SAMPLING AND ANALYSIS PLAN
FOR
CAMP BIRD – REMOVAL ASSESSMENT
OURAY, OURAY COUNTY, COLORADO

Prepared for
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 8

Prepared by
WESTON SOLUTIONS, INC.
Region VIII Superfund Technical Assessment and Response Team

April 15, 2015

For approval signatures, see Worksheet 1 & 2.

Project Dates of Sampling:	Week of May 18, 2015
CERCLA ID / Site Spill Identifier No.:	A8H9
Contract Name:	START IV
Contract No.:	EP-S8-13-01
Technical Direction Document No.:	0001/1503-07
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SAP Revision Log

Site: Camp Bird
OSC: Martin McComb
TDD: 0001/1503-07

Date	Revision Number	Reason for Change of Scope/Procedures	SAP Section Superseded	Requested By	Approved By

List of Acronyms

°C	degrees Celsius
%D	percent difference
%R	percent recovery
%RSD	percent relative standard deviation
ACM	asbestos containing material
AES	Atomic Emission Spectrometry
ANSI	American National Standards Institute
APP	Accident Prevention Plan
ARAR	applicable or relevant and appropriate requirements
ASQ	American Society for Quality
AST	aboveground storage tank
ATSDR	Agency for Toxic Substances and Disease Registry
B	bias
CA	Corrective Action
CB	calibration blank
CCB	continuing calibration blank
CCV	continuing calibration verification
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERLIS	Comprehensive Environmental Response, Compensation, and Liability System
CHMM	Certified Hazardous Materials Manager
CLP	Contract Laboratory Program
cpm	counts per minute
CO	Contracting Officer
COC	Chain-of-Custody
COR	Contracting Officer Representative
Cr^{+6}	Hexavalent Chromium
CRL	Central Regional Laboratory
CRQL	Contract Required Quantitation Limits
CSM	Conceptual Site Model
CVAA	Cold Vapor Atomic Absorption
D	absolute range
DQI	Data Quality Indicator
DQO	Data Quality Objective
DRMS	Colorado Division of Reclamation, Mining and Safety
EDD	electronic data deliverable
EDX	Energy Dispersive X-Ray
ERM	Emergency Response Manager
ERT	Environmental Response Team
ESI	Expanded Site Inspection
FID	Flame Ionization Detector
FS	Feasibility Study
FSP	Field Sampling Plan
GC	gas chromatography
GC/MS	gas chromatography/mass spectrometry

List of Acronyms

GIS	Geographic Information System
HASP	Health and Safety Plan
HRGC/HRMS	high resolution gas chromatography/high resolution mass spectrometry
HRGC/LRMS	high resolution gas chromatography/low resolution mass spectrometry
HRS	Hazard Ranking System
HPLC	high performance liquid chromatography
ICB	initial calibration blank
ICP	inductively coupled plasma
IDW	investigation-derived waste
ISTD	Instrument Standard
ITRC	Interstate Technology and Regulatory Council
LBP	lead based paint
LCS	laboratory control sample
LOD	limit of detection
LOQ	limit of quantitation
MDL	method detection limit
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MPC	Measurement Performance Criteria
MS	matrix spike
MSD	matrix spike duplicate
NA	not applicable
NCP	National Contingency Plan
ND	non-detect
NIOSH	National Institute of Safety and Health
NPL	National Priorities List
NRCS	Natural Resource Conservation Service
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbons
PAL	Project Action Limit
PCB	Pesticides/Polychlorinated biphenyls
PCDD	Polychlorinated Dibenzo-p-Dioxins
PCDF	Polychlorinated Dibenzofurans
PCM	Phase Contrast Microscopy
P.E.	Professional Engineer
PID	Photoionization Detector
PLM	polarized light microscopy
PM	Project Manager
PMP	Project Management Professional
POC	Point of Contact
PQL	Project Quantitation Limit
PQO	Project Quality Objectives
PPE	Personal Protective Equipment
PT	proficiency testing
PTL	Project Team Lead

