum location (approximately 25 square feet); and
- Soil within the excavation area would be excavated to a depth of 2 feet, producing approximately 50 cubic feet (1.85 cubic yards) of potentially contaminated soil.



Excavation depths are based on the results of sampling and analysis conducted during the site characterization and described in Section 5.1.

An area containing the cubic yard boxes will be established adjacent to the excavation to place contaminated soil for profile sampling and later loading into trucks. Soil cleanup confirmation samples will be collected from the excavation in the following manner:

- One grab sample will be collected from the floor of the excavation;
- One composite sample will be collected from the walls of the excavation (one subsample from each sidewall). Additional individual grab samples will also be collected from the walls of the excavation and held (not sent to the laboratory). If the analysis of the composite wall sample does not meet the screening levels, the individual wall samples will be analyzed separately to determine whether additional horizontal excavation is required.
- Samples will either be equally spaced within the excavation or located in areas that displayed the highest apparent contamination based on field evidence.

Soil samples will be submitted to ESC Lab Sciences for analysis. Table 3 lists the analytical methods for each COC. The holding time limit for pentachlorophenol by Method 8270 is 14 days. If the held samples are analyzed, the follow-up analyses may be performed on a rush basis if necessary to comply with this requirement.

Table 3. Proposed Soil Laboratory Analyses

Analyte	EPA Method
Pentachlorophenol	8270C

EPA – US Environmental Protection Agency

Profile sampling will be required by the selected disposal facility. It is anticipated a representative sample of stockpiled containerized soil will be collected for analysis of profile parameters in addition to any analytical data that has already been generated. The profile sample will be analyzed for dioxins by EPA Method 8290, PAHs by EPA Method 8270C-SIM, phenols by EPA Method 8270C, and TCLP for metals (arsenic and chromium) by EPA Method 1311/6010B.

7.0 QA/QC PLAN AND PROCEDURES

QA/QC procedures will follow those described in Section 3.0 of the SAP (Appendix 1).

8.0 HEALTH AND SAFETY PLAN FOR CLOSURE ACTIVITIES

This Closure Plan incorporates the HSP prepared on November 6, 2014 for the site investigation sampling activities (Appendix 2). The primary differences between the site investigation and closure activities will be:



- The use of excavation equipment and trucks for transporting contaminated soils to the disposal facility; and
- Excavation hazard control during Site closure activities.

It is anticipated that HSP Section 6.1.8 - Drilling Safety will apply to heavy equipment to be used during closure activities. However, excavation activities have additional potential to create physical hazards. Control measures implemented to minimize potential excavation physical hazards are presented below. All excavation activities must be performed in accordance with OSHA safety standards for excavating, 29 CFR 1926 Subpart P. In particular, the following points shall be observed:

- Any underground or overhead utilities in the vicinity shall be located prior to excavation activities.
- Heavy equipment and any other machinery must be inspected prior to each use. Deficiencies shall be repaired and defective parts replaced before use is continued.
- Only trained and experienced equipment operators shall be employed.
- Field personnel shall stand well clear of trenches and pits during excavation. Personnel not involved in monitoring or operation of excavating equipment shall remain a safe distance from the equipment.
- Access by the general public shall be impeded by means of traffic cones, construction fencing or barricades, if excavation occurs in a publicly trafficked area. If it is absolutely necessary that an excavation be left open overnight, the area shall be barricaded and a warning sign placed. Open excavations shall not be left unattended without the permission of the project manager and the property owner or tenant.
- Vehicles and equipment shall be kept far enough from excavations to prevent caving hazards, and shall not under any circumstances be placed closer than three feet from the edge of an excavation.
- Entry into any unshored excavation greater than five feet in depth is forbidden, unless the slope is gentler than 1:1.
- Personnel shall stand upwind of excavations, boreholes, spoils, etc., whenever practical. Always approach an excavation into potentially contaminated material from upwind.
- All team members must make a conscious effort to remain aware of their own and others' positions relative to moving equipment. Know where the emergency shutoff is located.
- Personnel shall not, under any circumstances, enter or ride in any equipment not designed specifically for carrying human passengers.

9.0 SITE MANAGEMENT

9.1 Erosion Control

Due to the small volume of material to be removed and level ground surface, erosion control will not be required for this project.



9.2 Contaminated Soil Staging Areas

It is anticipated that contaminated soil will be excavated and containerized in cubic yard boxes for profile sampling and staged for loading into a truck that will transport it to the disposal facility.

9.3 Decontamination Areas

Temporary areas will be established for the decontamination of sampling equipment and excavation equipment. Equipment will be brushed clean, washed with analconox solution, and triple rinsed with de-ionized or distilled water. Wash down water will be collected and included with contaminated soil and managed as F032 waste.

9.4 Field Quality Control Samples

Sample handling procedures are described in the SAP. Field QA/QC procedures are designed to minimize generation of analytical data that are biased by field contamination or sampling error. The following field procedures will be employed:

- Standard operating procedures for consistent sample collection;
- Equipment decontamination procedures to minimize cross-contamination; and
- Proper handling procedures to avoid compromising sample integrity during collection and shipping (observe sample container, labeling, preservation and holding time requirements).

9.5 Site Restoration

The 55-gallon drum excavation area, as well as the dip tank area (previously removed), will be backfilled with clean soil obtained from an onsite area approved by the USFS. Following backfilling, the area will be re-vegetated with a standard USFS seed mix by USFS personnel.

10.0 SCHEDULE FOR CLOSURE

The schedule for Site closure is subject to a number of factors that are difficult to predict currently. The following schedule (Table 4) provides an estimate of project tasks and duration, but is subject to change. Site activities are anticipated to begin in the summer or fall of 2016.



Table 4 – Schedule for Site Closure Activities

Task	Wk 0	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7
0 - Notice to Proceed								
2 - Mob / Demob								
3 - Excavate / Stockpile Soil								
4 - Lab Analysis / Profile								
5 - Remobilization								
6 - Load / Haul / Manifest								
7 - Backfill / Compact								
8 - Reporting								

The start of site closure activities are dependent on:

- The ability to mobilize to the site; and
- Weather conditions.

The report will be reviewed and stamped by a Professional Engineer.

11.0 REFERENCES

E W Wells Group, LLC, 2014a. Health and Safety Plan, Landmark Wood Treatment Site, Boise National Forest, Idaho. November 6, 2014.

E W Wells Group, LLC, 2014b. Sampling and Analysis Plan, Landmark Wood Treatment Site, Boise National Forest, Idaho. November 6, 2014.

USEPA, 2010. Closure Plan Guidance, updated May 25, 2010. <http://www.epa.gov/wastes/hazard/tsd/permit/tsd-regs/general/clos-plan.pdf>



TABLES



Table 1. Soil Sample Results

Analyte	Landmark DT-DP1-5ft	Landmark DT-DP1-10ft	Landmark DT-DP1-15ft	Landmark DT-DP2-5ft	Landmark DT-DP2-10ft	Landmark DT-DP2-15ft	Landmark DT-S1-N1	Landmark DT-S2-N1	Landmark DT-S3-E1	Landmark DT-S4-E1	Landmark DT-S5-S1	Landmark DT-S6-S1	Landmark DT-S7-W1	Landmark DT-S8-W1	Landmark DT-S9-Drum 1	Landmark DT-S10-Tankside	Landmark DT-S11-Tankfloor	Landmark DT-S12-Pond 1	Landmark DT-S13-Pond 1	Landmark DT-S14-BG	EPA RSL ¹
	mg/kg																				
Metals																					
Arsenic	0.91 J	0.69 J	ND	ND	0.8 J	0.79 J	2.8	2.5	3.2	2.4	4.3	2.2	1.7 J	3.9	6.5	4.0	1.0 J	1.5 J	4.1	1.3 J	6.7
Barium	11.6	14.2	6.3	8.1	30.7	10.7	27.8	26.5	33.0	25.7	41.0	26.8	32.1	32.3	35.0	39.4	9.9	71.6	77.2	10.9	15300
Cadmium	ND	ND	ND	ND	ND	ND	0.11 J	ND	0.10 J	ND	ND	ND	0.23 J	0.16 J	ND	0.10 J	ND	ND	ND	ND	71.1
Chromium	0.64 J	1.4	0.16 J	1.8	1.8	0.83 J	1.6	1.9	2.0	1.7	3.3	1.6	2.0	2.0	2.9	2.9	0.14 J	2.7	3.4	0.68 J	117,000 ²
Copper	ND	ND	ND	ND	0.95 J	ND	3.5	3.6	4.2	3.4	5.8	3.4	4.1	4.1	5.4	5.2	ND	2.7 J	3.1 J	0.86 J	3130
Lead	0.96	1.2	0.70	0.51 J	1.7	0.99	5.0	3.4	4.6	5.2	4.7	3.6	3.5	4.5	5.6	11.4	1.1	5.9	6.7	1.7	400
Mercury	0.027	0.030	0.021 J	0.043	0.030	0.033	0.021	0.019 J	0.011 J	0.012 J	0.016 J	0.012 J	0.009 J	0.016 J	0.018 J	0.015 J	0.018 J	0.027 J	0.035 J	0.010 J	9.43
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	391
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	391
Zinc	9.6	9.4	6.1	8.8	18.3	9.5	27.1	24.1	25.0	23.0	29.4	19.0	33.2	33.0	35.4	33.4	10.5	14.8	15.0	11.9	23500
VOCs																					
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	nt	11.6
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	nt	4890
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	nt	57.8
Xylenes, total	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	nt	647
Phenols																					
4-Chloro-3-methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND J5J3	ND	ND	ND	ND	nt	ns
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	nt	391
2,4-Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND J5	ND	ND	ND	ND	nt	190
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND J5	ND	ND	ND	ND	nt	1260
4,6-Dinitro-2-methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	nt	ns
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND J3	ND	ND	ND	ND	nt	126
2-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND J5	ND	ND	ND	ND	nt	ns
4-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND J5	ND	ND	ND	ND	nt	ns
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15 J	0.17 J	nt	19000
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	283	ND	ND	ND	ND	nt	10.2
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND J5	ND	ND	ND	ND	nt	63.2
PAHs																					
Acenaphthene	ND	ND	ND	ND	ND	ND	0.0008 J	ND	2.18	0.014 J	ND	ND	ND	nt	3590						
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0012 J	ND	ND	ND	ND	0.72	ND	ND	ND	ND	nt	ns
Anthracene	ND	ND	ND	ND	ND	ND	0.0043 J	ND	0.77	0.011 J	ND	ND	ND	nt	17900						
Benz(a)anthracene	ND	ND	ND	ND	ND	ND	0.0037 J	ND	ND	0.0094	ND	ND	ND	0.0011 J	0.045 J	ND	ND	ND	ND	nt	1.57
Benzo(a)pyrene	ND	ND	ND	ND	ND	ND	0.0015 J	ND	0.025 J	ND	ND	ND	ND	nt	0.157						
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	ND	0.01	0.00091 J	ND	0.0007 J	ND	ND	ND	ND	0.032 J	ND	ND	ND	ND	nt	1.57
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	ND	0.0017 J	ND	0.0011 J	0.0023 J	0.0018 J	0.0013 J	0.00084 J	ND	ND	ND	ND	0.0019 J	0.0015 J	nt	ns
Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND	0.0024 J	ND	ND	ND	ND	ND	nt	15.7							
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	nt	4780
Chrysene	ND	ND	ND	ND	ND	ND	0.019	0.0013 J	0.00074 J	0.0068 J	ND	ND	ND	ND	0.072 J	0.013 J	ND	ND	ND	nt	157
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	nt	0.157
Fluoranthene	ND	ND	ND	ND	ND	ND	0.062	0.0038 J	0.0013 J	0.0049 J	0.0007 J	ND	0.00077 J	0.0011 J	0.314	0.011 J	ND	0.0018 J	ND	nt	2390
Fluorene	ND	ND	ND	ND	ND	ND	0.0011 J	ND	ND	ND	ND	ND	ND	0.00094 J	4.31	0.027 J	ND	0.0045 J	ND	nt	2390



Analyte	Landmark DT-DP1-5ft	Landmark DT-DP1-10ft	Landmark DT-DP1-15ft	Landmark DT-DP2-5ft	Landmark DT-DP2-10ft	Landmark DT-DP2-15ft	Landmark DT-S1-N1	Landmark DT-S2-N1	Landmark DT-S3-E1	Landmark DT-S4-E1	Landmark DT-S5-S1	Landmark DT-S6-S1	Landmark DT-S7-W1	Landmark DT-S8-W1	Landmark DT-S9-Drum 1	Landmark DT-S10-Tankside	Landmark DT-S11-Tankfloor	Landmark DT-S12-Pond 1	Landmark DT-S13-Pond 1	Landmark DT-S14-BG	EPA RSL ¹
	mg/kg																				
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	0.0011 J	ND	ND	ND	ND	ND	nt	1.57							
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	12.9	0.067 J	ND	0.0052 J	ND	nt	176
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.59	ND	ND	0.0070 J	ND	nt	239
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.23 J	ND	ND	ND	ND	nt	38.3
Phenanthrene	ND	ND	ND	ND	ND	ND	0.022	0.0016 J	0.00097 J	0.0011 J	ND	ND	0.00099 J	0.0017 J	14.4	0.084	ND	0.0026 J	0.0015 J	nt	ns
Pyrene	ND	ND	ND	ND	ND	ND	0.033	0.0022 J	0.00083 J	0.0032 J	ND	ND	ND	0.0011 J	1.03	0.078	ND	ND	ND	nt	1790

¹ EPA RSL for residential use adjusted to 1x10⁻⁵ risk for carcinogens; or a hazard quotient of 1 for non-carcinogens (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm)

² RSL for chromium III

bold and **highlighted** - exceeds EPA RSL

EPA - United States Environmental Protection Agency

J - The reported value is an estimate, the identification of the analyte is acceptable.

J3 - The associated batch QC was outside the established quality control range for precision.

J5 - The sample matrix interfered with the ability to make any accurate determination; spike value is high.

ND - not detected at the reporting limit

ns - no standard

RSL - Regional Screening Level

SVOCs - semi-volatile organic compounds

VOCs - volatile organic compounds



Table 2. Water Sample Results

Analyte	Landmark DT- Pondwater	EPA RSL ¹
	mg/L	
Metals		
Arsenic	0.00058 J	0.00052
Barium	0.0077	3.8
Cadmium	ND	0.0092
Chromium	ND	22.5 ²
Copper	ND	0.80
Lead	ND	ns
Mercury	ND	0.00063
Selenium	ND	0.10
Silver	ND	0.094
Zinc	0.0163 J	6.0
VOCs		
Benzene	ND	0.0045
Toluene	ND	1.1
Ethylbenzene	ND	0.015
Xylenes, Total	ND	0.19
Phenols		
4-Chloro-3-methylphenol	ND	ns
2-Chlorophenol	ND	0.091
2,4-Dichlorophenol	ND	0.046
2,4-Dimethylphenol	ND	0.36
4,6-Dinitro-2-methylphenol	ND	ns
2,4-Dinitrophenol	ND	0.039
2-Methylphenol	ND	0.93
3&4-Methyl phenol	ND	ns
2-Nitrophenol	ND	ns
4-Nitrophenol	ND	ns
Pentachlorophenol	ND	0.00040
Phenol	ND	5.8
2,4,5-Trichlorophenol	ND	1.2
2,4,6-Trichlorophenol	ND	0.012
PAHs		
Acenaphthene	ND	0.53
Acenaphthylene	ND	ns
Anthracene	ND	1.76
Benz(a)anthracene	0.000011 J	0.00012
Benzo(a)pyrene	ND	0.000034
Benzo(b)fluoranthene	ND	0.00034
Benzo(g,h,i)perylene	ND	ns
Benzo(k)fluoranthene	ND	0.0034
2-Chloronaphthalene	ND	0.75
Chrysene	ND	0.034
Dibenz(a,h)anthracene	ND	0.000034
Fluoranthene	ND	0.80



Analyte	Landmark DT-Pondwater	EPA RSL ¹
	mg/L	
Fluorene	ND	0.29
Indeno(1,2,3-cd)pyrene	ND	0.00034
1-Methylnaphthalene	ND	0.011
2-Methylnaphthalene	ND	0.036
Naphthalene	ND	0.0017
Phenanthrene	ND	ns
Pyrene	ND	0.12

¹ EPA RSL for residential use adjusted to 1×10^{-5} risk for carcinogens; or a hazard quotient of 1 for non-carcinogens
 (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm)

² RSL for chromium III

bold and **highlighted** - exceeds EPA RSL

EPA - United States Environmental Protection Agency

J - the reported value is an estimate, the identification of the analyte is acceptable.

ND - not detected

ns - no standard

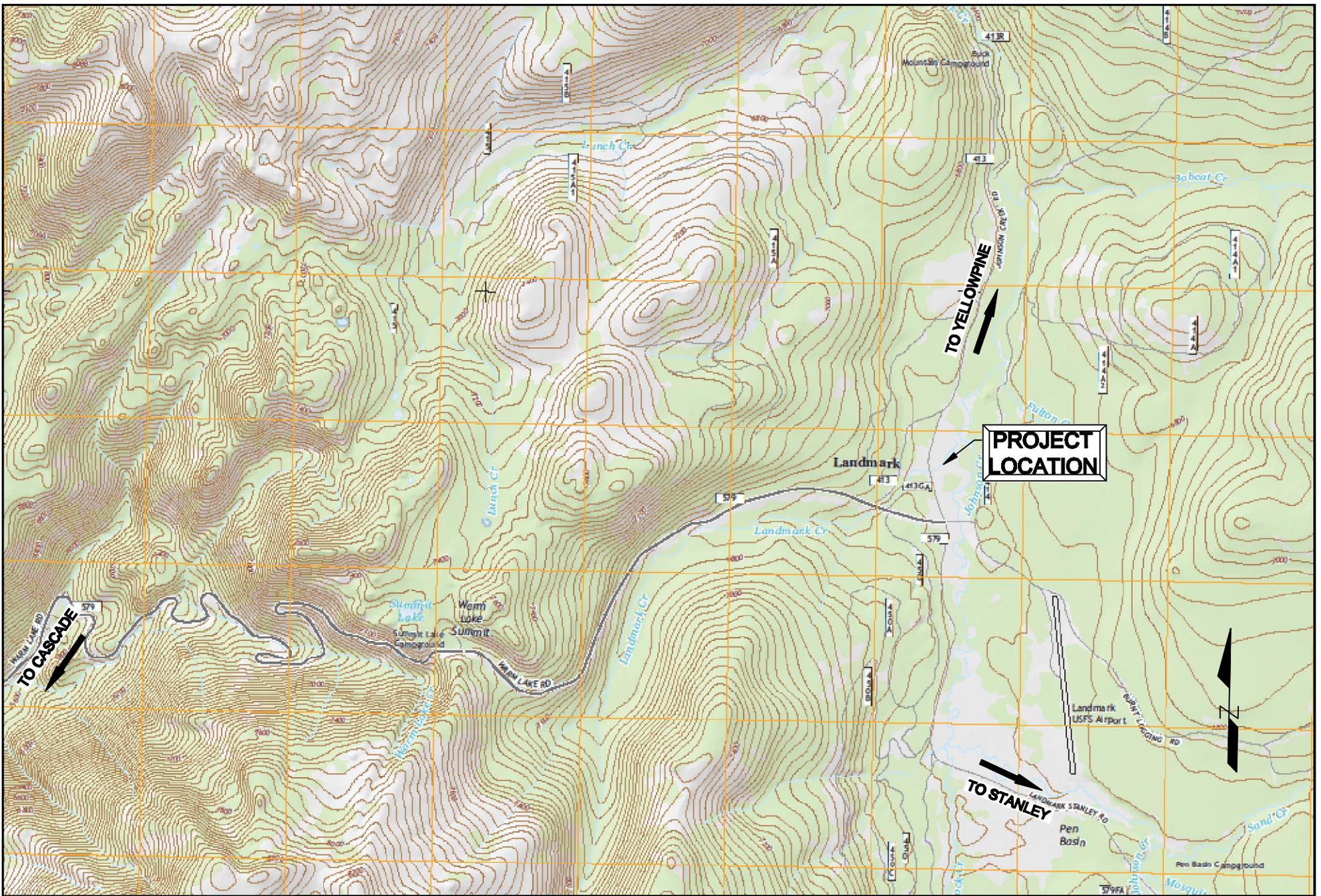
RSL - Regional Screening Level

SVOCs - semi-volatile organic compounds

VOCs - volatile organic compounds



FIGURES



NOTES:

DESIGNED BY
RK

DRAWN BY
KK

CHK'D BY
PH

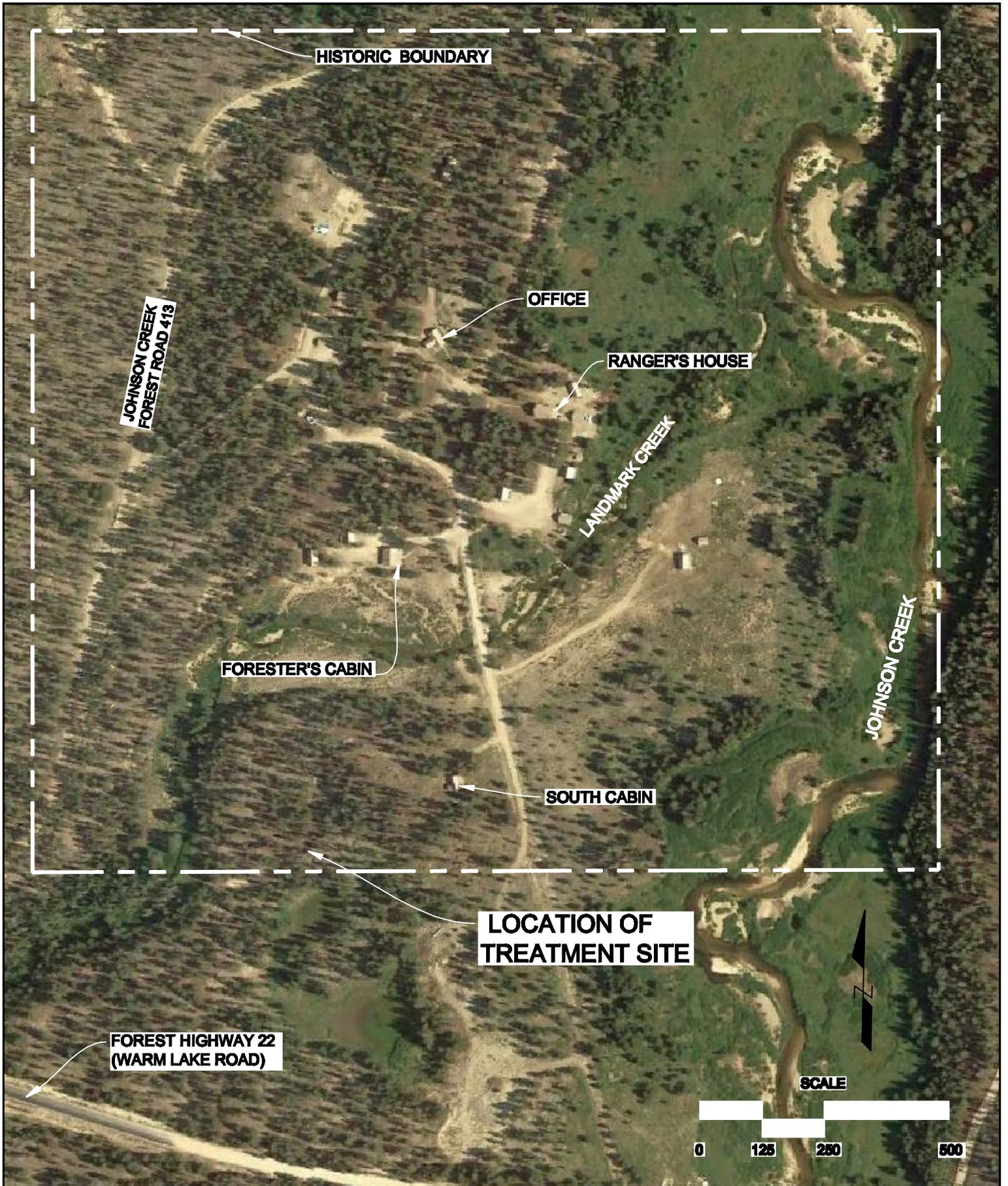
PREPARED FOR:
US FOREST SERVICE



**LANDMARK GUARD STATION
VICINITY MAP
WOOD TREATMENT SITE
LANDMARK, VALLEY COUNTY, IDAHO**

SHEET
FIGURE 1

DATE
10/21/2014



DESIGNED BY
PH

DRAWN BY
KK

CHK'D BY
PH

PREPARED FOR:
US FOREST SERVICE



**LANDMARK GUARD STATION
VICINITY MAP
WOOD TREATMENT SITE
LANDMARK, VALLEY COUNTY, IDAHO**

SHEET
FIGURE 2

DATE
10/8/2014



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PH

DRAWN BY
KK

CHK'D BY
PH

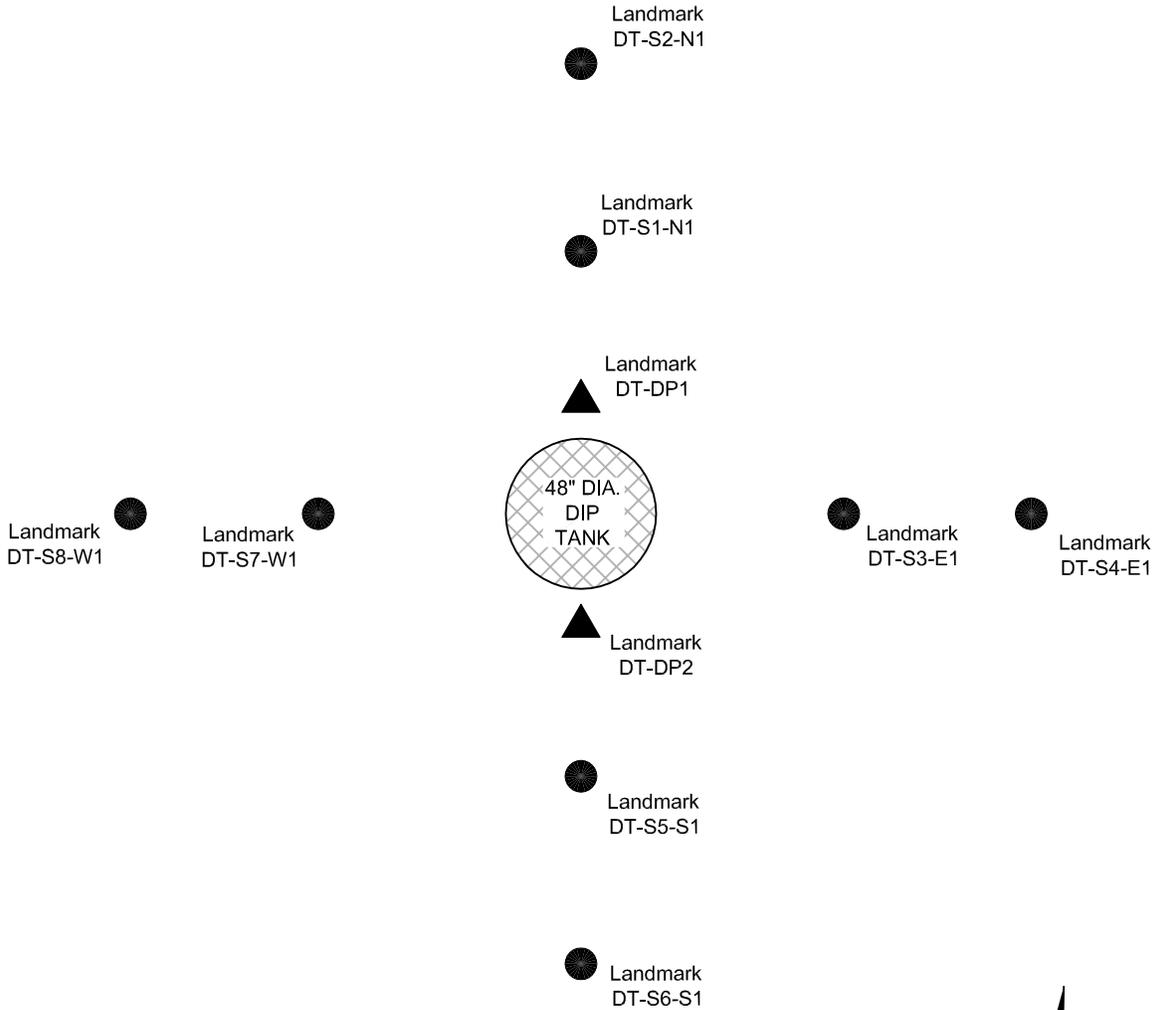
PREPARED FOR:
 US FOREST SERVICE



**LANDMARK GUARD STATION
 SAMPLE AREAS
 WOOD TREATMENT SITE
 LANDMARK, VALLEY COUNTY, IDAHO**

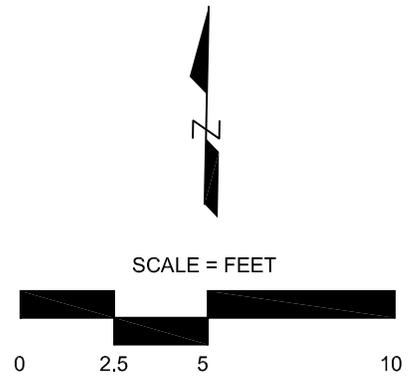
SHEET
FIGURE 3

DATE
09/21/2015



LEGEND

	SURFICIAL SOIL SAMPLE LOCATION
	DIRECT PUSH SAMPLE LOCATION

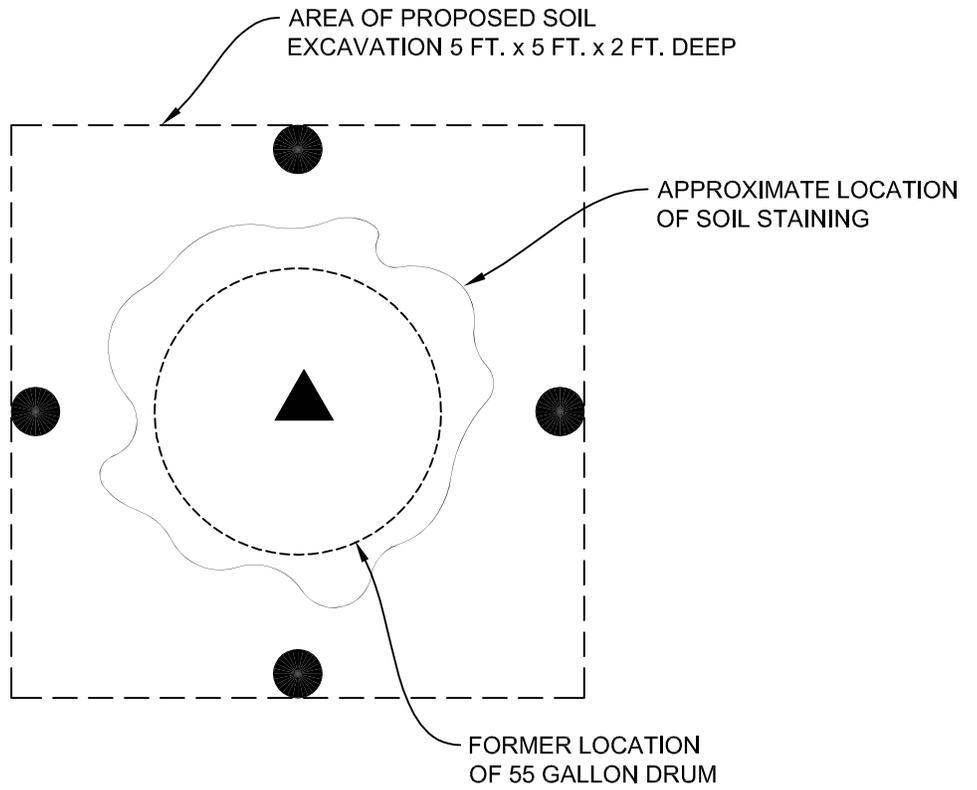


DESIGNED BY PH	PREPARED FOR: US FOREST SERVICE
DRAWN BY KK	
CHK'D BY PH	



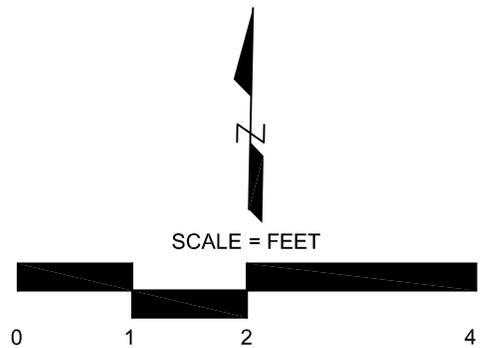
**LANDMARK GUARD STATION
DIP TANK SAMPLING POINTS
WOOD TREATMENT SITE
LANDMARK, VALLEY COUNTY, IDAHO**

SHEET FIGURE 4
DATE 09/21/2015



LEGEND

	GRAB SOIL SAMPLE
	COMPOSITE SOIL SUBSAMPLE



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DRAWN BY KK	
CHK'D BY PH	



LANDMARK GUARD STATION
 FORMER DURM LOCATION
 SAMPLING POINTS
 LANDMARK, VALLEY COUNTY, IDAHO

SHEET FIGURE 5
DATE 09/21/2015



APPENDIX 1

Sampling and Analysis Plan



Sampling and Analysis Plan

Landmark Wood Treatment Site

BOISE NATIONAL FOREST, IDAHO



Prepared For:
USDA Forest Service
Region 4

Prepared By:
E W Wells Group
390 E Parkcenter Blvd., Ste. 200
Boise, ID 83702

Contract No. AG-0261-P-14-0252

November 6, 2014





TABLE OF CONTENTS

1. INTRODUCTION.....	1
1.1 SITE DESCRIPTION AND BACKGROUND	1
1.2 ORGANIZATION AND RESPONSIBILITIES	2
1.2.1 <i>Special Training/Certification</i>	3
2. SAMPLING AND ANALYSIS PROGRAM.....	3
2.1 SAMPLING PROCESS DESIGN	3
2.2 SAMPLING METHODOLOGY	5
2.2.1 <i>Grab and Composite Soil Sample Collection Procedures</i>	6
2.2.2 <i>Water Sample Collection</i>	6
2.2.3 <i>Sample Labeling</i>	7
2.2.4 <i>Field Equipment Decontamination</i>	7
2.3 SAMPLE HANDLING AND CUSTODY	7
2.4 ANALYTICAL REPORTING	8
3. QUALITY ASSURANCE / QUALITY CONTROL	9
3.1 FIELD QA/QC.....	9
3.2 LABORATORY QC PROCEDURES	9
3.2 DATA QUALITY INDICATORS	12
3.2.1 <i>Precision Assessment</i>	12
3.2.2 <i>Accuracy Assessment</i>	13
3.2.3 <i>Representativeness Assessment</i>	13
3.2.4 <i>Comparability Assessment</i>	13
3.2.5 <i>Completeness Assessment</i>	14
3.3 DATA VERIFICATION.....	14
3.3 DATA VALIDATION	14
4. REPORTING	15
5. REFERENCES.....	16

TABLES

Table 1. Proposed Analysis

Table 2. Sample Containers, Preservation, and Holding Times

Table 3. Reporting Limits

FIGURES

Figure 1 - Vicinity Map

Figure 2 – Site Map

APPENDIX

Appendix 1. Health and Safety Plan



Distribution List and Signature Sheet

A handwritten signature in blue ink that reads "Dean C. Morgan".

Dean Morgan
On-Scene Coordinator
USDA Forest Service

11/5/2014
Date

A handwritten signature in black ink that reads "Paul Hunter".

Paul Hunter, P.G.
Project Manager
E W Wells Group, LLC

11/6/2014
Date



1. INTRODUCTION

E W Well Group, LLC (Wells) was contracted by the USDA Forest Service (USFS) to prepare a Resource Conservation and Recovery Act (RCRA) Closure Plan for a wood treatment facility at the Landmark Guard Station (Site) in the Boise National Forest, Idaho. The Closure Plan will document closure of the wood treatment facility and determine whether further action is required by the Idaho Department of Environmental Quality (IDEQ). The purpose of this Sampling and Analysis Plan (SAP) is to establish the requirements and procedures that will be implemented during site closure sampling and analysis activities at the Site.

This SAP describes the sampling plan design, rationale, and objectives; specify the sampling locations, sampling and analytical methods and protocols, sample frequency, and analytical parameters; specify procedures for sample management, equipment decontamination, field instrument operation and calibration, investigation-derived waste (IDW) management, and field documentation. Quality assurance/quality control (QA/QC) will be applied throughout the entire project including during sample collection, laboratory analysis, and data reduction and interpretation phases of the work. Potential contaminants of concern primarily include polynuclear aromatic hydrocarbons (PAHs), pentachlorophenol (PCP), creosote, and petroleum products. Project work will be conducted in accordance with the site-specific Health and Safety Plan (Appendix 1).

1.1 Site Description and Background

The Site is owned by the USFS and is located in the Boise National Forest, approximately 37 miles east of Cascade, Idaho. The Site was historically used as a guard station and ranger station as well as for treating wood posts. It is estimated that post treatment activities took place at the current location from 1984 to 1990.

During a safety inspection in June 2013, a wood treatment dipping vessel was discovered, approximately 120 yards southwest of the "South Cabin" in an area containing various piles of abandoned equipment and supplies (bone yard). Within 50 feet of the dipping vessel an older red/orange colored 55 gallon drum, approximately 1/3 full of liquid, was also discovered.

USFS personnel investigated the Site in July and September of 2013. At the time of investigation, the dipping vessel was covered with a plywood lid and was full of effluent to within 2 inches of overflow. The vessel is a 46- inch diameter by 4.5 foot deep steel container buried approximately 4 feet into the ground. Approximately 6 inches of the vessel protrudes above ground level. The vessel is constructed of 1/2-inch thick steel and appears to be competent enough to contain effluent.

Lodge pole pine seedlings, established trees, and grass like species are growing in close proximity to the dipping vessel with no observed signs of stress. According to USFS personnel, the red/orange colored 55-gallon drum appeared to be intact with no noticeable leakage from the drum or on the ground surface near the drum. A small depression/pond, measuring approximately 100 feet by 200 feet, is located about 60 yards down-gradient of the dipping



vessel and appears to impound runoff during spring snow melt. The depression/pond was reportedly dry during the September 2013 site visit.

On July 23, 2013, a contractor was commissioned by the USFS to sample both the contents of the dipping vessel and the red/orange colored 55-gallon drum. The analysis of the liquid in the dipping vessel showed low levels of volatile organic compounds (VOCs) and PAHs. PCP, at 9,600 micrograms per liter ($\mu\text{g/L}$), was also detected in the dipping vessel contents. The analysis of the red/orange colored 55-gallon drum showed high levels of VOCs and PAHs. PCP, at 18,000 $\mu\text{g/L}$, was also detected in the contents of the red/orange drum.

In September 2013, IDEQ was alerted to the discovery of this Site. In an effort to reduce the potential for further migration of contaminants, IDEQ advised the USFS to containerize and transport the liquid contents of the dipping vessel to a RCRA-permitted hazardous waste treatment, storage, and disposal facility (TSDF). IDEQ also advised that the red/orange colored 55 gallon drum be transported to a similar facility. On November 6, 2013, the contents of the dipping vessel were transferred into seven 55-gallon drums, and the red/orange colored 55-gallon drum was placed into an overpack container. All of the drums were transported by a licensed hazardous waste transporter to a permitted TSDF (Clean Harbors in Aragonite, Utah) for final disposal.

Upon emptying the dipping vessel, it was noted that the bottom of the vessel appeared to be intact with no noticeable points of leakage or drain apparatus. A small amount of sludge currently remains on the bottom of the vessel. After emptying the vessel, a fiberglass hood was placed over the top to exclude meteoric water from refilling the vessel.

1.2 Organization and Responsibilities

The activities and responsibilities of personnel involved in this soil investigation are listed below.

USFS, Region 4 – USFS has overall responsibility for this site. Dean Morgan, Contracting Officer's Representative (COR), is the point of contact for this Site.

IDEQ – IDEQ has the overall regulatory responsibility for the assessment portion of this site investigation. Mark Jeffers, Environmental Hydrogeologist and Kim Custer, Hazardous Waste Permit Officer are the points of contact.

Project Manager: Paul Hunter, PG – The Project Manager (PM) has overall management authority and responsibility for Wells. The PM reports directly to the USFS COR and is responsible for implementing the investigation activities, coordinating sub-contracted services, analyzing and reporting data, and providing recommendations for additional work.

Quality Assurance (QA) Officer: Chris Lammer, PE – The QA Officer is independent of the project laboratory and the day-to-day operations and is responsible for auditing implementation of the QA program in conformance with the QA/QC Procedures included in this SAP.

Safety Officer: Cliff Yeary – The Safety Officer is the member of Wells Corporate Safety and Health Department assigned to oversee health and safety requirements for the project and provide



any needed technical support. The Safety Officer will be the first point-of-contact for all of the project's health and safety matters.