List of Acronyms

PUF	polyurethane foam
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
QMP	Quality Management Plan
Ra	Radium
RA	Risk Assessment
RAS	Routine Analytical Services
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RL	reporting limit
RM	Removal Manager
RML	Removal Management Levels
RPD	relative percent difference
RSD	relative standard deviation
RSL	regional screening levels
SAP	Sampling and Analysis Plan
SAS	Special Analytical Services
SCDM	Superfund Chemical Data Matrix
SI	Site Inspection
SOP	Standard Operating Procedure
SRM	Standard Reference Material
SSL	soil screening level
START IV	Superfund Technical Assessment and Response Team 4
SVOC	Semi-volatile Organic Compounds
TAL	Target Analyte List
TBD	to-be-determined
TCL	Target Compound List
TDD	Technical Direction Document
TEM	transmission electron microscopy
TSA	Technical Systems Audit
UFP-QAPP	Uniform Federal Policy–Quality Assurance Project Plan
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
U.S. EPA	United States Environmental Protection Agency
USGS	United States Department of the Interior Geologic Survey
UST	underground storage tank
VOC	Volatile Organic Compounds
WAM	Work Assignment Manager
WESTON	Weston Solutions, Inc.
XRD	x-ray diffraction
XRF	X-Ray Florescence

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Introduction

This SAP identifies the data collection activities and associated QA/QC measures specific to the Camp Bird site (the Site) located in Ouray, Ouray County, Colorado. All data will be generated in accordance with the quality requirements described in the Quality Assurance Project Plan for Region 8 CERCLA Removal and Emergency Response Activities in Colorado, Utah, Wyoming, Montana, North Dakota, and South Dakota (Weston 2013). The purpose of this SAP is to describe site-specific tasks that will be performed in support of the stated objectives. This SAP will reference the QAPP for generic tasks common to all data collection activities including routine procedures for sampling and analysis, sample documentation, equipment decontamination, sample handling, data management, assessment, and data review. Additional site-specific procedures and/or modifications to procedures described in the QAPP are described in the following SAP elements.

This SAP is prepared, reviewed, and approved in accordance with the procedures detailed in the QAPP. Any deviations or modifications to the approved SAP will be documented using the SAP Revision Form. This SAP is produced in accordance with the UFP for QAPPs and consists of the site-specific UFP Worksheets from the QAPP.

Project Organization and Team

Refer to the QAPP Worksheet 3 & 5, and 4, 7, & 8 for the program organizational chart, communication pathways, personnel responsibilities and qualifications, and special personnel training requirements. Project-specific information is provided below.

The following are key individuals identified for this project:

Name	Title/Role	Organization	Receive Copy of SAP?
Jamie Miller	Project Team Lead	TechLaw	Yes
Dave Robinson	Project Manager	Weston	Yes
Megan Adamczyk	Project Scientist/XRF Lab	Weston	Yes
Tom Cartier	Field Team Lead	Weston	No
Martin McComb	OSC	EPA	Yes
Moira Pryhoda	Field Staff	Weston	No
Martin McComb	DAO	EPA	Yes

The individuals who will receive a copy of the Program QAPP are specified on QAPP Worksheet 3 & 5 (Project Organization and QAPP Distribution) as noted by the asterisk symbol adjacent to their names. The program QA Manager (QAPP Worksheet 4, 7 & 8) and the Project Manager will maintain the approved QA project plan consisting of the Program QAPP, Project SAP and SAP Document Review Crosswalk. The PTL will distribute the most current copy of the project QA documents via electronic or hard copy, as directed by the OSC. Files for this project will be kept in accordance with Section H.20 of Contract No.: EP-S8-13-01, stating a

length of 10 years from close of the project or end of litigation.

QAPP Reference: Weston Solutions, Inc. 2013. Quality Assurance Project Plan for Region 8 CERCLA Removal and Emergency Response Activities in Colorado, Utah, Wyoming, Montana, North Dakota, and South Dakota. Prepared for the START IV Contract. July 2013.

Worksheet 1 & 2 — Title and Approval Page

(UFP-QAPP Manual Section 2.1)
(EPA 2106-G-05 Section 2.2.1)

1. **Project Identifying Information**

   a) **Site Name/Project Name:** Camp Bird
   b) **Site Location/Number:** Ouray, Ouray County, Colorado
   c) **Contract/Work Assignment Number:** EP-S8-13-01/0001/1503-07

2. **List Plans and reports from previous investigation relevant to this project.**

   Colorado Department of Public Health and Environment (CDPHE) Hazardous Materials and Waste Management Division. Combined Assessment Analytical Results Report Canyon Creek Watershed. Ouray County, Colorado. October 26, 2000.

The undersigned approves the entire UFP-QAPP document which includes this SAP and other elements that are found in the Region 8 Removal and Emergency Response QAPP (Revision 1.0).

Lead Investigative Organization's SAP Author / Project Team Leader

Jamie Miller/WESTON
Printed Name/Title

Signature/Date

Lead Investigative Organization's Project Manager:

Dave Robinson/WESTON
Printed Name/Title

4/22/15
Signature/Date

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Martin McComb/OSC
Printed Name/Title

M McComb 5-20-15
Signature/Date

Document Control Numbering System: W0219.1E.00441

Worksheet 9 — Project Planning Session Summary

(UFP-QAPP Manual Section 2.5.1 and Figures 9-12)
(EPA 2106-G-05 Section 2.2.5)

Date of Planning Session: April 6, 2015 **Location:** Teleconference **Purpose:** Scoping Meeting for Camp Bird				
Name	**Title/Role**	**Organization**	**Phone No.**	**E-mail Address**
Martin McComb	OSC	EPA	720.413.9190	McComb.Martin@EPA.gov
Jamie Miller	Project Team Lead/Scientist	WESTON	720-302-3387	JMiller@techlawinc.com

Notes/Comments: Discussed anticipated removal assessment activities and data management practices. Logistics for field work were also discussed.

Consensus Decisions Made:

- Mobilize 4 START personnel, Project Team Lead, 1 Field Team Leads, 1 Field Staff member and XRF Lab Tech.
- Field sampling should take one week (2 travel days, 3 field sampling days) during the week of May 18, 2015.
- Assessment sampling will be designed to meet Removal Program requirements.
- Removal assessment will be performed to determine the cost needed to perform a Removal Action.
- All XRF analysis will be completed on site—requiring no additional hours for XRF prep and no costs for waste material disposal.
- **Note: As of field recon by OSC McComb on May 12, it was determined that the site was too muddy to allow for onsite XRF preparation and analysis. Samples will be brought back to the EPA warehouse in Denver for prep and analysis.**
- START will mobilize 2 GSA vehicles loaded with equipment to/from Denver.

Action Items:

Action	Responsible Party	Due Date
Prepare for Field Work to Start on or before June 2015	WESTON	TBD
Prepare SAP	WESTON	April 24, 2015
HASP	WESTON	April 24, 2015
SS DMP	WESTON	April 24, 2015

Worksheet 10 — Conceptual Site Model

(UFP-QAPP Manual Section 2.5.2)
(EPA 2106-G-05 Section 2.2.5)

Problem Definition:

The Camp Bird Mine is located in the Imogene Basin at the headwaters of Canyon Creek. It is an actively permitted mine consisting of approximately 472,520 cubic yards of tailings divided into two impoundments, one located on the north side of Canyon Creek and the other on the south side of Canyon Creek, and a discharging adit. Currently, the mine owner has completed some work to evaluate the reopening of the mine for production. This work included re-establishment of the collapsed main portal and sedimentation pond and the redirecting of the adit discharge to the pond. The mine plan includes reconnaissance of the workings to determine if they are accessible and to evaluate the economics of full scale mining.

The impoundment on the north side of Canyon Creek has been closed in-place by re-grading and capping of the pile. The impoundment on the south side of Canyon Creek has not been reclaimed. The south impoundment includes sulfide mineralized waste rock consisting of pyrite, chalcopyrite, galena, and sphalerite. This material has also been identified near the Camp Bird Level 14 portal and in and around Imogene Creek. The south impoundment represents a source of metals loading to Imogene Creek during run-off events.

EPA's Response Unit will be conducting a removal assessment on the property. START will support this effort by performing field sampling and providing technical assistance.

Background Information/Site History:

The Camp Bird Mine and Mill site is located in the Imogene Basin at the headwaters of Canyon Creek southwest of Ouray on the northern border of the San Juan Mountains. The Site comprises 129 patented mining claims and occupies approximately 1,000 acres. The mine and mill produced gold and silver during its early operational period and later produced lead and zinc. The Site occupies two separate areas comprised of the Camp Bird Level 14 Portal and mill site and the Upper Camp Bird Mine workings (300 level). The Upper Camp Bird is located at an elevation of approximately 11,200 amsl. The 1400 level portal served as the main entrance to the mine area and is located at the terminus of county road 361. A large tailings pond and associated mill buildings are present below the 1400 level portal. The tailings piles include the inactive tailings facility (265,360 cubic yards), the active tailings facility (60,935 cubic yards) and the historic tailings (146,225 cubic yards).