Project / Field Personnel – Eric Hieb, EIT with Wells is an experienced professional who possess the degree of specialization and technical competence required to effectively and efficiently perform the required work. Our subcontractor Cascade Drilling will be utilized for direct push drilling activities at the site and H2O Environmental for waste disposal services.

Analytical Laboratory – The laboratory responsible for chemical analyses of environmental media and toxicity testing is:

ESC Lab Sciences
Jarred Willis, TSR
12065 Lebanon Road
Mount Juliet, TN 37122
Telephone: (615) 758-5858

1.2.1 Special Training/Certification

All field personnel and contractors conducting field investigations are required to have 40 hours of OSHA health and safety training for hazardous waste sites (HAZWOPER), supplemented by annual 8-hour refresher courses. Field personnel are to conduct this work in accordance with the Wells site-specific Health and Safety Plan (Appendix 1). Contractors are responsible for ensuring that their personnel are informed and trained in relevant OSHA guidelines and for preparing and approving their own Health and Safety Plan.

Individuals implementing this SAP must receive, at a minimum, orientation to the project's purpose, scope, and methods of implementation. This orientation is the responsibility of the Project Manager or designee.

2. SAMPLING AND ANALYSIS PROGRAM

2.1 Sampling Process Design

Field screening, testing and cleanup verification sampling will be conducted in accordance with Environmental Protection Agency's (EPA) SW-846: *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. SW-846 functions primarily as a guidance document setting forth acceptable methods for hazardous waste-related sampling and analysis.

The dip tank was drained on November 6, 2013 and a fiberglass hood was placed over the top to keep the tank from refilling with water. To evaluate the potential for a release from the dip tank to have impacted adjacent soils, soil samples will be collected using a direct push rig. Soil samples will be collected from two borings as close to the dip tank as possible at 5, 10, and 15 feet below ground surface (bgs) to help define the vertical extent of any potential contamination. Soil samples will be collected at approximately 6 inches bgs from locations 5 and 10 feet laterally to the north, south, east and west of the dip tank to help define the lateral extent of any potential contamination.



One composite and one grab soil sample will be collected from the small depression/pond area located approximately 60 yards downslope from the dip tank. The grab sample will be collected from the lowest point in the depression. The composite will be prepared by collecting 4 to 6 subsamples from between 3 and 6 inches bgs at locations throughout the depression area. These subsamples will be field composited using disposable plastic equipment.

If water is present in the depression, a single water sample will also be collected and compared to the EPA Tap Water RSL's using the listing of applicable soil analytes identified in Table 3. A single surface soil sample will also be collected at the location of the previously removed 55-gallon drum.

One background soil sample will be collected from 9 to 12 inches bgs approximately 300 to 500 feet from the dip tank. One matrix spike / matrix spike duplicate (MS/MSD) analysis will be performed on one of the soil samples for QC purposes. A trip blank will also be included for QC.

Following collection of the soil samples, the USFS will remove the dip tank using a rubber-tired backhoe. Prior to removal, Wells' subcontractor (H2O Environmental) will remove and containerize any residual liquids and sludge for off-site disposal. The tank will be macro-encapsulated for disposal as hazardous waste. Any soil excavated during removal of the dip tank will be placed directly into appropriate waste containers (55-gallon drums or cubic yard boxes, etc.) for proper off-site disposal.

Following removal of the dip tank, two composite soil samples will also be collected from the dip tank excavation. One composite soil sample will be collected from the vertical walls of the excavation (a minimum of two subsamples per side wall) and one composite soil sample will be collected from the floor of the excavation (a minimum of three subsamples).

Latitude, longitude, and approximate elevation of each sampling location will be measured using a resource-grade Global Positioning System (GPS). All used sampling equipment, personal protective equipment (PPE), and other IDW will be placed in a 55-gallon drum for proper disposal as F032 listed waste.

Specific compounds that will be evaluated in each sample are listed in Table 1.



Table 1. Proposed Laboratory Analyses

Analyte	Soil ¹	Water	EPA Method
BTEX	X	X	8260B
Copper and zinc (total metals)	X	X	6010B
PCP	X	X	8270C/ SV8270PCP
PAHs	X	X	8270C-SIM
Phenols (including creosote)	X	NA	8270C, acid
RCRA 8 Metals: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver (total metals)	X	X	6010B 7470A – Hg (w) 7471 – Hg (s) 6020 – As (w)
Dioxin	X ²		8290 Modified

¹ Background soil sample will be analyzed for metals only.

² Only the composite sample from the dip tank excavation will be analyzed for dioxin.

BTEX – benzene, toluene, ethylbenzene, xylenes

NA – Not Analyzed

PAHs – polynuclear aromatic hydrocarbons

PCP – pentachlorophenol

RCRA – Resource Conservation and Recovery Act

2.2 Sampling Methodology

All samples collected for field screening, testing and cleanup verification will be collected in accordance with industry standards and SW-846 protocols. The following equipment may be used to collect grab samples:

- Decontaminated or stainless steel sampling spoon or disposable spoon;
- Disposable vinyl gloves;
- Sample kit (lab furnished) containing:
 - Ice chest/cooler;
 - Sample containers with lids;
 - Sample labels;
 - Packing material;
 - Chain of custody form(s); and
 - Return express shipping label(s)/sticker(s).
- Large (1 gallon) Ziploc® bags;
- Large trash bags;
- Cube ice – 10 pounds;
- Shipping tape/or duct tape;
- Waterproof marker (e.g., Sharpie®);
- Ink pens, black or blue; and
- Field logbook.



2.2.1 Grab and Composite Soil Sample Collection Procedures

All sampling activities will be conducted using safe practices and using appropriate PPE in accordance with the Site Health and Safety Plan. The following steps will be followed for collecting all soil samples to minimize collection errors.

Grab Sample Collection:

- Samples will be collected with disposable or clean tools that have been decontaminated (per Section 2.2.4);
- Disposable gloves will be worn and changed between sample collections;
- Sample containers will be filled quickly;
- Container rims will be quickly wiped clean before attaching the lids, and the containers will be quickly and adequately sealed;
- Sample containers will be labeled properly (per Section 2.2.3);
- Containers will be stored in an ice chest cooled to $4\pm 2^{\circ}\text{C}$ using gel ice or water ice (water ice is to be placed in sealed, double plastic bags) and this temperature will be maintained through delivery to laboratory until samples are analyzed.

Composite Sample Collection:

- Composite samples will be comprised of 4 to 6 selected grab samples collected at locations within an area or zone of interest to characterize the nature of contamination within the given volume of soils;
- Samples will be collected with disposable or clean tools that have been decontaminated (per Section 2.2.4);
- Disposable gloves will be worn and changed between sample collections;
- An equal volume of each grab sample will be placed into a stainless steel container or one-gallon disposable zip-lock plastic bag, and the soil will be carefully mixed to create a homogeneous soil matrix for the composite sample;
- Soil will be transferred from the mixing container directly to the sample containers which will be filled completely;
- Container rims will be quickly wiped clean before attaching the lids, and the containers will be quickly and adequately sealed;
- Sample containers will be labeled properly (per Section 2.2.3);
- Containers will be stored in an ice chest cooled to $4\pm 2^{\circ}\text{C}$ using gel ice or water ice (water ice is to be placed in sealed, double plastic bags) and this temperature will be maintained through delivery to laboratory until samples are analyzed.

2.2.2 Water Sample Collection

Surface water sampling will include collecting a grab sample from the depression/pond area, if water is present. The sample will be collected from the depression area by submerging a laboratory supplied bottle directly into the water under the surface to allow the bottle to fill. Care will be taken to avoid contact or disturbing the depression bottom. The sample bottle will be



labeled properly (per Section 2.2.3) and placed in a cooler with ice for transport to the laboratory as described above.

2.2.3 Sample Labeling

Indelible, waterproof ink will be used to label sample containers securely fastened to the container. All information entered onto the label or container must be duplicated in the field record or log book. Information on the containers or labels must include:

- Unique sample ID will be assigned to each sample for laboratory analysis (see below);
- Project name and location of sample;
- Date and time of collection;
- Name or initials of person collecting the sample;
- Each intended laboratory analysis for the sample; and
- Preservation method.

Sample Identification

All samples will be given a unique identification that is descriptive of the sample. The sample identification procedure will follow the format shown below.

Sample ID: Site – Sample Type and Number – Location and Depth

For example: Landmark DT – S1 – N5

Where: Landmark DT = Landmark Dip Tank
S1 = Soil Sample #1
N5 = North of Dip Tank, 5 feet deep

2.2.4 Field Equipment Decontamination

Equipment that comes into direct contact with a soil sample must be new or decontaminated. Equipment will be decontaminated as follows:

- Scrub the equipment thoroughly with phosphate-free detergent and potable water using a brush to remove particulate matter or surface film;
- Rinse all drill tooling and samplers with a high pressure washer to remove packed dirt;
- Rinse twice with clean potable water;
- Air dry on plastic sheeting or equivalent; and
- Store in aluminum foil, plastic bags, or other appropriate containers until use for collecting the sample.

2.3 Sample Handling and Custody

Sample custody will be maintained and documented throughout collection, shipping, analysis, and disposal of the sample. Samples will not be left unattended unless properly secured. A chain-



of-custody (COC) form will be used to summarize the samples collected and analyses requested. The COC tracks the samples between their release from the field to the initial receiving laboratory by having each COC signed by the person relinquishing control of the samples and the person taking possession of them. The original COC will accompany the samples; the person releasing custody will keep a copy. Upon receipt at the laboratory, the COC will be signed by the person receiving the samples. The following information will be recorded on each COC:

- Project name;
- Sample identification;
- Sample type (grab or composite);
- Date and time of collection;
- Preservation technique;
- Analyses to be performed;
- Identification of sample collector;
- Shipping destination; and
- Signature and dates of all sample custodians.

Immediately upon receipt by the laboratory, the condition of samples will be assessed and documented. The contents of the shipping container will be checked against the information on the custody form for anomalies. If any discrepancy is identified, or if laboratory acceptance criteria or project-specific criteria are not met, the laboratory must contact the Project Manager for resolution of the problem. The discrepancy, its resolution, and the identity of the person contacted will be documented in the laboratory's file and copies of the documentation will be included in the final report. The following conditions may cause sample data to be unusable and must be communicated to the laboratory team leader:

- The integrity of the samples is compromised (e.g., leaks, cracks, grossly contaminated container exteriors or shipping cooler interiors, obvious odors, etc.);
- The identity of the container cannot be verified;
- The proper preservation of the container cannot be established;
- Incomplete sample custody forms (e.g., the sample collector is not documented or the custody forms are not signed and dated by the person who relinquished the samples); and
- Required sample temperatures were not maintained during transport.

The laboratory will also verify that sample conditions, amounts, and containers meet the requirements for the sample and matrix. A unique sample identifier will be assigned to all containers for each sample received at the laboratory, including multiple containers of the same sample.

2.4 Analytical Reporting

The laboratory reports will document all aspects of sample management and the analytical results for the project samples. The following is a list of the required information that will be included in the laboratory reports.

- Client name and address;



- Client contact;
- Laboratory name and address;
- Laboratory contact;
- Project name;
- Client sample identification;
- Laboratory sample identification;
- Dates samples were collected, received by the laboratory, extracted, and analyzed;
- Sample custody documentation;
- Analytical method number(s) and project protocols;
- Case narrative/sample group comments;
- Analytical result and qualifier symbol definitions;
- Analytical results for all samples and quality control samples;
- Quality control parameters including method detection limit (MDL), limits of quantitation (PQL), result qualifiers, dilution factors;
- Analyst initials; and
- Laboratory data reviewer name and signature.

3. QUALITY ASSURANCE / QUALITY CONTROL

QA/QC is developed to provide guidelines for field and laboratory operations. The project data quality objectives (DQO) are designed to produce data of known and acceptable quality, allowing the site investigators to fully assess the degree and extent of constituents of concern in the media present at the site. During the site assessment, activities and analyses will be conducted using standard procedures and established methodologies to ensure that acceptable levels of data accuracy, precision, completeness, representativeness, and comparability were achieved. This consistency also minimizes loss of data due to unforeseen conditions and results in data that is reproducible at all levels.

3.1 Field QA/QC

Field QA/QC procedures are designed to minimize generation of analytical data that are biased by field contamination or sampling error. The following field procedures will be employed:

- Standard operating procedures for consistent sample collection;
- Equipment decontamination procedures to minimize cross-contamination; and
- Proper handling procedures to avoid compromising sample integrity during collection and shipping (observe sample container, labeling, preservation and holding time requirements).

3.2 Laboratory QC Procedures

Laboratory quality control procedures adopted for this project are those outlined in the QA Manual by ESC Lab Sciences. The QA Manual documents the laboratory's management system and demonstrates the ability to execute the indicated tests and/or procedures and to meet regulatory requirements. The QA Manual establishes compliance with ISO 17025, NELAC,



DOD QSM, and AIHA. Specific procedures addressed by the Laboratory's Quality Assurance Plan include:

- Sample Management;
- Technical Requirements;
- Waste Minimization/Disposal;
- Reagent/Standard Preparation;
- General Laboratory Techniques (which are not otherwise specified);
- Test Methods (sample preparation and analysis procedures, instrument standardization, precision and bias, detection and reporting limits, and analytical method-specific quality control procedures);
- Equipment Calibration and Maintenance;
- QC Samples (type, purpose, frequency, acceptance criteria);
- Corrective Action;
- Data Reduction and Validation;
- Reporting; and
- Records Management.

A copy of the laboratories QA Manual will be kept on-file by Wells' QA Manager.

Quantitative laboratory analytical data (QC Level II) will be generated through the implementation of this SAP. Laboratory data will be of sufficient quality to facilitate a risk evaluation through comparison with contaminant Regional Screening Levels (RSLs) published by EPA. These data will also support the data quality assessment activities described below. EPA analytical methods will be selected to provide detection limits that are equal to or below the RSLs for contaminants of concern. With minor exceptions, the items identified above are activities and procedures that are addressed internally by the laboratory at the level of data quality required for this project. However, project personnel will scrutinize the laboratory reports produced for this project as an additional check of data quality. Specific items to be assessed are presented below.

Data Package Completeness – the laboratory reports will be assessed to confirm that they include a case narrative, appropriate method and/or practical quantitation limits and sample custody documentation.

Laboratory QC Samples – The adequacy of laboratory control procedures will be verified by determining whether laboratory quality control samples are within established control limits. Method blanks will be assessed to monitor target analyte contamination in the analyses batch. Laboratory control samples will be evaluated to assess the method performance and provide information on method accuracy. MS/MSD analyses will be evaluated to assess method performance for a selected sample matrix in the analytical batch and to provide a measure of method precision. Batch MS performance can be applied to other similar matrices in the batch with caution. MS/MSD will be evaluated to determine whether reproducibilities are consistent with project data quality goals as measured by relative percent difference (% RPD). Spike recovery data (% REC) for laboratory control sample (LCS), MS/MSD will be evaluated to



determine whether recoveries are within the established control limits. Surrogates, added to all samples will be evaluated to assess method performance/bias for each sample within a batch.

Sample Holding Times – Since each EPA analytical method to be performed for the project has a specific holding time, within which sample integrity is judged to be adequate, the date of sample collection, extraction/preparation and analyses will be checked for all analyses. Proper sample preservation will also be documented. Sample container, preservation and holding time requirements for specific analyses to be performed are provided below as Table 2. Sample container requirements are specified by the laboratory.

Table 2. Sample Containers, Preservation and Holding Times

Parameter	Method	Container	Preservative	Holding Time (days)
Soil				
BTEX	8260B	2 oz clear soil jar	4° C	14
Total Metals (RCRA 8) and Cu, Zn	6010B, 7471 (Hg)	2 oz clear soil jar	4° C	180, 28 ^a
PAHs	8270C-SIM	4 oz clear soil jar	4° C	14
Phenols and PCP	8270C	4 oz clear soil jar	4° C	14
Dioxin	8290 Modified	4 oz clear soil jar	4° C	30
Water				
BTEX	8260B	3 40 ml, HCL vial	HCL, 4° C	14
Total Metals (RCRA 8) and Cu, Zn	6010B, 7470A (Hg), 6020 (As)	500 ml HDPE bottle	HNO ₃ , 4° C	180, 28 ^a
PAHs	8270C-SIM	3 40 ml amber vial	4° C	7
PCP	SV8270PCP	2 100 ml amber jars	4° C	7

^a ICP metals have 180 day holding time; Hg has 28 day holding time

BTEX – benzene, toluene, ethylbenzene, xylenes

PAHs – polynuclear aromatic hydrocarbons

PCP – pentachlorophenol

RCRA – Resource Conservation and Recovery Act

Compound Identification, Quantitation and Detection Limits – Laboratory reports will be reviewed to verify that all requested analyses have been reported and to confirm that analytical method detection limits are adequate to compare the data with project cleanup standards. Identification of tentatively identified compounds and the use of appropriate data qualifiers will be noted as part of this review. The reporting limits (RLs) for the analytes of interest are provided below as Table 3.



Table 3. Reporting Limits

Analyte	Soil RL	RSL (10 ⁻⁵)	Unit
Arsenic	2.0	6.7	mg/kg
Barium	0.50	1.53E+4	mg/kg
Cadmium	0.50	7.03E+1	mg/kg
Chromium III	1.0	1.17E+5	mg/kg
Lead	0.50	4.0E+2	mg/kg
Mercury	0.02	9.43	mg/kg
Selenium	2.0	3.91E+2	mg/kg
Silver	1.0	3.91E+2	mg/kg
Copper	2.0	3.13E+3	mg/kg
Zinc	5.0	2.35E+4	mg/kg
Benzene	0.001	1.16E+1	mg/kg
Toluene	0.005	4.89E+3	mg/kg
Ethylbenzene	0.001	5.78E+1	mg/kg
Total Xylenes	0.003	5.84E+2	mg/kg
PAHs	0.006 - 0.033	varies	mg/kg
Phenol	0.33	1.85E+4	mg/kg
PCP	0.33	9.85	mg/kg

PAHs – polynuclear aromatic hydrocarbons

RL – Laboratory reporting limit

RSL – EPA Regional Screening Level 2014 for residential use adjusted to 1x10⁻⁵ risk for carcinogens; or hazard index of 1 for non-carcinogens (http://www.epa.gov/reg3hwm/risk/human/rb-concentration_table/index.htm)

Performance Evaluation – Analytical data will be reviewed to confirm that the data quality criteria have been adequately addressed. Precision, accuracy, representativeness, comparability and completeness (PARCC) Data Quality Indicators will be addressed as part of this evaluation.

3.2 Data Quality Indicators

This section discusses the results of the analytical data quality requirements in terms of data quality indicators.

3.2.1 Precision Assessment

Also known as reproducibility, precision is a measure of mutual agreement among individual measurements of the same property usually under prescribed conditions. This is the random component of error. The relative percent difference (RPD) of two duplicate samples is used to assess the precision of the data. For laboratory duplicates, field duplicates and matrix spike duplicates, the following represents the equation to calculate RPD:

$$RPD = \frac{100\% \times (C_1 - C_2)}{(C_1 + C_2) / 2}$$

Where: C₁ = concentration in first sample

C₂ = concentration in second sample



Laboratory duplicate measurements are obtained for each set of samples and analyzed to assess the laboratory's precision. Acceptable RPDs for duplicate samples generally range from 35% to 50%.

3.2.2 Accuracy Assessment

Accuracy is a measure of the closeness of the agreement between a "true" or reference value and the associated measured value. The recoveries of standard reference materials (SRM), matrix spikes, and surrogate spikes are used to evaluate the accuracy of the measurements. These recoveries are typically calculated as "percent recovery" and are represented by the following equations:

Percent Recovery for SRM:

$$\% \text{ Recovery} = \frac{100\% \times (C_m)}{C_T}$$

Where: C_m = measured SRM value

C_T = true SRM value

Percent Recovery for Spiked Samples (Matrix and Surrogate):

$$\% \text{ Recovery} = \frac{100\% \times (S-U)}{C}$$

Where: S = measured value of spiked sample

U = measured value of un-spiked sample

C = true value of spike added

Acceptable spike recoveries are established by the laboratory and typically range from 50% to 150% and are used to assess the accuracy of measurements.

3.2.3 Representativeness Assessment

Representativeness is a parameter that expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. The evaluation criteria for representativeness include: (1) implementation of standard operating procedures; (2) adherence to sample holding times; (3) use of analytical detection limits that are at or below regulatory standards; and (4) the absence of contamination in method blanks. In addition, 90% of LCS duplicates should meet RPD goals.

3.2.4 Comparability Assessment

Comparability is defined as the confidence with which one data set can be compared to another data set. Using standard sampling and analysis procedures maximizes comparability.