Previous Investigations

Investigations at the Canyon Creek watershed mine and mill sites is limited largely to a Colorado Geological Survey (CGS) inventory of the abandoned mine sites within the basin and NPDES compliance monitoring at the Camp Bird Mine and Mill. The CGS investigation provided an inventory of mine and mill sites as well as an assessment of general water quality parameters associated with selected adit discharges at each mine/mill site. In 1975, the US Bureau of Mines conducted a visit at the Camp Bird mine largely to gain an understanding of ore bodies and mining practices. During a September 11, 1996 inspection of the Camp Bird Mine by Colorado Water Quality Control Division personnel, inspectors indicated that tailings materials were slumping into Canyon Creek and the water contained within the on-site settling pond was an unnatural green color. Analysis of both influent (originating from the Camp Bird Level 14 portal) and effluent samples from the settling pond indicated that the pond effluent was, at times, higher in total zinc values than was the influent. Zinc concentrations in pond influent samples averaged 0.21 milligrams/liter (mg/L) for a period from August 1996 to April 1997. Total zinc values for pond effluent samples averaged 0.24 mg/L for the same period.

On October 29, 1997 CDPHE CEQCD issued a letter to Camp Bird Colorado, Inc. notifying that sampling efforts conducted in May and June of 1997 indicated an exceedance of permit limitations for 30-day average dissolved zinc concentrations in mine effluent. The May and June 30-day average values for zinc were 0.615 mg/L and 0.539 mg/L, respectively. Both of these values exceeded the calculated stream standards of 0.36 mg/L (May) and 0.53 mg/L (June).

Additional investigations at the Camp Bird Mine and Mill site include efforts by the EPA NPDES inspectors to characterize water discharges from the Number 14 level portal and at the settling pond outfall. EPA NPDES personnel performed this sampling effort during the summer of 1998 in response to a request to discontinue its discharge permit for the facility.

A Combined Assessment of the Canyon Creek Watershed was conducted under a cooperative agreement by CDPHE Hazardous Materials and Waste Management Division for the US EPA in 2000. Field work included sampling and non-sampling data collection. Sampling included waste source sampling, surface water sampling, and sediment sampling. Non-sampling activities included the collection of surface water flow data needed to calculate the metals loading to nearby surface water bodies and perform mass balance analysis along the drainage. In addition, field measurements of the dimensions of piles and waste rock dumps were collected.

Worksheet 11 — Project/Data Quality Objectives

(UFP-QAPP Manual Section 2.6.1)
(EPA 2106-G-05 Section 2.2.6

1. State the Problem

The Camp Bird Mine is located in the Imogene Basin at the headwaters of Canyon Creek. It is an actively permitted mine consisting of approximately 472,520 cubic yards of tailings divided into two impoundments, one located on the north side of Canyon Creek and the other on the south side of Canyon Creek. Additionally, the mine includes a discharging adit. EPA's Response Unit will be conducting a removal assessment on the property. START will support this effort by performing field sampling and providing technical assistance.

2. Identify the Goals of the Study

The goals of the study are to assess assimilated data, identify gaps in analytical or reconnaissance data, and collect appropriate sampling and reconnaissance data to fill those data gaps.

- Where is additional sampling needed to identify metals contaminated soil?
- What is the extent of metals contamination originating from waste piles/source areas?
- What is the volume of each waste pile/source area?
- Has contamination been mobilized from waste pile/source areas via adjacent streams or other methods?
- If a Removal action is necessary, what are the options for such activity?
- If a Removal action is necessary, what type of information will be necessary to facilitate disposal?

3. Identify Information Inputs

Information that will be used to answer the above questions includes the following:

- Data from previous studies will be compiled and geospatially located to determine areas where existing characterization is sufficient for decision making.
- In situ X-Ray Fluorescence (XRF) analysis will be utilized to identify areas of metals contamination.
- Surface and subsurface soil samples from source areas and sediment samples from stream beds adjacent to source areas will be collected, prepped, and analyzed using XRF instrumentation.
- Surface water samples from streams adjacent to source areas will be collected and sent to the laboratory for analysis.

- Ten percent of samples will be sent to the laboratory for metals analysis as confirmation of the XRF results.
- Field sampling data will be recorded electronically in a Scribe mobile field sampling application on an iPad or Scribe compatible data dictionary on a Trimble GPS unit and uploaded into a Site-specific Scribe database.
- Additional field reconnaissance data, including waste pile and stream bed data, may be collected using a Trimble GPS unit or a Site-specific FileMaker assessment form (TBD).
- Sampling locations will be geospatially and photographically documented.
- All data will be loaded to the Site-specific geospatial viewer for operational purposes.
- Additional documentation may be collected from Ouray County, the State of Colorado, or the Town of Ouray. All documentation will be loaded to the Site-specific EPAOSC.net website.

4. Define the Boundaries of the Study

- Assessment activities, including sampling and field reconnaissance, will be conducted on or before June 2015 and will be scheduled as follows:
    - Week 1: sampling (utilizing hand auger and/or ERRS excavator for subsurface) and mobile mapping of waste piles at mine and mill sites.
- Sampling will be conducted from the surface to a depth of no more than 6 inches.
- Sampling zones will be delineated from the AOIs by the OSC.

5. Develop the Analytic Approach

In situ screening for metals in soil will be conducted using the XRF instrument. A number of soil samples will be collected, prepped and analyzed using the XRF instrument in the START field laboratory. The number of samples collected for preparation and XRF analysis will be determined in the field based on professional judgment.

Samples will be analyzed at an independent laboratory as follows:

- Ten percent of surface and subsurface soil samples collected for field XRF analysis will be submitted to the laboratory for TAL metals analysis.

Analytical sample results will be reviewed and verified by a WESTON START chemist to determine data usability. Analytical results will be compared to EPA Regional Screening Levels (RSLs) for residential soil and additional criteria as determined by the OSC. The OSC will develop site specific criteria for determining if a removal action is necessary.

6. Specify Performance or Acceptance Criteria

All data will be reviewed and verified to ensure that they are acceptable for the intended use.

Limited data validation will be performed as described in Worksheet #36.

Sampling error will be limited to the extent practicable by following approved U.S. EPA methods and applicable SOPs listed in Worksheet #21. Sampling error and tolerable limits cannot be quantified.

7. Develop the Detailed Plan for Obtaining Data

Data will be collected per the sampling design and rationale provided in Worksheet 17. Sample nomenclature is described in Worksheet 17, Identification and Handling. Sample descriptions will be logged in the field logbook using standard geologic descriptions. Documentation of assessment activities will be collected using a FileMaker Pro form loaded onto an iPad. Sampling data will be collected using the Scribe Mobile Application loaded onto an iPad or a Scribe compatible data dictionary on a Trimble GPS unit. Data will be entered into Scribe for data management and reporting purposes. Chain of custody forms will be generated from the Scribe database. A Scribe compatible EDD will be requested from the laboratory for importing analytical results into the database. Geospatial data will be collected using the iPad loaded with the ESRI mobile application and a Bluetooth connected GPS or a Trimble GPS unit.

Worksheet 14 & 16 —Project Tasks & Schedule

(UFP-QAPP Manual Section 2.8.2)
(EPA 2106-G-05 Section 2.2.4)

Activity	Responsible Party	Planned Start Date	Planned Completion Date	Deliverable(s)	Deliverable Due Date
Develop a Draft SAP and the EPA Region 8 QA Document Review Crosswalk	WESTON	4/15/15	4/23/15	Draft SAP and the Draft EPA Region 8 QA Document Review Crosswalk	4/24/15
Address EPA comments on Draft SAP and the Draft EPA Region 8 QA Document Review Crosswalk	WESTON	4/25/15	4/26/15	SAP and the Final EPA Region 8 QA Document Review Crosswalk	4/27/15
SS DMP	WESTON	4/20/15	4/23/15	SS DMP	4/24/15
HASP	WESTON	4/20/15	4/23/15	HASP	4/24/15
Mobilization/Demobilization	WESTON	05/18/15	05/22/15	NA	NA
Sample Collection Tasks	WESTON	05/19/15	05/21/15	Field Notes	05/22/15
Analytical Tasks	WESTON	05/19/15	15/21/15	Field Notes/Laboratory Reports	TBD
Validation	WESTON	TBD	TBD	Validation Summary Report	TBD
Summarize Data	WESTON	TBD	TBD	Data Report	TBD

Reports to management will be written and distributed in accordance with the QAPP Worksheet #6.

Worksheet 15 — Project Action Limits and Lab-Specific Detection/Quantitation Limits

(UFP-QAPP Manual Sections 2.6.2.3 and Figure 15)
(EPA 2106-G-05 Section 2.2.6)

The following information will be provided for each matrix, analyte, analytical method, and concentration level (if applicable).