3.2.5 Completeness Assessment

Completeness is defined as the percentage of valid measurements to planned measurements. For the purpose of the completeness calculation, the number of measurements planned is defined as the total number of analytes that the laboratory will be requested to analyze. The percent completeness of the data will be calculated according to the following equation:

$$\text{Completeness} = 100\% \times \frac{\text{Number of Valid Measurements}}{\text{Number of Planned Measurements}}$$

A calculated completeness of 90% or greater is considered acceptable. Analytical results for blanks and laboratory QC samples are not included in this total.

Corrective Action Summary - The need for corrective action will be determined based on the performance evaluation results for the data quality criteria identified above.

3.3 Data Verification

All data will be verified to ensure that it is complete, correct, and conforms to the methods and specifications of this SAP. The analytical laboratory will review and verify each data package prior to release for independent validation. At a minimum, the following reviews must be performed:

- Peer review of the data by a qualified analyst;
- Review of the reported data and deviations by a technical supervisor or data coordinator; and
- QA officer review of 10% of the data.

Implementation of these procedures is defined in laboratory SOPs. Verification must ensure the following:

- All data for project samples are reported accurately and completely;
- Sample analysis was conducted in accordance with required laboratory procedures and analytical methods specified in the SAP;
- Criteria for data quality have been met or deviations are documented in the package narrative and data flags have been appropriately applied;
- Each data set is appropriately reviewed; and
- All project requirements have been met.

3.3 Data Validation

Each laboratory data package will be validated by the QA Officer to assess the adequacy of the data to meet the DQOs.

The QA Officer will validate the soil data generated for this project in accordance with this SAP using the National Functional Guidelines for Superfund Organic Methods Data Review (US



EPA, 2008) as general guidance. The QA Officer will prepare a data validation report to summarize the data quality indicators, to assess field and laboratory data for conformance with the QA objectives of this plan, and to describe any nonconformance along with corrective actions taken and the anticipated effects on data quality. The review will evaluate the results of sample analyses, methods of analysis, quantitation limits, sample collection and laboratory receipt dates, sample preparation and extraction dates, sample analysis dates, and holding time compliance. The following list summarizes the elements that will be reviewed in the data validation process:

- Sample preservation;
- Temperature blanks;
- Holding times;
- Method blanks;
- Trip blanks;
- Equipment blanks;
- Surrogate recovery;
- MS / MSD recovery;
- LCS / LCS Duplicate (LCSD) recovery;
- Laboratory duplicate;
- Field duplicate;
- Detection Limits; and
- Completeness.

4. REPORTING

Wells will prepare a Closure Plan that includes separate sections discussing assessment findings and results. The report will identify sample locations. Wells will also provide an electronic version of the report. A summary of data quality will be included in the Closure Plan.



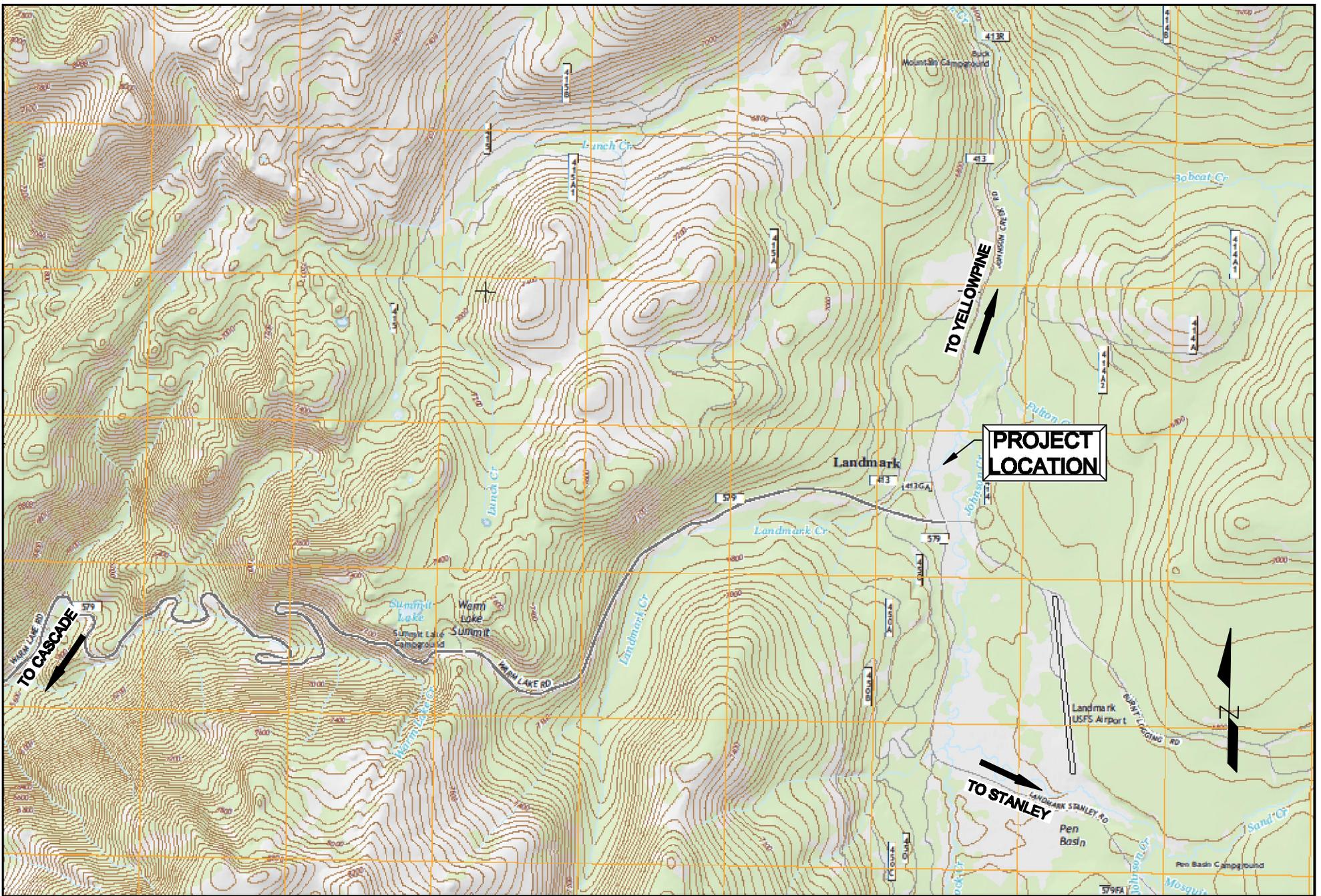
5. REFERENCES

US Environmental Protection Agency (US EPA), 2002. Guidance for Quality Assurance Project Plans. EPA QA/G-5, EPA/240/R-02/009.

US EPA, 2008. US EPA Contract Laboratory Program National functional Guidelines for Superfund Organic Methods Data Review. USEPA-540-R-08-01, OSWER 9240.1-48. June 2008.



FIGURES



NOTES:

DESIGNED BY
RK

DRAWN BY
KK

CHK'D BY
PH

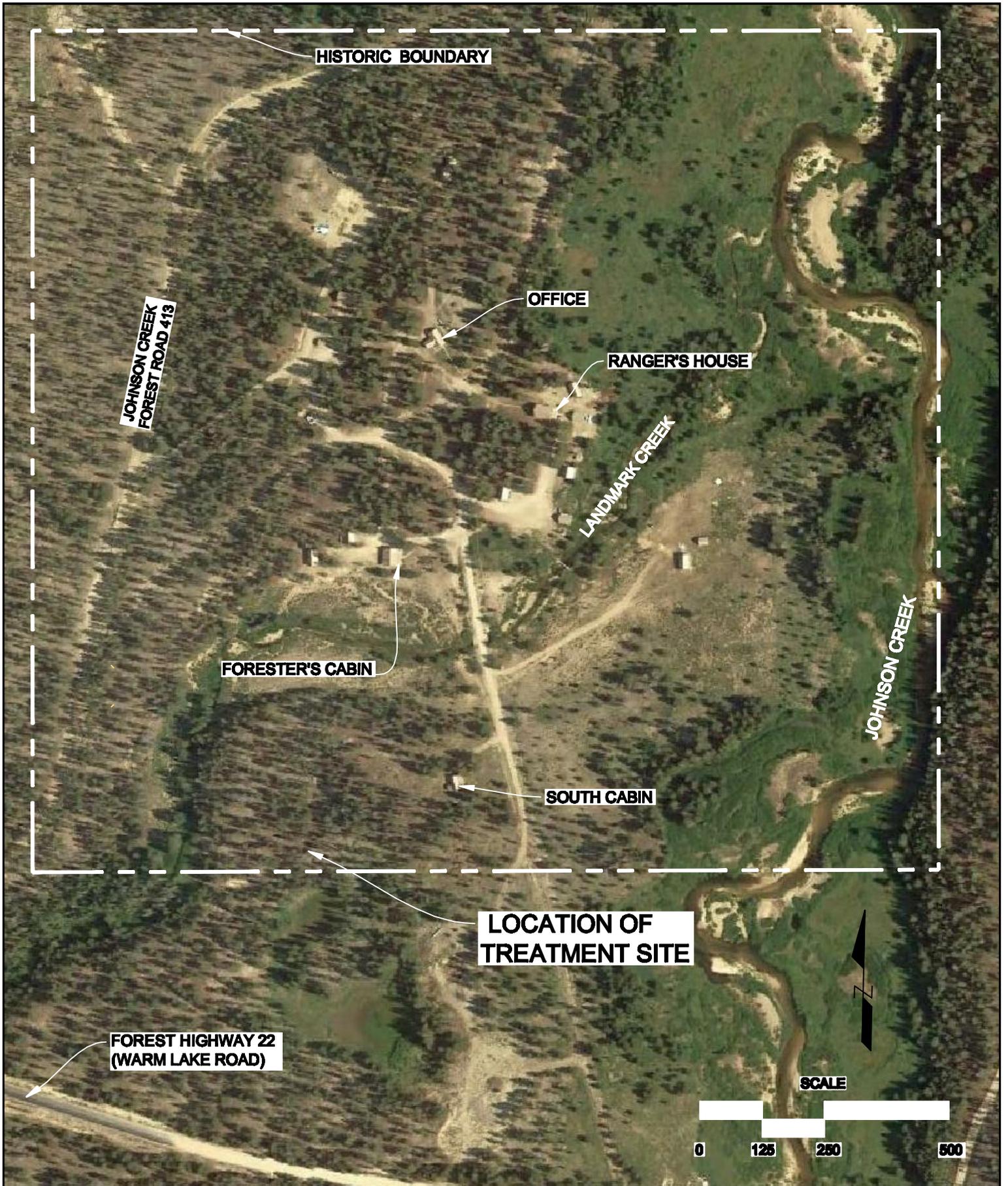
PREPARED FOR:
US FOREST SERVICE



**LANDMARK GUARD STATION
VICINITY MAP
WOOD TREATMENT SITE
LANDMARK, VALLEY COUNTY, IDAHO**

SHEET
FIGURE 1

DATE
10/21/2014



DESIGNED BY
PH

DRAWN BY
KK

CHK'D BY
PH

PREPARED FOR:
US FOREST SERVICE



**LANDMARK GUARD STATION
VICINITY MAP
WOOD TREATMENT SITE
LANDMARK, VALLEY COUNTY, IDAHO**

SHEET
FIGURE 2

DATE
10/8/2014



APPENDIX 2

Health and Safety Plan



Health and Safety Plan
Landmark Wood Treatment Site

BOISE NATIONAL FOREST, IDAHO



Prepared For:
**USDA Forest Service
Region 4**

Prepared By:
E W Wells Group
390 E Parkcenter Blvd., Ste. 200
Boise, ID 83702

Contract No. AG-0261-P-14-0252

November 6, 2014





TABLE OF CONTENTS

1. INTRODUCTION.....	1
1.1 POLICY STATEMENT.....	1
1.2 GUIDANCE AND REFERENCES.....	2
1.3 GENERAL PROJECT INFORMATION	2
2. SITE DESCRIPTION AND SCOPE OF WORK.....	2
2.1 SITE DESCRIPTION AND HISTORY.....	2
2.2 SCOPE OF WORK	3
2.2.1 <i>Site Characterization</i>	4
3. PROJECT HEALTH AND SAFETY ORGANIZATION	4
4. SAFETY PROGRAMS	6
4.1 HAZWOPER QUALIFICATIONS.....	6
4.2 SITE-SPECIFIC SAFETY TRAINING	6
4.3 MEDICAL MONITORING	7
4.4 HAZARD COMMUNICATION.....	7
4.5 HAZARDOUS, SOLID, OR MUNICIPAL WASTE.....	7
4.6 GENERAL SAFETY RULES.....	8
4.7 HOUSEKEEPING.....	8
4.8 SMOKING, EATING, OR DRINKING	8
4.9 FIRE PREVENTION	8
4.10 STOP WORK AUTHORITY	8
5. HAZARD ASSESSMENT.....	9
5.1 CHARACTERIZATION	9
5.2 KNOWN SITE BACKGROUND INFORMATION ON CHEMICAL HAZARDS	9
5.3 RELATIVE TOXICITY AND POTENTIAL HEALTH RISKS OF CHEMICALS	9
5.3.1 <i>Pentachlorophenol (CAS 87-86-5, DOT UN2020, NFPA 3-0-0)</i>	10
5.3.2 <i>Creosote (CAS 65996-93-2)</i>	10
5.3.3 <i>Polycyclic Aromatic Hydrocarbons</i>	10
5.3.4 <i>Diesel fuel (CAS 68-4763-46, DOT NA1993, NFPA 0-2-0)</i>	11
5.3.5 <i>Dioxins</i>	11
5.4 ROUTES OF CHEMICAL EXPOSURE	11
5.4.1 <i>Inhalation</i>	11
5.4.2 <i>Skin Absorption</i>	12
5.4.3 <i>Ingestion</i>	12
5.4.4 <i>Eye Contact</i>	12
5.5 PHYSICAL HAZARDS	12
6. SAFETY AND HEALTH CONTROLS.....	12
6.1 ACCIDENT PREVENTION.....	12
6.1.1 <i>General</i>	12
6.1.2 <i>Slips, Trips, Falls, and Protruding Objects</i>	13
6.1.3 <i>Cuts and Lacerations</i>	13



6.1.4	<i>Fire Protection</i>	14
6.1.5	<i>Heat and Cold Stress</i>	14
6.1.6	<i>Ultraviolet Radiation Protection</i>	16
6.1.7	<i>Confined Spaces</i>	16
6.1.8	<i>Drilling Safety</i>	16
6.1.9	<i>Exposure to Traffic</i>	16
6.1.10	<i>Exposure to Falling Loads</i>	16
6.1.11	<i>Hazardous Noise Environments</i>	16
6.1.12	<i>Manual Lifting Guidelines</i>	17
6.1.13	<i>Driving Safety</i>	17
6.1.14	<i>Secure Parking</i>	17
6.1.15	<i>Illumination Requirements</i>	18
6.2	CHEMICAL HAZARD MINIMIZATION	18
6.2.1	<i>Required First Aid and Safety Equipment</i>	18
6.2.2	<i>Required Personal Protective Equipment</i>	18
6.2.3	<i>Respiratory Protection</i>	19
6.2.4	<i>Decontamination</i>	19
6.3	BIOLOGICAL HAZARD MINIMIZATION.....	20
6.3.1	<i>Poisonous Snakes</i>	20
6.3.2	<i>Biting or stinging insects</i>	20
6.3.3	<i>Transmitted Diseases</i>	21
7.	SITE CONTROL	21
7.1	CONTROLLED WORK AREAS.....	22
7.1.1	<i>Exclusion Zone</i>	22
7.1.2	<i>Contamination Reduction Zone</i>	22
7.1.3	<i>Support Zone</i>	22
7.2	SITE ACCESS	23
7.2.1	<i>Visitor Access</i>	23
7.3	SITE SECURITY	23
8.	EMERGENCY RESPONSE PLANNING AND PROCEDURES	24
8.1	EMERGENCY ACTION PLAN	24
8.2	SITE-SPECIFIC EMERGENCY PROCEDURES	24
8.2.1	<i>Site Evacuation</i>	25
8.2.2	<i>Notification Procedures</i>	25
8.2.3	<i>Initial Response Steps</i>	25
8.3	NEAREST HOSPITAL	25
8.4	SPILL CONTAINMENT PROCEDURE	26
8.5	ACCIDENT/INCIDENT REPORTING	26

TABLES

- Table 1. Project Contact Information
 Table 2. Project Site and Potential Hazards
 Table 3. Identification and Treatment of Heat/Cold-Related Illness





Table 4. Personal Protective Equipment
Table 5. Emergency Planning
Table 6. Emergency Contacts

FIGURES

Figure 1. Vicinity Map
Figure 2. Site Plan

ATTACHMENTS

Attachment 1. Route to Hospital



1. INTRODUCTION

This site Health and Safety Plan (HSP) is prepared for the field investigation associated with a Resource Conservation and Recovery Act (RCRA) Closure Plan of a wood treatment facility at the Landmark Guard Station (Site) in the Boise National Forest, Idaho. The HSP provides a general description of the levels of personal protection and safe operating guidelines expected of each employee or subcontractor associated with the environmental services being conducted at the work site. This HSP also identifies chemical and physical hazards known to be associated with the E W Wells Group, LLC (Wells) managed activities addressed in this document.

The provisions of this HSP are mandatory for all Wells personnel engaged in field work associated with the environmental services being conducted at the Site. A copy of this HSP shall be maintained on site and available for review at all times. Record keeping will be maintained in accordance with this HSP and the applicable Wells Standard Operating Procedures (SOPs). In the event of a conflict between this HSP, the SOPs and federal, state, and local regulations, workers shall follow the most stringent/protective requirements.

Prior to on-site work, all personnel shall be informed of the provisions of this plan and the site emergency response procedures. An acknowledgment form (beginning of HSP) will be signed by all personnel working on-site to whom it applies, signifying they have read this plan and agree to abide by its provisions.

The health and safety requirements of this plan are based on limited information, known at the time of its preparation. All plan provisions are subject to revision by the Project Manager based on new site information, changes in the scope of field work, or judgments regarding the appropriate level or type of protection for workers. In such a case, an addendum will be issued for this plan. This plan was prepared in accordance with generally accepted principles of industrial hygiene practice in the same or similar locality. A copy of this plan will be maintained onsite during all work activities.

1.1 Policy Statement

It is the policy of Wells to provide a safe and healthy work environment for all of its employees. Wells considers that no phase of operations or administration is of greater importance than injury and illness prevention. Safety takes precedence over expediency or shortcuts. At Wells, we believe every accident and every injury is avoidable. We will take every reasonable step to reduce the possibility of injury, illness, or accident. This is detailed in Wells Safety, Health and Environmental Policy Statement.

The practices and procedures presented in this HSP and any supplemental documents associated with this HSP are binding on all Wells employees while engaged in the subject work. In addition, all Site visitors shall abide by these procedures as the minimum acceptable standard for the work site. Operational changes to this HSP and supplements that could affect the health or safety of personnel, the community, or the environment will not be made without prior approval of the Wells Project Manager (PM) and the assigned Safety Professional.



1.2 Guidance and References

This HSP conforms to the regulatory requirements and guidelines established in the following documents:

- Title 29, Part 1910 of the Code of Federal Regulations (29 CFR 1910), Occupational Safety and Health Standards with special attention to Section 120, Hazardous Waste Operations and Emergency Response.
- Title 29, Part 1926 of the Code of Federal Regulations (29 CFR 1926), Safety and Health Regulations for Construction.
- National Institute for Occupational Safety and Health (NIOSH)/OSHA/U.S. Coast Guard (USCG)/EPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, Publication No. 85-115, 1985.

The requirements in this HSP also conform to Wells Corporate Safety Program requirements as specified in Wells Safety, Health and Environmental Manual, a copy of which will be maintained on site at all times.

1.3 General Project Information

Client: USDA Forest Service,
Client Contract Number: AG-0261-P-14-0252
Project Name: Landmark Wood Treatment Site Closure Plan
Project Manager: Paul Hunter, PG
Health & Safety Officer: Cliff Yeary
Dates of Field Activities: November 2014

2. SITE DESCRIPTION AND SCOPE OF WORK

Wells was contracted by the USFS Region 4. Site activities will be conducted in accordance with the Sampling and Analysis Plan (SAP) and this HSP. The following is a relevant summary of data concerning the site and the work procedures to be performed by Wells and our subcontractors. The SAP prepared by Wells provides significantly greater details concerning both the site history and the planned work operations.

2.1 Site Description and History

The Site is owned by the USFS and is located in the Boise National Forest, approximately 37 miles east of Cascade, Idaho (Figure 1). The Site was historically used as a guard station and ranger station as well as for treating wood posts. Prior to 1984, post treatment took place in a northwestern area of the guard station, but were moved to the present location when the FS Road 413 bypass was constructed. It is estimated that post treatment activities took place from 1984 to 1990 at the present location.

During a safety inspection in June 2013, a wood treatment dipping vessel was discovered, approximately 120 yards southwest of the “Packers Cabin” in an area containing various piles of



abandoned equipment and supplies (bone yard). The vessel is a 46-inch diameter by 4.5 foot deep steel container buried approximately 4 feet into the ground. Approximately 6 inches of the vessel protrudes above ground level. The vessel is constructed of ½-inch steel and appears to be competent enough to contain effluent.

Within 50 feet of the dipping vessel an older red/orange colored 55-gallon drum, approximately 1/3 full of liquid, was also discovered and appeared to be intact with no noticeable leakage from the drum or on the ground surface near the drum.

A small depression/pond, approximately 100 feet by 200 feet, is located about 60 yards down gradient of the dipping vessel and looks to impound snow melt water. The depression/pond was dry during the September 2013 site visit.

On July 23, 2013, a contractor was commissioned by the USFS to sample both the contents of the dipping vessel and the red/orange colored 55-gallon drum. The analysis of the effluent in the dipping vessel showed low levels of volatile organic compounds (VOCs) and PAHs; PCP was also detected. The analysis of the red/orange colored 55-gallon drum showed high levels of VOCs and PAHs; and PCP was also detected.

On November 6, 2013, the contents of the dipping vessel were transferred into seven 55-gallon drums, and the red/orange colored 55-gallon drum was placed into an overpack container. All of the drums were transported by a licensed hazardous waste transporter to a permitted TSDF (Clean Harbors in Aragonite, Utah) for final disposal.

Upon emptying the dipping vessel, it was noted that the bottom of the vessel appeared to be intact with no noticeable points of leakage or drain apparatus. A small amount of sludge remains on the bottom of the vessel. After emptying the vessel, a fiberglass hood was placed over the top to exclude meteoric water from refilling the vessel.

2.2 Scope of Work

The Closure Plan includes a field investigation to characterize the Site and determine whether further action is warranted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or required by Idaho Department of Environmental Quality (IDEQ). Contaminants associated with wood treatment formulations include creosote, pentachlorophenol (PCP) and other phenol compounds, polynuclear aromatic hydrocarbons (PAHs), metals (chromium and arsenic). Petroleum fuels such as diesel are also commonly associated with wood treatment formulations. There is a potential for dioxins and furans to be associated with this waste classification. Field monitoring and testing will focus on PCP as an indicator compound to assess the extents of contaminated soils requiring removal. Laboratory analysis of the contaminants of concern in soil samples will be performed to confirm the extent of contamination.



2.2.1 Site Characterization

The project involves conducting an initial site characterization and observing the USFS remove the on-site dip tank. Wells will collect direct push soil samples from two borings as close to the dip tank as possible at 5, 10, and 15 feet below ground surface (bgs) to help define the vertical extent of contamination. Soil samples will be collected at approximately 6 inches bgs from locations 5 and 10 feet laterally to the north, south, east and west of the dip tank to help define the lateral extent of contamination.

One composite and one grab soil sample will be collected from the small depression/pond area. The grab sample will be collected from the lowest point in the depression. The composite will be prepared by collecting 4 to 6 sub-samples from between 3 and 6 inches bgs at locations throughout the depression area. These sub-samples will be field composited using disposable plastic equipment. If water is present in the depression, a single water sample will also be collected. A single surface soil sample will also be collected at the location of the previously removed 55-gallon drum.

One background soil sample will be collected from 9 to 12 inches bgs approximately 300 to 500 feet from the dip tank. One matrix spike/ matrix spike duplicate (MS/MSD) analysis will be performed on one of the soil samples for quality control (QC) purposes.

Following removal of the dip tank, two composite soil samples will also be collected from the dip tank excavation. One composite soil sample will be collected from the vertical walls of the excavation (a minimum of two subsamples per side wall) and one composite soil sample will be collected from the floor of the excavation (a minimum of three subsamples).

The samples will be analyzed for the target analytes by an off-site laboratory as specified in the SAP, and the results presented in a final report to USFS.

3. PROJECT HEALTH AND SAFETY ORGANIZATION

Summarized below is a list of contacts associated with this project (Table 1).

Table 1. Project Contact Information

Title	Name / Organization	Telephone Number
Client – Contracting Officers Representative	Dean Morgan – USFS COR	Office: (208) 879-4157 Cell: (208) 993-1747
Project Manager and On-site Coordinator	Paul Hunter – Wells	Office: (208) 345-8292, ext. 119 Cell: (208) 899-6784
Health & Safety Officer	Cliff Yeary – Wells	Cell (214) 732-9085

Project Manager: Paul Hunter, PG – The Project Manager (PM) has overall management authority and responsibility for all site operations, including safety. The Project Manager will provide plans, staff, and budgetary resources, which are appropriate to meet the safety needs of the project operations. The Project Manager is responsible for:



- Discussion of deviations from the SAP or safety issues with the field personnel;
- Development and implementation of corrective actions for site safety deficiencies;
- Implementation of this HSP and ensuring compliance;
- Ensure that all Site personnel and visitors have received the proper training and medical clearance prior to entering the Site;
- Inspections of the Site for compliance with this HSP;
- Halt any activity which poses a potential hazard to personnel, property or the environment; and
- Temporarily suspend individuals from field activities for infractions against the HSP pending consideration by the Health and Safety Officer.

Health and Safety Officer: Cliff Yeary – The Safety Professional is the member of Wells Corporate Safety and Health Department assigned to oversee health and safety requirements for the project and provide any needed technical support. The Safety Professional will be the first point-of-contact for all of the project's health and safety matters. Duties include the following:

- Approving and updating this HSP and any required changes to reflect changes in Site conditions or the scope of work;
- Be aware of changes in Wells Safety Policy.
- Reviewing all personal exposure monitoring results;
- Investigating any reported unsafe acts or conditions; and
- Work with the Project Manager to develop and implement corrective action plans to correct deficiencies discovered during Site inspections;

Project / Field Personnel – Responsibilities of employees associated with this project include, but are not limited to understanding and abiding by the policies and procedures specified in the HSP and other applicable safety policies, and clarifying those areas where understanding is incomplete; providing feedback to health and safety management relating to omissions and modifications in the HSP or other safety policies; and notifying the Project Manager of unsafe conditions and acts.

The health and safety authority of each employee assigned to the Site includes the following:

- The right to refuse to work and/or stop work authority when the employee feels that the work is unsafe (including subcontractors or team contractors), or where specified safety precautions are not adequate or fully understood.
- The right to refuse to work on any Site or operation where the safety procedures specified in this HSP or other safety policies are not being followed.
- The right to contact the SSO or the Safety Professional at any time to discuss potential concerns.

Subcontractors – Each Wells subcontractor is responsible for assigning specific work tasks to their employees. Each subcontractor's management will provide qualified employees and allocate sufficient time, materials, and equipment to safely complete assigned tasks. In particular, each subcontractor is responsible for equipping its personnel with any required personnel protective equipment (PPE).



Wells considers each subcontractor to be an expert in all aspects of the work operations for which they are tasked to provide, and each subcontractor is responsible for compliance with the regulatory requirements that pertain to those services. Each subcontractor is expected to perform its operations in accordance with its own unique safety policies and procedures, in order to ensure that hazards associated with the performance of the work activities are properly controlled. Copies of any required safety documentation for a subcontractor's work activities will be provided to Wells for review prior to the start of onsite activities, if required.

Hazards not listed in this HSP but known to any subcontractor, or known to be associated with a subcontractor's services, must be identified and addressed to the Wells Project Manager prior to beginning work operations. The Project Manager has the authority to halt any subcontractor operations, and to remove any subcontractor or subcontractor employee from the site for failure to comply with established health and safety procedures or for operating in an unsafe manner.

Visitors – Authorized visitors (e.g., client representatives, regulators, Wells management staff, etc.) requiring entry to any work location on the Site will be briefed by the Project Manager on the hazards present at that location. Visitors will be escorted at all times at the work location and will be responsible for compliance with their employer's health and safety policies. In addition, this HSP specifies the minimum acceptable qualifications, training, and personal protective equipment which are required for entry to any controlled work area. Visitors must comply with these requirements at all times. Unauthorized visitors, and visitors not meeting the specified qualifications, will not be permitted within established controlled work areas.

4. SAFETY PROGRAMS

4.1 HAZWOPER Qualifications

Personnel performing work at the job site must be qualified as HAZWOPER workers, and must meet the medical monitoring and training requirements. Personnel must have successfully completed training meeting the provisions established in 29 CFR 1910.120 (e)(2) and (e)(3) (40-hour initial training). As appropriate, personnel must also have completed annual refresher training in accordance with 29 CFR 1910.120 (e)(8); each person's most recent training course must have been completed within the previous 365 days. Personnel must also have completed a physical exam in accordance with the requirements of 29 CFR 1910.120 (f), where the medical evaluation includes a judgment of the employee's ability to use respiratory protective equipment and to participate in hazardous waste site activities.

If site monitoring procedures indicate that a possible exposure has occurred above the OSHA permissible exposure limit (PEL), employees may be required to receive supplemental medical testing to document symptoms specific to the particular materials present.

4.2 Site-Specific Safety Training

All Wells personnel assigned to this project shall be qualified for working at petroleum-contaminated sites. In addition to the HAZWOPER training described above in Section 4.1, personnel are required to be:



- Currently qualified to wear a respirator, in accordance with Wells Safety and Health Manual.
- Successfully completed the Hazard Communication training in accordance with the Wells Safety and Health Manual.
- Instructed on the contents of applicable portions of this HSP and any supplemental health and safety information developed for the tasks to be performed.
- Made aware of task-specific physical hazards and other hazards that may be encountered during site work. This includes any client-specific required training for health and safety.
- Made aware of fire prevention measures, fire extinguishing methods, and evacuation procedures.

The site-specific training will be performed prior to the worker performing the subject task or handling the impacted materials and on an as-needed basis thereafter.

4.3 Medical Monitoring

All Wells personnel assigned to this project shall be enrolled in the company's Medical Surveillance Program. The program requires baseline (upon employment) and periodic examinations by a licensed physician. Records of these examinations for Boise personnel are maintained at Occupational Medicine Associates, 6533 West Emerald Street, Boise, Idaho (208) 377-1520.

4.4 Hazard Communication

Section 5 provides information concerning the materials that may be encountered as environmental contaminants during the work activities. In addition, any organization wishing to bring any hazardous material onto any Wells-controlled work site must first provide a copy of the item's Safety Data Sheet (SDS) to the Project Manager for approval and filing (the Project Manager will maintain copies of all SDSs on Site). SDSs may not be available for locally-obtained products, in which case some alternate form of product hazard documentation will be acceptable. All personnel shall be briefed on the hazards of any chemical product they use, and shall be aware of and have access to all SDSs.

All containers on Site shall be properly labeled to indicate their contents. Labeling on any container not intended for single-day, individual use shall contain additional information indicating potential health and safety hazards (flammability, reactivity, etc.).

4.5 Hazardous, Solid, or Municipal Waste

If hazardous, solid and/or municipal wastes are generated during any phase of the project, the waste shall be accumulated, labeled, and disposed of in accordance with applicable Federal, State, and/or local regulations.



4.6 General Safety Rules

All site personnel shall adhere to this HSP during site operations. In addition, the housekeeping and personal hygiene requirements listed below will also be observed.

4.7 Housekeeping

During site activities, work areas will be continuously policed for identification of excess trash and unnecessary debris. Excess debris and trash will be collected and stored in an appropriate container (e.g., plastic trash bags, garbage can, roll-off bin) prior to disposal. At no time will debris or trash be intermingled with waste PPE or contaminated materials.

4.8 Smoking, Eating, or Drinking

Smoking, eating and drinking will not be permitted inside any controlled work area at any time. Field workers will first wash hands and face immediately after leaving controlled work areas (and always prior to eating or drinking). Consumption of alcoholic beverages is prohibited at any Wells site.

4.9 Fire Prevention

All flammable materials will be stored in locations away from sources of ignition and heat. Flammable materials will be stored in approved containers with appropriate warning labels. Fire extinguisher shall be readily available in the work area. Fire extinguishers shall be approved for Class A, B and C fires, they will have been inspected within the past month and the inspection tag will be located on the fire extinguisher. The work area shall be kept free of flammable and combustible materials including, debris and dried brush.

4.10 Stop Work Authority

All employees have the right and duty to stop work when conditions are unsafe, and to assist in correcting these conditions. Whenever the Project Manager determines that workplace conditions present an uncontrolled risk of injury or illness to employees, immediate resolution with the appropriate supervisor shall be sought. Should the supervisor be unable or unwilling to correct the unsafe conditions, the Project Manager is authorized and required to stop work, which shall be immediately binding on all affected Wells employees and subcontractors.

Upon issuing the stop work order, the Project Manager shall implement corrective actions so that operations may be safely resumed. Resumption of safe operations is the primary objective; however, operations shall not resume until the Health and Safety Officer has concurred that workplace conditions meet acceptable safety standards.



5. HAZARD ASSESSMENT

5.1 Characterization

The following is a brief description of the work site and potential hazards (Table 2).

Table 2. Project Site and Potential Hazards

Facility Type		Facility Status		Waste Type		Waste Class		Exposure Route	
Landfill		Active	X	Gas		Corrosive		Inhalation	X
Commercial		Inactive	X	Liquid	X	Flammable	X	Absorption	X
Industrial		Abandoned		Solid	X	Poison	X	Ingestion	X
Residential		Other (specify)		Unknown		Radioactive			
Public						Oxidizer			
Military						Explosive			
Agricultural						Carcinogen	X		
Other: USFS maintenance facility	X					Other: metals	X		

5.2 Known Site Background Information on Chemical Hazards

On July 23, 2013, a contractor was commissioned by the USFS to sample both the contents of the dipping vessel and the red/orange colored 55-gallon drum. The analysis of the liquid in the dipping vessel showed low levels of volatile organic compounds (VOCs) and PAHs. PCP, at 9,600 micrograms per liter ($\mu\text{g/L}$), was also detected in the dipping vessel contents. The analysis of the red/orange colored 55-gallon drum showed high levels of VOCs and PAHs. PCP, at 18,000 $\mu\text{g/L}$, was also detected in the contents of the red/orange drum.

No visual evidence of a release to soil has been observed.

5.3 Relative Toxicity and Potential Health Risks of Chemicals

The following is a discussion of the hazards presented to worker personnel during this project from on-site chemical hazards known or suspected to be present on Site. Some of the more common chemicals which may be encountered are described below. CAS registry numbers are unique identification numbers assigned by the Chemical Abstracts Service, a division of the American Chemical Society. DOT numbers are assigned by the US Department of Transportation, and may be used in conjunction with the 1996 North American Emergency Response Guidebook. NFPA ratings are assigned by the National Fire Protection Association. They are listed in the order Health–Flammability–Reactivity, where 4 represents a severe hazard and 0 a minimal hazard. Information presented here was primarily obtained from the NIOSH Pocket Guide to Chemical Hazards, June 1994 Edition, with supplementary information from manufacturer’s MSDSs. A general discussion of the routes of exposure appears below.



5.3.1 Pentachlorophenol (CAS 87-86-5, DOT UN2020, NFPA 3-0-0)

Pentachlorophenol (Penta, PCP, pentachlorophenate) was widely used as a wood preservative and fungicide. Degradation products have fewer chlorine atoms per molecule. Pentachlorophenol is a colorless to white non-combustible crystalline solid with a benzene-like odor. It was commonly applied as a solution in diesel fuel or other flammable hydrocarbon mixtures. The PEL for skin absorption is 0.5 mg/m³, and the IDLH concentration is 2.5 mg/m³. The primary exposure route for penta adsorbed to soils is expected to be through skin or eye contact. Inhalation of vapors can irritate the eyes, nose and throat. Skin absorption can result in sneezing, coughing or weakness. Ingestion can lead to anorexia, low body weight or sweating. Contact with eyes or skin can produce headaches, dizziness, nausea, vomiting, dyspepsia, chest pain, high fever or dermatitis. In case of contact with eyes, rinse immediately. If skin is exposed wash affected areas with soap and water. Provide respiratory support if inhaled.

5.3.2 Creosote (CAS 65996-93-2)

The kind of creosote made from coal tar is a commonly used fungicidal wood preservative. EPA classifies it as a restricted use pesticide, for sale and application only by certified applicators. Creosote is a complex mixture of perhaps 10,000 different compounds. The most important components which may cause adverse health effects are polycyclic aromatic hydrocarbons (PAHs), phenol and cresols. Coal-tar creosote is a heavy, oily liquid with a sharp, smoky odor and a burning taste. It is typically amber to brown in color when fresh, but is often black at hazardous waste sites. Creosote is flammable, and reacts with strong oxidizers. It is sparingly soluble in water. The PEL is 0.2 mg/m³, and the IDLH concentration is 80 mg/m³. The major exposure routes are inhalation and contact.

- Symptoms: NIOSH considers creosote to be a potential occupational carcinogen. Exposure can result in dermatitis; bronchitis; damage to eyes, skin, nervous system and kidneys; and cancer.
- First Aid: In case of contact, irrigate eyes immediately, and wash affected skin with soap and water. Provide respiratory support in case of inhalation. If swallowed, immediate medical attention is required.

5.3.3 Polycyclic Aromatic Hydrocarbons

Polycyclic aromatic hydrocarbons (PAHs, formerly called polynuclear aromatic compounds, or PNAs, and listed in the NIOSH Pocket Guide as “Coal tar pitch volatiles”) are a class of relatively non-volatile organic compounds found in petroleum products, creosote and combustion products. PAHs form an amorphous brown-black residue, and their specific properties vary by compound. The PAHs include such compounds as: naphthalene, anthracene, phenanthrene, acenaphthene, fluorene, fluoranthene, pyrene, chrysene, perylene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]anthracene, dibenz[a,h]anthracene, benzo[g,h,i]perylene and indeno[1,2,3-cd]pyrene. NIOSH considers coal tar pitch volatiles to be potential occupational carcinogens, and has established a 10-hour REL of 0.1 mg/m³. The OSHA 8-hour PEL is 0.1 mg/m³.



- Symptoms: The usual exposure routes are inhalation (especially on particles) and contact. Symptoms of exposure may include: dermatitis, bronchitis, and cancer. Some PAHs (e.g., benzo[a]pyrene) are carcinogens, while others are not.
- First Aid: Eyes should be irrigated immediately with clean water. Wash exposed skin with soapy water. Respiratory support should be provided in case of breathing difficulty, and immediate medical attention is required in case of swallowing.
- NIOSH usually recommends that occupational exposures to carcinogens be limited to the lowest feasible concentration, and recommends the use of a self-contained breathing apparatus (SCBA) or supplied-air respirator (SAR) at all concentrations. For details, consult Appendices A and C in the NIOSH Pocket Guide to Chemical Hazards.

5.3.4 Diesel fuel (CAS 68-4763-46, DOT NA1993, NFPA 0-2-0)

Diesel fuel is representative of a refined petroleum fraction known as middle distillates. This category includes diesel fuel no. 2, many fuel oils and kerosene. Middle distillates are pale yellow liquids with a typical specific gravity of 0.8 and which are insoluble in water. They are Class II combustible liquids (flash point 125°F, explosive range 0.6–4.7%). The primary exposure route is vapor inhalation. Inhalation may produce irritation to the eyes, skin, nose and throat and a burning sensation in the chest. Prolonged breathing can cause headache, dizziness, appetite loss, weakness, nausea, confusion, drowsiness or loss of coordination. Ingestion may lead to vomiting, diarrhea or chemical pneumonia (by aspiration of fluid into the lungs). Skin contact may result in moderate dermatitis. Skin absorption is not expected to result in significant toxicity to internal organs. NIOSH usually recommends that occupational exposures to carcinogens be limited to the lowest feasible concentration. Based on its possible use as a PCP carrier, diesel constituents are expected to be encountered.

5.3.5 Dioxins

Dioxins have been associated with wood treatment formulations. Dioxin is a colorless to white, crystalline solid. Dioxins can undergo slow photochemical degradation (UV light) and slow bacterial degradation. Exposure routes include: inhalation, skin adsorption, ingestion, skin and/or eye contact. Vapors may cause drowsiness and dizziness. Skin adsorption can result in redness and pain; affected skin should be gently washed with soap and water. If swallowed, do not induce vomiting; seek medical advice immediately. In case of contact with eyes, rinse immediately. NIOSH usually recommends that occupational exposures to dioxin be limited to lowest feasible concentration.

5.4 Routes of Chemical Exposure

The routes of chemical exposure and relevant safety practices are briefly described below.

5.4.1 Inhalation

Breathing a gas, vapor, mist, fume, or dust is the most common type of accidental exposure. Generally, respirators should be worn when activities involve the generation of airborne particles



or when organic vapors are suspected. It is the responsibility of the Project Manager to determine where and when respirators will be worn.

5.4.2 Skin Absorption

Skin absorption is the second most common accidental means of entry of chemicals to the body. Avoid unnecessary contact with contaminated surfaces. All skin areas shall be protected when working with hazardous materials. Items to protect the skin may include: disposable Tyvek® suits, rubber boots, gloves and face shield.

After work is completed contaminated protective equipment must be decontaminated or disposed of in accordance with the applicable and relevant or appropriate regulations.

5.4.3 Ingestion

Contact with contaminated materials is likely during excavation and collection/handling of environmental samples. However, protection against exposure via ingestion can be accomplished by performance of proper decontamination procedures when exiting contaminated work areas. To minimize the potential for incidental ingestion, no eating, drinking, smoking, or chewing gum will be allowed on Site within the primary work area.

5.4.4 Eye Contact

Most chemicals have the ability to injure the eye to some degree through surface contact or absorption. Appropriate safety goggles shall be worn on the site. Furthermore, contact lenses are not allowed in work areas where hazardous chemicals are encountered.

5.5 Physical Hazards

Field personnel may be exposed to a number of physical hazards, including:

- Fire and explosion;
- Animal bites;
- Industrial hazards: lifting, hand tools, falls and slips;
- Electrical hazards;
- Heat or cold stress;
- Excavation hazards;
- Hazards from heavy equipment and motor vehicles; and
- Noise.

6. SAFETY AND HEALTH CONTROLS

6.1 Accident Prevention

6.1.1 General



- All Wells personnel shall follow the corporate Health and Safety Manual, except where this site-specific HSP conflicts, in which case this plan shall take precedence.
- Prior to field activities commencing, a brief safety meeting will be held at the site. At a minimum, the following information will be reviewed:
 - Work to be done;
 - Basic and specific work procedures; and
 - Review of chemical/physical hazards.
- No persons other than those pre-approved by the Project Manager shall be allowed on the site during exploration activities.
- Smoking, eating, drinking, or chewing gum are not permitted on site. Wash hands and face before engaging in these activities off-site.
- Avoid touching on-site materials, walking through known or suspected "hot zones" or contaminated puddles, kneeling or sitting on the ground, sitting or leaning against potentially contaminated equipment or machinery.
- All contractors or subcontractors shall contact the Project Manager if any unsafe condition or practice occurs.
- First Aid and safety equipment will be provided as listed in section 6.2.1 below.
- PPE will be worn, as required in section 6.2.2 below.
- No alcoholic beverages or illegal drugs are allowed on site.
- Tools and equipment will be used in accordance with normal safe working procedures. This includes equipment inspection before use, and will usually require the use of eye protection.
- Safe lifting and carrying procedures shall be followed. Lift with your legs, not with your back!

6.1.2 Slips, Trips, Falls, and Protruding Objects

A variety of conditions may exist that may result in injury from slips, trips, falls, and protruding objects. Slips and trips may occur as a result of wet, slippery, or uneven walking surfaces. To prevent injuries from slips and trips, always keep work areas clean; keep walkways free of objects and debris; and report/clean up liquid spills. Serious injuries may occur as a result of falls from elevated heights. Always wear fall protection while working at heights of 6 feet or greater above the next lower level. Protruding objects are any object that extends into the path of travel or working area that may cause injury when contacted by personnel. Always be aware of protruding objects and when feasible remove or label the protruding object with an appropriate warning.

6.1.3 Cuts and Lacerations

If it is necessary to use knives or blades, follow the safety precautions listed below:

- Keep your free hand out of the way;
- Use only sharp blades; dull blades require more force which results in less knife control
- Pull the knife at an angle to your body; pulling motions are easier to manage;
- Don't put your knife in your pocket;



- Use a hooked knife (i.e. linoleum knife) or a utility knife with a self-retracting blade
- Wear leather or Kevlar® gloves when using knives or blades.

Glass bottles, laboratory equipment, and VOA vials can break and cause lacerations and puncture wounds. The follow preventive measures should be taken to reduce the potential for broken glassware.

- Package all glassware such that there is no glass to glass contact during transportation or storage;
- Assume that any time glass strikes another object it is damaged;
- Inspect all glassware for cracks, scratches, and other damage before using;
- Lids and caps should be “finger tight” unless there is a torque specification and you use a torque wrench;
- Never fill a glass container (other than VOA vials with a septum) liquid full, always leave an air space to buffer thermal expansion of the liquid; and
- Avoid rapid temperature changes when filling glass containers.

Glass often has flaws that cannot be detected by visual inspection and the force needed to open and tighten lids can cause these flaws to fracture the glass. Any time force is applied to glass, workers should wear leather or preferably Kevlar® gloves. Kevlar® glove liners are available for use under Nitrile or cotton gloves.

6.1.4 Fire Protection

Fire protection measures will not be required for this project. If a fire is identified, Wells personnel will evacuate the area and contact 911.

6.1.5 Heat and Cold Stress

Heat and cold stress may vary based upon work activities, PPE/clothing selection, geographical locations, and weather conditions. To reduce the potential of developing heat/cold stress, be aware of the signs and symptoms of heat/cold stress and watch fellow employees for signs of heat/cold stress.

Heat/cold stress can be a significant field site hazard, particularly for non-acclimated personnel. Site personnel will be instructed in the identification of a heat/cold stress victim, the first-aid treatment procedures for the victim and the prevention of casualties. Work-rest cycles will be determined and the appropriate measures taken to prevent heat stress. Heat stress can be avoided by taking rest breaks in cool or shaded areas, drinking water or dilute drinks to maintain electrolyte balance, and maintaining physical fitness. Some of the control measures to prevent cold stress include the use of appropriate clothing, the availability of warm shelter, and the careful scheduling of work/rest periods. These control measures should be taken to help prevent the worker’s deep body temperature from falling below 96.8 degrees F.

The guidance below will be used in identifying and treating heat/cold-related illness (Table 3).



Table 3. Identification and Treatment of Heat/Cold-Related Illness

Type of Illness	Description	First Aid
Mild Heat Strain	The mildest form of heat-related illness. Victims exhibit irritability, lethargy, and significant sweating. The victim may complain of headache or nausea. This is the initial stage of overheating, and prompt action at this point may prevent more severe heat-related illness from occurring.	<ul style="list-style-type: none"> • Provide the victim with a work break during which he/she may relax, remove any excess protective clothing, and drink cool fluids. • If an air-conditioned spot is available, this is an ideal break location. • Once the victim shows improvement, he/she may resume working; however, the work pace should be moderated to prevent recurrence of the symptoms.
Heat Exhaustion	Usually begins with muscular weakness and cramping, dizziness, staggering gait, and nausea. The victim will have pale, clammy moist skin and may perspire profusely. The pulse is weak and fast and the victim may faint unless they lie down. The bowels may move involuntarily.	<ul style="list-style-type: none"> • Immediately remove the victim from the work area to a shady or cool area with good air circulation (avoid drafts or sudden chilling). • Remove all protective outerwear. • Call a physician. • Treat the victim for shock. (Make the victim lie down, raise his or her feet 6–12 inches, and keep him or her cool by loosening all clothing). • If the victim is conscious, it may be helpful to give him or her sips of water. • Transport victim to a medical facility as soon as possible.
Heat Stroke	The most serious of heat illness, heat stroke represents the collapse of the body's cooling mechanisms. As a result, body temperature may rise to 104 degrees Fahrenheit or higher. As the victim progresses toward heat stroke, symptoms such as headache, dizziness, and nausea can be noted, and the skin is observed to be dry, red, and hot. Sudden collapse and loss of consciousness follows quickly and death is imminent if exposure continues. Heat stroke can occur suddenly.	<ul style="list-style-type: none"> • Immediately evacuate the victim to a cool and shady area. • Remove all protective outerwear and as much personal clothing as decency permits. • Lay the victim on his or her back with the feet slightly elevated. • Apply cold wet towels or ice bags to the head, armpits, and thighs. • Sponge off the bare skin with cool water or rubbing alcohol, if available. • The main objective is to cool without chilling the victim. • Give no stimulants or hot drinks. • Since heat stroke is a severe medical condition requiring professional medical attention, emergency medical help should be summoned immediately to provide onsite treatment of the victim and proper transport to a medical facility.
Frostnip	Characterized by a sudden blanching of the skin.	<ul style="list-style-type: none"> • Immediately cover the affected area with warmth until symptoms subside.
Frostbite	Characterized by white or waxy skin which feels firm to the touch.	<ul style="list-style-type: none"> • Immediately cover the affected area with warmth. • Move the victim to a heated shelter when possible. • A physician's care should be sought as soon as possible.



Type of Illness	Description	First Aid
Mild Hypothermia	Characterized by shivering, numbness and drowsiness.	<ul style="list-style-type: none"> • Apply heat/warmth. • The main objective is to warm without shocking the victim. • Move the victim to a heated shelter.

6.1.6 Ultraviolet Radiation Protection

To protect against exposure to ultraviolet (UV) radiation, workers will observe the following requirements:

- Workers will utilize a commercial sun-block with a minimum solar protection factor (SPF) of 30 or higher; and
- Wide-brim hats are recommended as they provide additional UV protection.

6.1.7 Confined Spaces

No confined space work will be performed for this project.

6.1.8 Drilling Safety

No drilling will be performed by Wells personnel as part of this project. However, Wells has retained a licensed soil drilling subcontractor to perform this work. All work by Wells personnel near the drill rig will require wearing a hard hat, steel-toed boots and safety glasses, at a minimum. Wells will review the drilling subcontractors HSP before beginning drilling work. The drilling subcontractor will also be briefed on Wells HSP and will be expected to adhere to the Wells HSP at a minimum.

6.1.9 Exposure to Traffic

Employees exposed to vehicular traffic shall be provided with, and wear, high visibility traffic vests.

6.1.10 Exposure to Falling Loads

No employees shall work underneath loading handled by lifting or digging equipment. Employees are required to stay away from any vehicle being loaded or unloading to avoid struck by injuries from spilling or falling materials. Operators must stay in the cab of the vehicle being loaded or unloaded to provide adequate protection.

6.1.11 Hazardous Noise Environments

Working around large equipment often creates excessive noise. The effects of noise can include physical damage to the ear, pain, and temporary and/or permanent hearing loss. Workers can also be startled, annoyed, or distracted by noise during critical activities. All personnel are required to



use hearing protection (earplugs or earmuffs) within 25 feet of any operating piece of heavy equipment.

6.1.12 Manual Lifting Guidelines

Most materials associated with investigation and remedial activities are moved by hand. The human body is subject to severe damage in the forms of back injury, muscle strains, and hernia if caution is not observed in the handling process. Whenever possible, use at least two people to lift, or roll/lift with your arms as close to the body as possible. Under no circumstances should any one person lift more than 49 pounds unassisted.

6.1.13 Driving Safety

Drivers must be licensed to drive the class of vehicle they are operating and trained in defensive driving. Only Wells personnel may drive Wells vehicles or vehicles rented for Wells business; client, subcontractor, or other work-related personnel may ride. Drivers and passengers must comply with all traffic laws and posted signs, and will not operate a vehicle if under the influence of impairing medication, alcohol, or any other substance.

You must NOT operate a vehicle while talking on your cell phone, regardless of “hands free” or not. Cell phones must be turned off while vehicle is in use. Do NOT allow other distractions to interfere with your safe operation of the vehicle.

6.1.14 Secure Parking

Secure parking is essential to preventing injuries, property damage and even death to drivers and other motorists. Secure parking is the responsibility of the vehicle operator. Vehicles must be secured to the extent that reasonably anticipated changes in conditions such as wind, speed of travel, changes in routes, inclines and slopes, and traffic conditions do not affect integrity of the load’s security. The following safe work procedure shall be followed to ensure loads are secured prior to travel. These procedures are the minimum requirement, addition precautions shall be implemented by the field team, with the Project Manager’s approval.

- Inspect all loads prior to departure, ensure that items cannot shift or slide or become dislodged.
- Secure all loads (interior and exterior) using straps, cargo nets, bracing or other mechanical means.
- Do not place loose items on car seats, place items in the trunk, or use a tote box to secure.
- **Never rely on size, shape or weight of items alone.**
- Pack equipment to minimize obstruction of the driver’s view.
- Secure loads even when driving short distances, such as between well locations.
- When driving long distances stop to verify that the load has not shifted and mechanical means of secure packing remain intact.
- When using cargo nets, straps or bracing insure that tie-off and anchor points are intended to be used as such, do not improvise.



- If a load cannot be thoroughly secured, then work shall stop and the Project Manager shall be notified.

6.1.15 Illumination Requirements

All planned field activities will be conducted outside of buildings and will only be conducted during daylight hours.

6.2 Chemical Hazard Minimization

6.2.1 Required First Aid and Safety Equipment

- First-aid kit; and
- Fire extinguisher.

6.2.2 Required Personal Protective Equipment

The purpose of PPE is to provide a barrier, which will shield or isolate individuals from the chemical and/or physical hazards that may be encountered during work activities. Table 4 lists the minimum PPE required during Site operations.

For the purposes of this job, level "D" protection (minimum) shall be used. Since the atmosphere is not expected to contain hazardous gases in concentrations above regulatory limits, no respiratory protection is being required.

Table 4. Personal Protective Equipment

Type	Material	Additional Information
Safety Vest	High-visibility	Must have reflective tape and be visible from all sides
Boots	Leather	ANSI approved safety toe
Safety Glasses		ANSI Approved; <u>≥ 98 % UV Protection</u>
Hard Hat		ANSI Approved; recommended wide brim
Work Uniform		No shorts/cutoff jeans or sleeveless shirts
Hearing Protection	Ear plugs and/ or muffs	In hazardous noise areas
Leather Gloves		If working with sharp objects or powered equipment.
Nitrile gloves		Handling any material which may be contaminated, such as soil, water, oil, etc.

Eye protection is required whenever paints, petroleum products, or chemicals are handled.

By signing this HSP you are agreeing that you have been properly trained in the use, limitations, care and maintenance of the protective equipment you will use at this project. If you have not received training on the proper use, care, and limitations of the PPE required for this project, please see the PM/SSO for the proper training prior to signing this HSP.



6.2.3 Respiratory Protection

Respiratory protection is not anticipated to be required.

6.2.4 Decontamination

All possible and necessary steps shall be taken to reduce or minimize contact with chemicals and contaminated/impacted materials while performing field activities (e.g., avoid sitting or leaning on, walking through, dragging equipment through or over, tracking, or splashing potential or known contaminated/impacted materials, etc.).

All equipment leaving the Site must be properly decontaminated to minimize the potential for exposure and off-site migration of impacted materials. Such equipment may include, but is not limited to: sampling tools, heavy equipment, vehicles, PPE, support devices (e.g., hoses, cylinders, etc.), and various handheld tools.

Decontamination procedures may vary based on site conditions and nature of the contaminant(s). If chemicals or decontamination solutions are used, care should be taken to minimize reactions between the solutions and contaminated materials. In addition, personnel must assess the potential exposures created by the decontamination chemical(s) or solutions. The applicable MSDS must be reviewed, implemented, and filed by personnel contacting the chemicals/solutions.

All contaminated PPE and decontamination materials shall be contained, stored and disposed of in accordance with site-specific requirements determined by site management.

Decontamination Equipment

The equipment required to perform decontamination may vary based on site-specific conditions and the nature of the contaminant(s). The following equipment is commonly used for decontamination purposes:

- Soft-bristle scrub brushes or long-handled brushes to remove contaminants;
- Hoses, buckets of water or garden sprayers for rinsing;
- Large plastic/galvanized wash tubs or children's wading pools for washing and rinsing solutions;
- Large plastic garbage cans or similar containers lined with plastic bags for the storage of contaminated clothing and equipment;
- Metal or plastic cans or drums for the temporary storage of contaminated liquids;
- Paper or cloth towels for drying protective clothing and equipment; and
- High pressure washers for removing soil from large equipment.



6.3 Biological Hazard Minimization

The job site is located in Boise National Forest, and encountering wildlife in these areas may occur. All wildlife should be treated with respect and not provoked in any way. Some specific concerns include the following:

6.3.1 Poisonous Snakes

Poisonous snakes are indigenous to the area including the prairie rattlesnake. This Western rattlesnake lives in grasslands, shrublands, rocky areas, pine and juniper forests throughout Idaho. As adults these snakes can range from 26 to 48 inches length. Their coloring ranges, but is generally grayish brown, with darker brown blotches down the back and sides. The snake also has a wide head, a narrow neck, a stout body and keeled scales. In case of a snakebite the most important thing is for the victim to stay calm. Then the following first aid steps should be taken. First wash the bite with soap and water, second immobilize the bite area and keep it below the heart and third get medical attention as soon as possible. The quicker medical attention is obtained the more effective the treatment. If an extended period of time will be required to reach the nearest medical facility, an additional step should be taken. This step is to wrap a bandage around the extremity two to four inches above the bite to help slow the venom. The bandage should be snug but it should not cut off blood flow. The bandage should be loose enough to allow a finger to be able to be slipped underneath it.

6.3.2 Biting or stinging insects

Ticks: The Rocky Mountain wood tick and the American dog tick are the most common ticks associated with people in the Mountain West. Most tick bites are harmless but ticks can be carriers of illnesses such as Lyme disease, Rocky Mountain spotted fever and Colorado tick fever. The most common disease associated with ticks is Colorado tick fever. Rocky Mountain spotted fever is rare but can occur in this area. Although uncommon in the area Lyme disease is also a potential concern. Ticks are most active in the spring and early summer, then they go dormant during the heat of the summer until the following spring. They poise themselves on top of vegetation then cling to passing animals. They are usually found along paths in bushy areas, edges of fields and woodlands, grassy areas and shrublands. The best repellents for ticks are repellents that have DEET (N,N-diethyl-metatolamide). The repellent should be applied directly to the skin and clothes especially around the lower body. Wearing long sleeves and pants also helps keeps ticks from attaching to skin. Even though it can take several hours for a tick to attach to your skin, you should remove ticks promptly and carefully by grasping the tick with a pair of tweezers as close to the skin as possible and gently pulling the whole tick out. If symptoms such as a rash, fever, muscle aches, joint pain and swelling occur seek medical attention.

Black Widow Spiders: Black Widow Spiders have a shiny, black, globular abdomen with a reddish or yellowish hourglass marking on the underside of the spider. Most of the time these spiders are not aggressive but they will bite if bothered or cornered. Their webs are usually built outdoors close to the ground in trash, rubbish piles and under or around buildings. Symptoms from Black Widow bites start with slight swelling with two faint red spots around the bite area.



One to three hours after being bitten pain intensifies and travels up or down the arm or leg and localizing in the abdomen and back with rigid abdominal muscles and cramping. Other symptoms may include pain in the muscles and soles of the feet, swollen eye lids, nausea, vomiting, tremors, labored breathing, profuse perspiration, a feeble pulse, cold clammy skin, unconsciousness, convulsions and in rare cases death. First aid is washing and putting antiseptic on the bite area and getting medical attention as soon as possible. Recovery usually occurs in 2 to 5 days.

Paper Wasps: Wasps can be a serious problem throughout Idaho particularly in the late summer when their nests are the largest. Paper Wasps include Yellowjackets, Hornets and Polistes wasps. They usually feed on insects but some species (e.g. Yellowjackets) are also scavengers and are attracted by garbage and food. All of these wasps are capable of producing a painful sting but most won't sting unless provoked. If a nest is encountered the best thing to do is leave it alone, it will be abandoned by winter and not reused. If the nest needs to be removed then insecticides containing carbyl, diazinon, chlorpyrifos or propoxur are effective for killing nests. When approaching the nest wear light colored clothing and apply the insecticide directly to the entrance of the nest. One application should work. If stung, symptoms include swelling and pain that gradually disappear in a few hours. They can be treated with antiseptic, cool compresses and crushed aspirin to help relieve the pain and swelling. In extreme cases a severe allergic reaction may occur which includes difficulty in breathing, dizziness, nausea and development of hives. In these cases, immediate medical attention is required.

6.3.3 Transmitted Diseases

Colorado Tick Fever: The Rocky Mountain wood tick and the American dog tick are the most common carriers of this disease. Symptoms include aching, fever, chills and fatigue which lasts 1 to 3 days. Most cases are not reported due to similarity to flu symptoms.

Rocky Mountain Fever: Rocky Mountain spotted fever is rare but has been documented. The Rocky Mountain wood tick and the American dog tick are commonly associated with this disease. Symptoms include a general feeling of malaise and/or aching and a high fever. A rash also develops starting on the wrists and ankles, later the rash spreads to the rest of the body including the palms and the soles of the feet. Medical attention is required.

7. SITE CONTROL

The purpose of site control is to minimize potential contamination of workers, protect the public from site hazards, and prevent vandalism. The degree of site control necessary depends on the Site characteristics, site size, and the surrounding community.

Controlled work areas will be established at each work location, and if required, will be established directly prior to the work being conducted. Diagrams designating specific controlled work areas will be drawn on site maps, posted in the support vehicle and discussed during safety meetings. If the Site layout changes, the new areas and their potential hazards will be discussed immediately after the changes are made.



7.1 Controlled Work Areas

Each HAZWOPER controlled work area will consist of the following three zones:

- Exclusion Zone (EZ): Contaminated work area.
- Contamination Reduction Zone (CRZ): Decontamination area.
- Support Zone (SZ): Uncontaminated or “clean area” where personnel should not be exposed to hazardous conditions.

Each zone will be periodically monitored in accordance with the air monitoring requirements established in this HSP. The EZ and the CRZ are considered work areas. The SZ is accessible to the public (e.g., vendors, inspectors).

7.1.1 Exclusion Zone

The EZ is the area where primary activities occur, such as sampling, remediation operations, installation of wells, cleanup work, etc. Only personnel involved in work activities, and meeting the requirements specified will be allowed in an EZ.

The extent of each area will be sufficient to ensure that personnel located at/beyond its boundaries will not be affected in any substantial way by hazards associated with sample collection activities. To meet this requirement, the minimum distances of 15 feet will be used.

All personnel should be alert to prevent unauthorized, accidental entrance into controlled-access areas (the EZ and CRZ). If such an entry should occur, the trespasser should be immediately escorted outside the area, or all HAZWOPER-related work must cease. All personnel, equipment, and supplies that enter controlled-access areas must be decontaminated or containerized as waste prior to leaving (through the CRZ only).

7.1.2 Contamination Reduction Zone

The CRZ is the transition area between the contaminated area and the clean area. Decontamination is the main focus in this area. The decontamination of workers and equipment limits the physical transfer of hazardous substances into the clean area. This area must also be clearly marked and access limited to personnel involved in decontamination.

7.1.3 Support Zone

The SZ is an uncontaminated zone where administrative and other support functions, such as first aid, equipment supply, emergency information, etc., are located. The SZ shall have minimal potential for significant exposure to contaminants (i.e., background levels).

Employees will establish a SZ (if necessary) at the Site before the commencement of site activities. The SZ would also serve as the entry point for controlling site access.



7.2 Site Access

If implemented by the Project Manager, all personnel entering the Site shall complete the "Site Entry/Exit Log" located at the Site trailer or primary site support vehicle.

7.2.1 Visitor Access

Visitors to any HAZWOPER controlled-work area must comply with the health and safety requirements of this HSP, and demonstrate an acceptable need for entry into the work area. All visitors desiring to enter any controlled work area must observe the following procedures:

1. A written confirmation must be received by Wells documenting that each of the visitors has received the proper training and medical monitoring required by this HSP. Verbal confirmation can be considered acceptable provided such confirmation is made by an officer or other authorized representative of the visitor's organization.
2. Each visitor will be briefed on the hazards associated with the Site activities being performed and acknowledge receipt of this briefing by signing the appropriate tailgate safety briefing form.
3. All visitors must be escorted by a Wells employee.

If the Site visitor requires entry to any EZ, but does not comply with the above requirements, all work activities within the EZ must be suspended. Until these requirements have been met, entry will not be permitted.

7.3 Site Security

Site security is necessary to:

- Prevent the exposure of unauthorized, unprotected people to site hazards.
- Avoid the increased hazards from vandals or persons seeking to abandon other wastes on the Site.
- Prevent theft.
- Avoid interference with safe working procedures.

To maintain site security during working hours:

1. Maintain security in the SZ and at access control points.
2. Establish an identification system to identify authorized persons and limitations to their approved activities.
3. Assign responsibility for enforcing authority for entry and exit requirements.
4. When feasible, install fencing or other physical barrier around the Site.
5. If the Site is not fenced, post signs around the perimeter and whenever possible, use guards to patrol the perimeter. Guards must be fully apprised of the hazards involved and trained in emergency procedures.



6. Have the Project Manager approve all visitors to the Site. Make sure they have valid purpose for entering the Site. Have trained site personnel accompany visitors at all times and provide them with the appropriate protective equipment.

To maintain site security during off-duty hours:

1. Secure the equipment.

8. EMERGENCY RESPONSE PLANNING AND PROCEDURES

8.1 Emergency Action Plan

The potential for an emergency to occur is remote. The only significant type of onsite emergency that may occur is physical injury or illness, fire or explosion. The Emergency Action Plan (EAP) will be reviewed by all personnel prior to the start of field activities.

Three major categories of emergencies could occur during site operations:

1. Illnesses and physical injuries (including injury-causing chemical exposure).
2. Catastrophic events (fire, explosion, earthquake, or chemical).
3. Safety equipment problems.

8.2 Site-Specific Emergency Procedures

Prior to the start of site operations, the Project Manager shall fill in Table 5 below with any site-specific information regarding evacuations, muster points, communication, and other site-specific emergency procedures.

Table 5. Emergency Planning

Emergency	Evacuation Route	Muster Location
Fire/Explosion	[insert directions]	[insert location]
Lightning	[insert directions]	Vehicle
Railway Accident	[insert directions]	[insert location]
Additional Information:		
Communication Procedures	[insert communication procedures, means of alerting personnel, etc.]	
CPR/First Aid Trained Personnel	(Name) personnel on site	



The most likely emergencies include accident and fire. Wells personnel may become involved in an emergency caused by unrelated work on the site.

8.2.1 Site Evacuation

If evacuation of the site is necessary, exit via the main road. Remain available to site personnel until released, so you can be accounted for.

8.2.2 Notification Procedures

If a situation arises which is immediately hazardous to life and health, presents a fire or explosion hazard, or results in a risk of fuel release, notify the site contact first. As soon as practicable, notify the Wells Project Manager or Health and Safety Officer followed by the client (if different than the site contact).

In case of an injury accident, provide first aid and medical attention, as required and as your qualifications allow. As soon as practicable, provide notification as in the previous paragraph.

In the event of an emergency, personnel should dial 911.

8.2.3 Initial Response Steps

Evaluate the situation *quickly*. Is it immediately dangerous? Are there injuries which require treatment? Can injured persons be moved? Do you have the materials necessary to contain a spill? Are site personnel or other Wells personnel readily available?

Take actions with the following priority:

1. If widespread evacuation is necessary, provide notification.
2. Remove and treat injured persons, if movement is not precluded by the injuries.
3. Contain spill, if any.

Obtain help for any actions you cannot handle yourself.

8.3 Nearest Hospital

The nearest hospital available to the general public is located approximately 35 miles southwest of the project site:

Cascade Medical Center
402 Old State Hwy
Cascade, Idaho 83611
208-382-4242

A map showing the direction to the hospital is included as Attachment 1.



8.4 Spill Containment Procedure

Work activities may involve the use of hazardous materials (i.e. fuels, solvents) or work involving drums or other containers. The following procedures will be used to prevent or contain spills:

- All hazardous material will be stored in appropriate containers
- Tops/lids will be placed back on containers after use.
- Containers of hazardous materials will be stored appropriately away from moving equipment.

At least one spill response kit, to include an appropriate empty container, materials to allow for booming or diking the area to minimize the size of the spill, and appropriate clean-up material (i.e. speedy dri) shall be available at each work site (more as needed).

- All hazardous commodities in use (i.e. fuels) shall be properly labeled.
- Containers shall only be lifted using equipment specifically manufactured for that purpose.

8.5 Accident/Incident Reporting

All accidents and incidents that occur on-site during any field activity will be promptly reported to the Project Manager. If any Wells employee is injured and requires medical treatment, the Project Manager will contact the Safety and Health Officer immediately. The Project Manager will initiate a written report. The report will then be provided to the Safety and Health Officer before the end of the following shift. Emergency contacts are provided in Table 6.

If any employee of a subcontractor is injured, documentation of the incident will be accomplished in accordance with the subcontractor's procedures; however, copies of all documentation (which at a minimum must include the OSHA Form 301 or equivalent) must be provided to the Safety and Health Officer within 24 hours after the incident has occurred.

All accidents/incidents will be investigated. Copies of all subcontractor accident investigations, whether accomplished in accordance with their own procedures, will be provided to the Safety and Health Officer within five (5) days of the accident/incident.

Table 6. Emergency Contacts

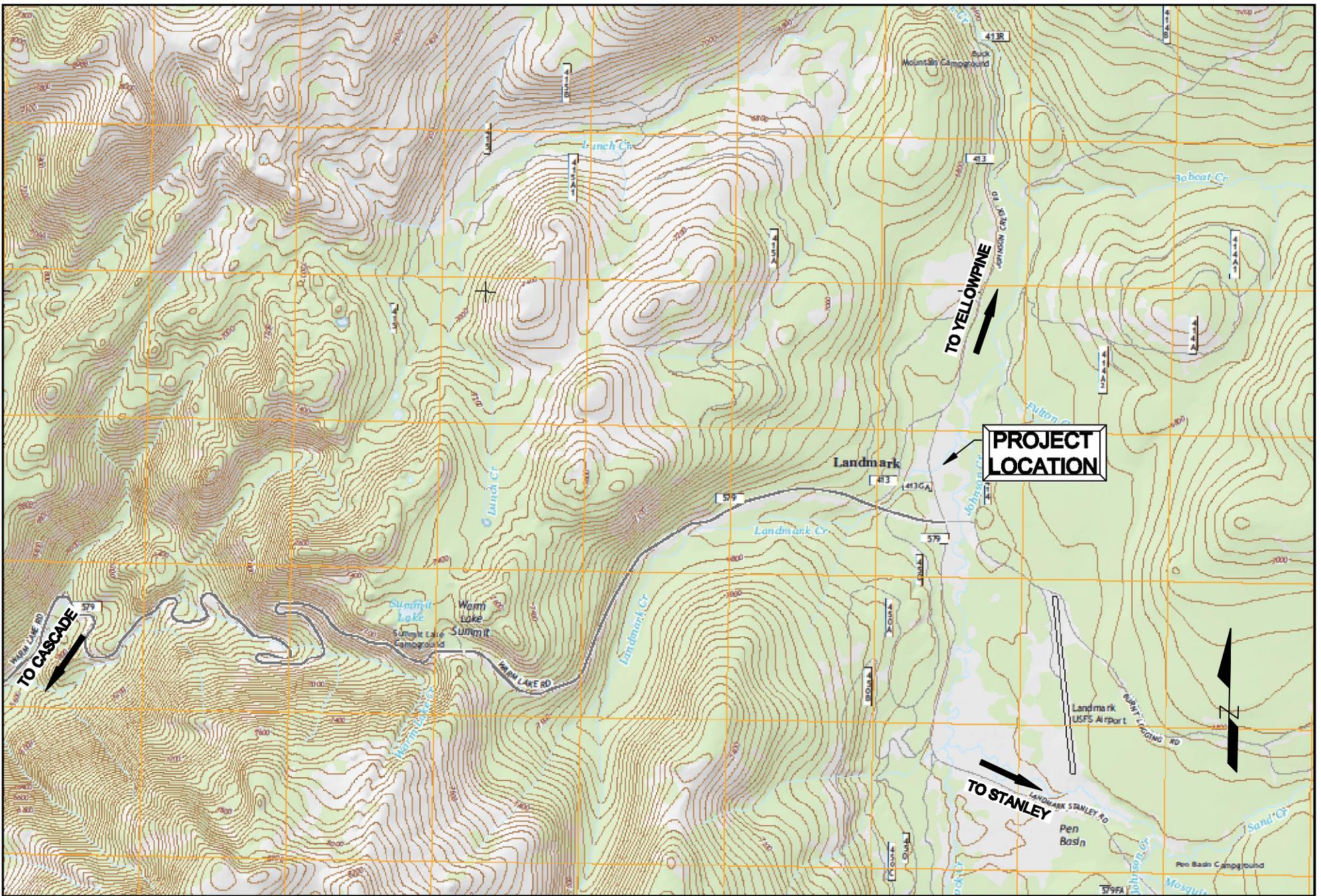
<i>Emergency Coordinators / Key Personnel</i>			
Name	Title/Workstation	Telephone	Cellular Phone
Paul Hunter	Project Manager	208-345-8292, ext. 119	208-899-6784
Cliff Yeary	Safety Professional		214-732-9085
Dean Morgan	USFS COR	208-879-4157	208-993-1747
<i>Organization / Agency</i>			Telephone
Police Department			911
Fire Department			911



State Police	911
Ambulance Service (<i>EMT will determine appropriate hospital for treatment</i>)	911
Hospital (<i>Use by site personnel is only for non-emergency cases</i>)	
Cascade Medical Center 402 Old State Hwy Cascade, Idaho 83611	208-382-4242
Poison Control Center	800-222-1222
Pollution Emergency	800-292-4706
National Response Center	800-424-8802
Chem-Trec	800-424-9300



FIGURES



NOTES:

DESIGNED BY
RK

DRAWN BY
KK

CHK'D BY
PH

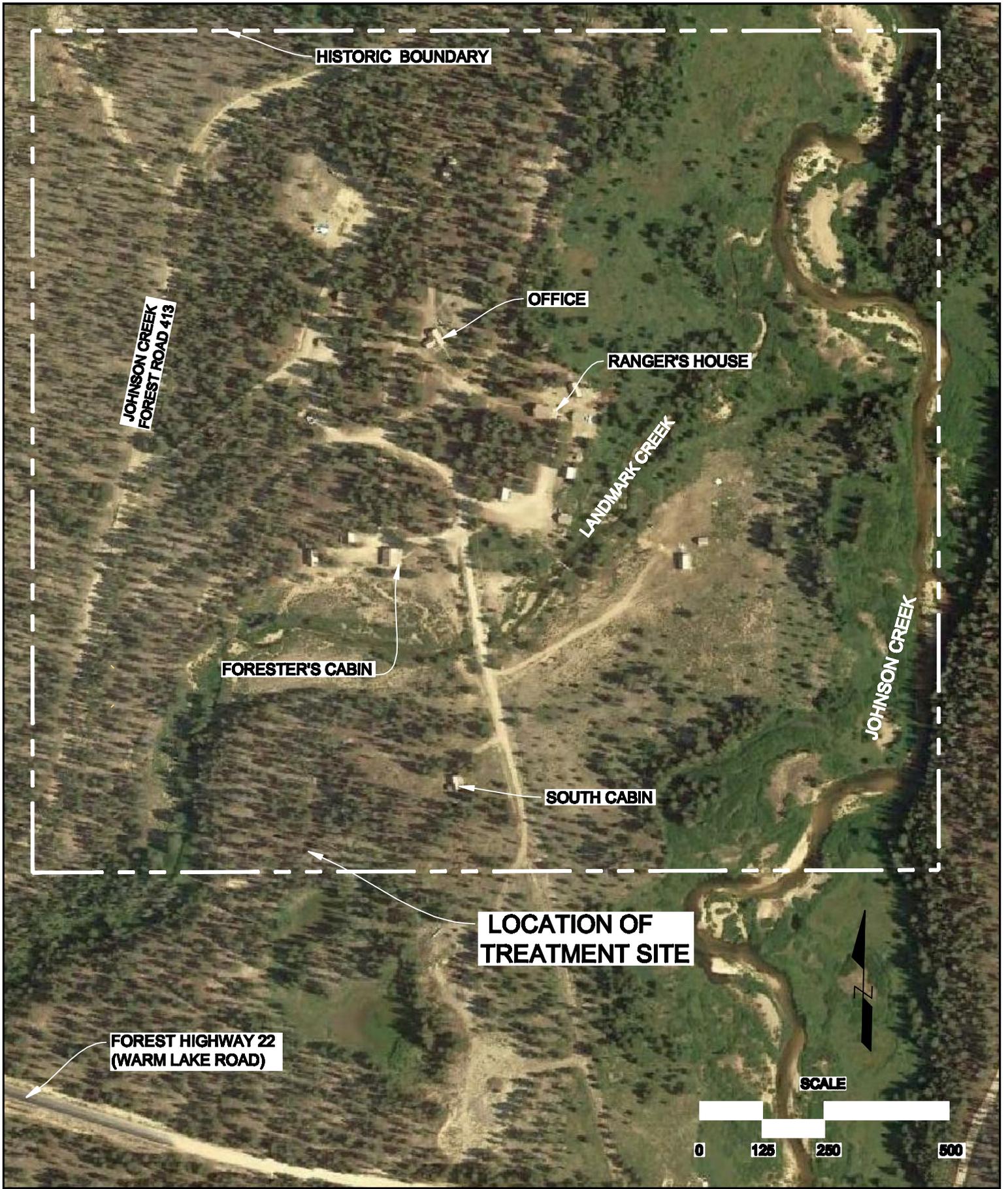
PREPARED FOR:
US FOREST SERVICE



**LANDMARK GUARD STATION
VICINITY MAP
WOOD TREATMENT SITE
LANDMARK, VALLEY COUNTY, IDAHO**

SHEET
FIGURE 1

DATE
10/21/2014



DESIGNED BY
PH

PREPARED FOR:
US FOREST SERVICE

DRAWN BY
KK



**LANDMARK GUARD STATION
VICINITY MAP
WOOD TREATMENT SITE
LANDMARK, VALLEY COUNTY, IDAHO**

SHEET
FIGURE 2

CHK'D BY
PH

DATE
10/8/2014



ATTACHMENT 1

Route to Nearest Hospital

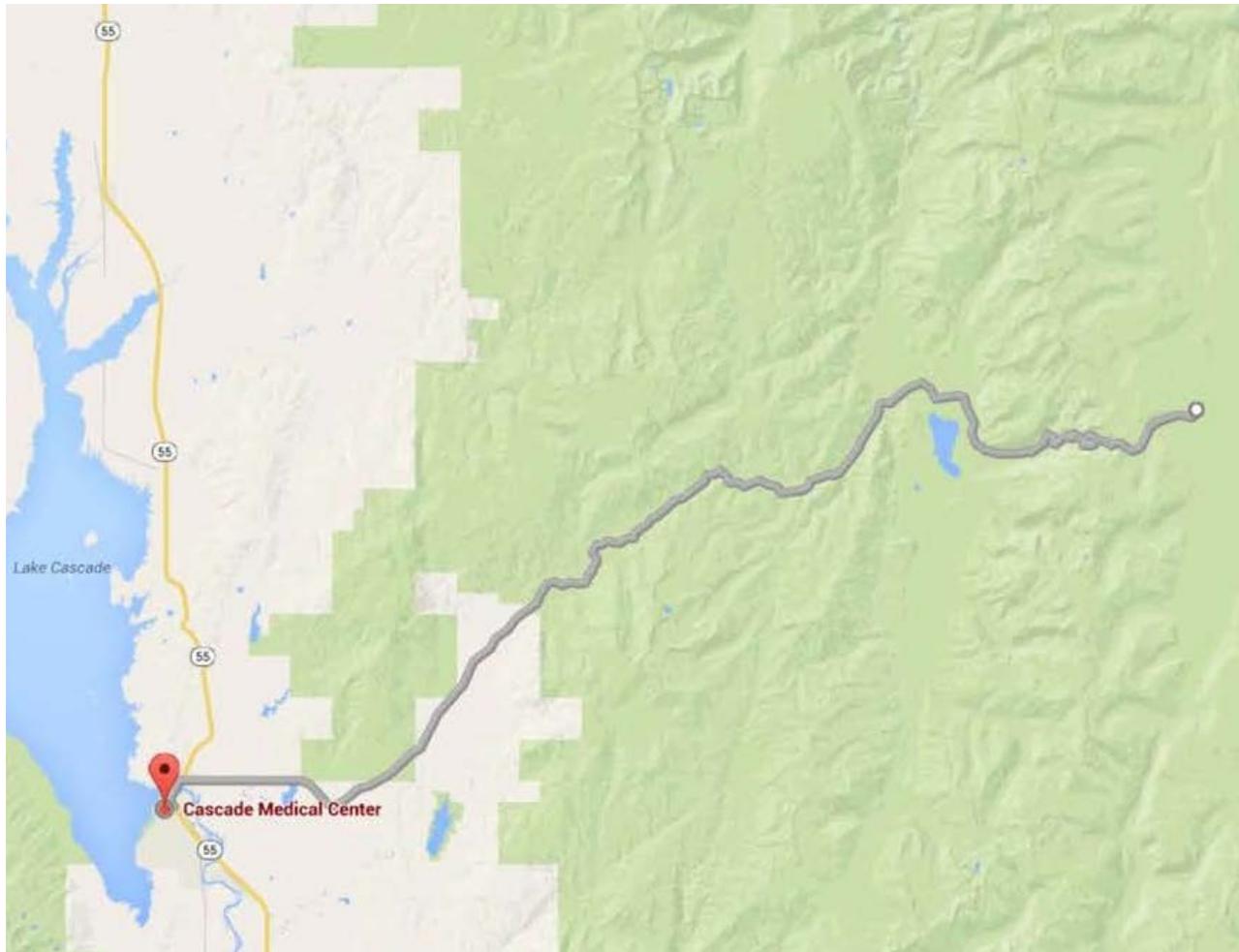


Route to Hospital

Cascade Medical Center

402 Old State Hwy
Cascade, Idaho 83611
208-382-4242

Directions to Cascade Medical Center from Project Site:





APPENDIX 3

Site Photographs



Photo 1. Fiberglass hood covering the dip tank excavation (following tank removal).



Photo 2. View of the dip tank prior to removal. Orange flags mark locations of surface soil samples.



Photo 3. Direct Push sampling adjacent to the dip tank.



Photo 4. Inside view of the dip tank.



Photo 5. Dip tank removal.



Photo 6. Removal of residual sludge from within the dip tank.



Photo 7. Dip tank being macro-encapsulated for disposal.



Photo 8. Former drum storage location (orange flag marks former drum location)



Photo 9. Small depression/pond located approximately 200 feet downslope of the dip tank.



APPENDIX 4

Hazardous Waste Manifests

Manifest 530 – 2013, drum of pentachlorophenol
solution in overpack and liquid contents of dip tank

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number ID1122300105	2. Page 1 of 1	3. Emergency Response Phone 800 645 6265	4. Manifest Tracking Number 002083530 GBF		
5. Generator's Name and Mailing Address USDA FS Landmark RS FS Rd 22 NE of Cascade HC63 Highway 93 Cascade, ID 83611			Generator's Site Address (if different than mailing address) 4500n FS Landmark RS FS Rd 22 NE of Cascade Cascade, ID 83611				
Generator's Phone: 208 879-4157							
6. Transporter 1 Company Name Specialty Environmental Svcs, Inc.				U.S. EPA ID Number IDR000002063			
7. Transporter 2 Company Name Clean Harbors Environmental Services, Inc.				U.S. EPA ID Number MAD039322250			
8. Designated Facility Name and Site Address Clean Harbors Aragonite, L.L.C. 11600 North Aptus Rd. Aragonite, UT 84209				U.S. EPA ID Number UTD981552177			
Facility's Phone: 435-884-8169							
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit WL/Vol.	13. Waste Codes
			No.	Type			
	X	RQ, NA3082, Hazardous waste, liquid, n.o.s. (Contains Pentachlorophenol), 9, PGIIT (RQ = 10 lbs.)	08	Dm	3800	P	F032
14. Special Handling Instructions and Additional Information 1) CH 691702 Aqueous Pentachlorophenol 7X55 1X85 Sales order 798516396							
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.							
Generator's/Offoror's Printed/Typed Name Dean C. Morgan							
Signature <i>Dean C. Morgan</i>							
Month Day Year 10 06 13							
TRANSPORTER INTL	16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit: Date leaving U.S.:				
	Transporter signature (for exports only):						
TRANSPORTER	17. Transporter Acknowledgment of Receipt of Materials						
	Transporter 1 Printed/Typed Name Steven King	Signature <i>Steven King</i>	Month 10	Day 06	Year 13		
Transporter 2 Printed/Typed Name Kevin Mayes	Signature <i>Kevin Mayes</i>	Month 10	Day 06	Year 13			
DESIGNATED FACILITY	18. Discrepancy						
	18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection						
	18b. Alternate Facility (or Generator) Manifest Reference Number: U.S. EPA ID Number:						
Facility's Phone:							
18c. Signature of Alternate Facility (or Generator)							
Month Day Year							
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)							
1.	2.	3.	4.				
H040							
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a							
Printed/Typed Name Angie Turner							
Signature <i>Angie Turner</i>							
Month Day Year 12 06 13							

LAND DISPOSAL NOTIFICATION AND CERTIFICATION FORM PHASE IV

Generator Name: USDA FS Landmark 25 Profile # 621792 Manifest No. 00708352968

1. If waste is a wastewater (see 40 CFR 268.2) place "w" next to the applicable code(s)

2. CODES WITH SUBCATEGORIES (place appropriate letter from section 8 before each code that applies) (See 40 CFR 268 for details)
- | | | | | |
|--|---|---|---|---|
| <input type="checkbox"/> D001 Hi-TOC | <input type="checkbox"/> D008 Lead acid batteries | <input type="checkbox"/> K069 Not Calcium Sulfate | <input type="checkbox"/> P065 Lo RMERC Res. | <input type="checkbox"/> U151 Hi Hg |
| <input type="checkbox"/> D001 Except Hi-TOC | <input type="checkbox"/> D009 Organic Hg > 260ppm | <input type="checkbox"/> K071 RMERC Res. | <input type="checkbox"/> P065 Not Inc./RMERC Res. | <input type="checkbox"/> U240 2, 4 D |
| <input type="checkbox"/> D003 Reactive Cyanide | <input type="checkbox"/> D009 Inorg. Hg > 260 | <input type="checkbox"/> K071 Not RMERC Res. | <input type="checkbox"/> P065 Hi Inc./RMERC Res. | <input type="checkbox"/> U240 2, 4 Esters & Salts |
| <input type="checkbox"/> D003 Reactive Sulfide | <input type="checkbox"/> D009 Hg < 260 | <input type="checkbox"/> K106 Lo RMERC Res. | <input type="checkbox"/> P092 Lo Inc. Res. | |
| <input type="checkbox"/> D003 Explosive | <input type="checkbox"/> F025 Light ends | <input type="checkbox"/> K106 Not RMERC Res. | <input type="checkbox"/> P092 Lo RMERC Res. | |
| <input type="checkbox"/> D003 Water Reactives | <input type="checkbox"/> F025 Spent filter | <input type="checkbox"/> K106 > 260 ppm Hg | <input type="checkbox"/> P092 Not Inc./RMERC Res. | |
| <input type="checkbox"/> D003 Unexp Ord. Emg | <input type="checkbox"/> K006 Hydrated | <input type="checkbox"/> P047 Salts | <input type="checkbox"/> P092 Hi Inc./RMERC Res. | |
| <input type="checkbox"/> D003 Other Reactives | <input type="checkbox"/> K006 Anhydrous | <input type="checkbox"/> P047 Nonsalts | <input type="checkbox"/> U151 Lo RMERC Res. | |
| <input type="checkbox"/> D006 Batteries | <input type="checkbox"/> K069 Calcium Sulfate | <input type="checkbox"/> P065 Lo Inc. Res. | <input type="checkbox"/> U151 Lo Not RMERC Res. | |

The subcategory for D018-D043 waste is "treated in nonCWA/nonSDWA facility" unless the following box is checked: "treated in CWA/SDWA facility"

3. COMMON CODES (Place appropriate letter from section 8 before each code that applies)
- | | | | | | | | | | | | | | | | |
|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| <input type="checkbox"/> D002 | <input type="checkbox"/> P012 | <input type="checkbox"/> P030 | <input type="checkbox"/> P051 | <input type="checkbox"/> P098 | <input type="checkbox"/> P105 | <input type="checkbox"/> P205 | <input type="checkbox"/> F006 | <input type="checkbox"/> F007 | <input type="checkbox"/> F008 | <input type="checkbox"/> F009 | <input type="checkbox"/> F010 | <input type="checkbox"/> F011 | <input type="checkbox"/> F012 | <input type="checkbox"/> F019 | <input type="checkbox"/> F039 |
| <input type="checkbox"/> D004 | <input type="checkbox"/> D005 | <input type="checkbox"/> D006 | <input type="checkbox"/> D007 | <input type="checkbox"/> D008 | <input type="checkbox"/> D009 | <input type="checkbox"/> D010 | <input type="checkbox"/> D011 | <input type="checkbox"/> D012 | <input type="checkbox"/> D013 | <input type="checkbox"/> D014 | <input type="checkbox"/> D015 | <input type="checkbox"/> D016 | <input type="checkbox"/> D017 | <input type="checkbox"/> D018 | <input type="checkbox"/> D019 |
| <input type="checkbox"/> D020 | <input type="checkbox"/> D021 | <input type="checkbox"/> D022 | <input type="checkbox"/> D023 | <input type="checkbox"/> D024 | <input type="checkbox"/> D025 | <input type="checkbox"/> D026 | <input type="checkbox"/> D027 | <input type="checkbox"/> D028 | <input type="checkbox"/> D029 | <input type="checkbox"/> D030 | <input type="checkbox"/> D031 | <input type="checkbox"/> D032 | <input type="checkbox"/> D033 | <input type="checkbox"/> D034 | <input type="checkbox"/> D035 |
| <input type="checkbox"/> D036 | <input type="checkbox"/> D037 | <input type="checkbox"/> D038 | <input type="checkbox"/> D039 | <input type="checkbox"/> D040 | <input type="checkbox"/> D041 | <input type="checkbox"/> D042 | <input type="checkbox"/> D043 | <input type="checkbox"/> F001 | <input type="checkbox"/> F002 | <input type="checkbox"/> F003 | <input type="checkbox"/> F004 | <input type="checkbox"/> F005 | <input type="checkbox"/> U002 | <input type="checkbox"/> U003 | <input type="checkbox"/> U006 |
| <input type="checkbox"/> U007 | <input type="checkbox"/> U044 | <input type="checkbox"/> U061 | <input type="checkbox"/> U072 | <input type="checkbox"/> U080 | <input type="checkbox"/> U108 | <input type="checkbox"/> U117 | <input type="checkbox"/> U122 | <input type="checkbox"/> U123 | <input type="checkbox"/> U136 | <input type="checkbox"/> U154 | <input type="checkbox"/> U188 | <input type="checkbox"/> U213 | <input type="checkbox"/> U220 | <input type="checkbox"/> U226 | <input type="checkbox"/> U279 |

ADDITIONAL CODES (Enter all codes not identified above which are associated with waste) K061

4. USEPA HAZARDOUS WASTE CODE(S)	5. TREATMENT STANDARDS FOR NON-PHASE II STATES (INDICATE THE APPLICABLE TREATMENT STANDARD 268.41, 268.43 OR SPECIFIED TECHNOLOGY BELOW)	6. HOW MUST THE WASTE BE MANAGED? ENTER THE LETTER FROM BELOW
F032	Incineration	A

To identify F039, or waste managed in non-CWA, use the "F039/Underlying Hazardous Constituents Form" provided and check here:
 If no UHCs are present upon generation check here: Check here if disposal facility will check for all UHCs (i.e. no UHC form required)
 To list additional EPA waste code(s), use the supplemental sheet and check here: In lieu of supplemental sheet you may use multiple copies of this form.

7. SOLVENT CONSTITUENTS (F001 - F005) Check here if disposal facility will check for all spent solvents
- | | | | |
|---|--|---|--|
| <input type="checkbox"/> Acetone | <input type="checkbox"/> Benzene | <input type="checkbox"/> n-Butyl alcohol | <input type="checkbox"/> Carbon disulfide |
| <input type="checkbox"/> Carbon Tetrachloride | <input type="checkbox"/> Chlorobenzene | <input type="checkbox"/> O-Cresol | <input type="checkbox"/> Cresols (m&p) |
| <input type="checkbox"/> Cyclohexanone | <input type="checkbox"/> o-Dichlorobenzene | <input type="checkbox"/> 2-Ethoxyethanol | <input type="checkbox"/> Ethyl acetate |
| <input type="checkbox"/> Ethyl benzene | <input type="checkbox"/> Ethyl ether | <input type="checkbox"/> Isobutanol | <input type="checkbox"/> Methanol |
| <input type="checkbox"/> Methylene chloride | <input type="checkbox"/> Methyl ethyl ketone | <input type="checkbox"/> Methyl isobutyl ketone | <input type="checkbox"/> Nitrobenzene |
| <input type="checkbox"/> 2 - Nitropropane | <input type="checkbox"/> Pyridine | <input type="checkbox"/> Tetrachloroethylene | <input type="checkbox"/> Toluene |
| <input type="checkbox"/> 1, 1, 1 Trichloroethane | <input type="checkbox"/> 1, 1, 2-Trichloroethane | <input type="checkbox"/> 1, 1, 2-Trichloro, 1, 2, 2-trifluoroethane | <input type="checkbox"/> Trichloroethylene |
| <input type="checkbox"/> Trichloromonofluoromethane | <input type="checkbox"/> Xylenes | | |

8. (State authorized by EPA to manage the LDR program may have regulatory citations different from the 40 CFR citations listed below. Where these regulatory citations differ, your certification will be deemed to refer to those state citations instead of the 40 CFR citations.)
- A. or RESTRICTED WASTE REQUIRES TREATMENT
 This waste must be treated to the applicable treatment standards set forth in 40 CFR Part 268.40.
 For Hazardous Debris: "This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45."
- B.1 RESTRICTED WASTE TREATMENT TO PERFORMANCE STANDARDS
 "I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the treatment standards specified in 40 CFR 268.40 without impermissible dilution of the prohibited waste. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment."
- B.2 (CERTIFICATION REMOVED BY PHASE IV)
- B.3 GOOD FAITH AND ANALYTICAL CERTIFICATION - FOR INCINERATED ORGANICS
 "I certify under penalty of law that I have personally examined and am familiar with the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the nonwastewater organic constituents have been treated by combustion units as specified in 268.42, Table 1. I have been unable to detect the nonwastewater organic constituents, despite having used best good faith efforts to analyze for such constituents. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."
- B.4 DECHARACTERIZED WASTE REQUIRES TREATMENT FOR UNDERLYING HAZARDOUS CONSTITUENTS
 "I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.40 to remove the hazardous characteristic. This decharacterized waste contains underlying hazardous constituents that require further treatment to meet universal treatment standards. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."
- C. RESTRICTED WASTE SUBJECT TO A VARIANCE
 This waste is subject to a national capacity variance, a treatability variance, or a case-by-case extension. Enter the effective date of prohibition in column 5 above.
 For hazardous debris: "This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45."
- D. RESTRICTED WASTE CAN BE LAND DISPOSED WITHOUT FURTHER TREATMENT
 "I certify under penalty of law that I have personally examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D. I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification including the possibility of a fine and imprisonment."
- E. WASTE NOT CURRENTLY SUBJECT TO PART 268 RESTRICTIONS
 This waste is a newly identified waste that is not currently subject to any 40 CFR Part 268 restrictions.

I hereby certify that all information in this and all associated documents is complete and accurate to the best of my knowledge and information.

Signature: [Handwritten Signature]
 Title: _____

Manifest 125 – 2015, residual solids in bottom of dip
tank

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number ID1122300105	2. Page 1 of 2	3. Emergency Response Phone (800) 645-8265		4. Manifest Tracking Number 002718125 GBF					
		5. Generator's Name and Mailing Address USDA Salmon-Challis National Forest HC63 Highway 93, Box 1669 Challis, ID 83226 Generator's Phone: 208 993-1747			Generator's Site Address (if different than mailing address) Latitude 44.39 21, Longitude 115.39 45 Cascade, ID 83611 Landmark						
6. Transporter 1 Company Name Specialty Environmental Svcs, Inc.					U.S. EPA ID Number IDR000002063						
7. Transporter 2 Company Name Clean Harbors Environmental Services, Inc.					U.S. EPA ID Number MAD039322250						
8. Designated Facility Name and Site Address Clean Harbors Aragonite, L.L.C. 11600 North Aptus Rd. Aragonite, UT 84209 Facility's Phone: 435-884-8169					U.S. EPA ID Number UTD981552177						
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))			10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
		1. HA3077, Hazardous waste, solid, n.o.s. (Pentachlorophenol), 9, PGIII (F032)			No.	Type			F032		
		2.					85	P			
		3.									
		4.									
											
14. Special Handling Instructions and Additional Information 1) CH856812 Solids Contaminated with Pentachlorophenol - 1x15 SO# 1501991090											
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.											
Generator's/Offeror's Printed/Typed Name Steven King ow Roloff					Signature <i>[Signature]</i>			Month Day Year 06 16 15			
TRANSPORTER INT'L	16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____										
	17. Transporter Acknowledgment of Receipt of Materials										
TRANSPORTER	Transporter 1 Printed/Typed Name Kurt Hoagland					Signature <i>[Signature]</i>			Month Day Year 06 16 15		
	Transporter 2 Printed/Typed Name James Babbler					Signature <i>[Signature]</i>			Month Day Year 06 18 15		
DESIGNATED FACILITY	18. Discrepancy										
	18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection										
	18b. Alternate Facility (or Generator) U.S. EPA ID Number										
	18c. Signature of Alternate Facility (or Generator) Month Day Year										
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)											
1. H040			2.			3.			4.		
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a											
Printed/Typed Name Tom Pedersen					Signature <i>[Signature]</i>			Month Day Year 7 1 15			

Manifest 124 – 2015, the steel dip tank

15262405024

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number ID1122300105	2. Page 1 of 1	3. Emergency Response Phone (800) 570-8570		4. Manifest Tracking Number 002718124 GBF		
		5. Generator's Name and Mailing Address USDA Salmon-Challis National Forest HC63 Highway 93, Box 1669 Challis, ID 83226 Generator's Phone: 208 993-1747					Generator's Site Address (if different than mailing address) Latitude 44.39.21, Longitude 115.39.45 Cascade, ID 83611 <i>Landmark</i>	
6. Transporter 1 Company Name Specialty Environmental Svcs, Inc.					U.S. EPA ID Number IDR000002063			
7. Transporter 2 Company Name					U.S. EPA ID Number			
8. Designated Facility Name and Site Address US Ecology, Idaho 20400 Lewly Rd. Grandview, ID 83624 Facility's Phone: 208-834-2275					U.S. EPA ID Number IDD073114654			
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))		10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
				No.	Type			
	X	1. NA3077, Hazardous waste, solid, n.o.s. (F032), 9, PGIII		001	cw	500	P	F032
		2.						
		3.						
	4.							
14. Special Handling Instructions and Additional Information 1) 37122 Debris, Metal Vessel 1x Pallet w/Tank								
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.								
Generator's/Offeror's Printed/Typed Name Steven King on Behalf					Signature <i>St. King</i>		Month Day Year 06 16 15	
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Transporter signature (for exports only): _____ Date leaving U.S.: _____								
TRANSPORTER	17. Transporter Acknowledgment of Receipt of Materials							
	Transporter 1 Printed/Typed Name Kurt Hoagland				Signature <i>Kurt Hoagland</i>		Month Day Year 06 16 15	
Transporter 2 Printed/Typed Name				Signature		Month Day Year		
DESIGNATED FACILITY	18. Discrepancy							
	18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection							
	Manifest Reference Number: _____							
	18b. Alternate Facility (or Generator)						U.S. EPA ID Number	
	Facility's Phone: _____							
18c. Signature of Alternate Facility (or Generator)						Month Day Year		
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)								
1		2.		3.		4.		
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest, except as noted in Item 18a								
Printed/Typed Name Cynthia Rodriguez					Signature <i>Cynthia Rodriguez</i>		Month Day Year 6 25 15	



APPENDIX 5

Boring Logs

BORING & WELL CONSTRUCTION LOG

BORING DP-1



		DEPTH (FEET)	SAMPLE ID	BLOW COUNT (PER 6 INCHES)	SAMPLE INTERVAL AND RECOVERY	PID READINGS (PPM)	USCS	PROJECT Landmark PA/SI CLIENT US Forest Service DRILLING COMPANY Cascade Drilling, Inc. GEOLOGIST Paul Hunter, PG START DATE END DATE 6/16/15 6/16/15	DRILLING METHOD Direct-push Geoprobe SAMPLING METHOD Split-spoon SURFACE COMPLETION N/A Elevation Ground: Not Measured Elevation TOC: Not Measured Total Boring Depth: 15 Feet Depth to Water ATD: 14 Feet
Bentonite Seal Medium chips		0						Silt loam, organic debris, brown, slightly moist.	
		2.0 Feet						Fine grained sand with silt, tan, slightly moist.	
		3.0 Feet						Coarse gravely sand, light tan, lenses of coarse gravel quartz sand.	
		5	Landmark DT-DP1-5					Coarse sand, fine to coarse gravel, tan, slightly moist.	
		10	Landmark DT-DP1-10				Coarse sand, fine to coarse gravel, tan, moist, saturated at 14'.		
		15	Landmark DT-DP1-15						

Total depth = 15.0 feet.

Notes: Backfilled with bentonite chips