Matrix: Soil/Sediment
Analytical Method: TAL Metals (field analysis: 6200, lab analysis: 6010)
Concentration level (if applicable): N/A

Analyte	Project Action Limit (PAL)[1] mg/kg	PAL Reference[1]	Project Quantitation Limit (PQL) Goal[4]	Laboratory Quantitation Limit[2]	Laboratory Detection Limit[2]
Aluminum	110,000	EPA Industrial Soil RSLs*	NA	TBD	TBD
Antimony	47	EPA Industrial Soil RSLs*	50-100	TBD	TBD
Arsenic	48	EPA Industrial Soil RSLs*	10-100	TBD	TBD
Barium	22,000	EPA Industrial Soil RSLs*	50-100	TBD	TBD
Beryllium	230	EPA Industrial Soil RSLs*	NA	TBD	TBD
Cadmium	98	EPA Industrial Soil RSLs*	50-100	TBD	TBD
Calcium	N/A	EPA Industrial Soil RSLs*	250-2500	TBD	TBD
Chromium	180,000	EPA Industrial Soil RSLs*	10-100	TBD	TBD
Cobalt	35	EPA Industrial Soil RSLs*	10-100	TBD	TBD
Copper	4,700	EPA Industrial Soil RSLs*	10-100	TBD	TBD
Iron	82,000	EPA Industrial Soil RSLs*	10-100	TBD	TBD

Analyte	Project Action Limit (PAL)[1] mg/kg	PAL Reference[1]	Project Quantitation Limit (PQL) Goal[4]	Laboratory Quantitation Limit[2]	Laboratory Detection Limit[2]
Lead	800	EPA Industrial Soil RSLs*	10-100	TBD	TBD
Magnesium	NA	EPA Industrial Soil RSLs*	NA	TBD	TBD
Manganese	2,600	EPA Industrial Soil RSLs*	10-100	TBD	TBD
Nickel	2,200	EPA Industrial Soil RSLs*	10-100	TBD	TBD
Potassium	N/A	EPA Industrial Soil RSLs*	250-2500	TBD	TBD
Selenium	580	EPA Industrial Soil RSLs*	10-100	TBD	TBD
Silver	580	EPA Industrial Soil RSLs*	50-100	TBD	TBD
Sodium	NA	EPA Industrial Soil RSLs*	NA	TBD	TBD
Thallium	1.2	EPA Industrial Soil RSLs*	10-100	TBD	TBD
Vanadium	580	EPA Industrial Soil RSLs*	10-100	TBD	TBD
Zinc	35,000	EPA Industrial Soil RSLs*	10-100	TBD	TBD

1 CLP laboratories use accepted analytical methods for the isolation, detection, and quantitation of specific target compounds and analytes. The CLP TCL, TAL, and their corresponding CRQL are listed in QAPP Appendix B and QAPP Appendix C, respectively.

2 Links to State regulatory cleanup standards are provided in QAPP Appendix D. The PALs will ultimately be determined by the OSC but will be based in part on TCLP limits, CSEVs, and Colorado WQS.

3 Terminology is project/laboratory-specific.

4 XRF Detection Limit Guidelines-Low density sample types (soils, powders, liquids)

Worksheet 17 — Sampling Design and Rationale

(UFP-QAPP Manual Section 3.1.1)
(EPA 2106-G-05 Section 2.3.1)

Samples will be managed in accordance with SAP Worksheet 26 & 27.

Safety

All field activities will be conducted in strict accordance with an approved Health and Safety Plan (HASP), which will be developed before the start of field activities. It is anticipated that all field work can be accomplished in Level D Personal Protective Equipment (PPE) equipment. START personnel performing sampling will wear PPE appropriate to the hazard presented. At a minimum, the following guidelines should be followed: when on site steel toed-boots shall be worn; sampling gloves and eye protection should be worn. In the presence of heavy equipment including the excavator, a hard hat and hearing protection should also be worn. Field crews will be cognizant of steep slopes and uneven terrain when sampling.

Property Access and Logistics

Access to the property will be obtained and managed by the EPA before any sampling. START will have consent from all applicable property owners (on property and off-property) prior to the field sampling event.

Sample Collection

Surface and Subsurface Soil Sampling

START will navigate to sampling zones in the AOIs delineated by the OSC and collect 10-30 point composite samples based on locations determined by professional judgment in the field. Aliquots will be homogenized and composited into a single sample per sampling zone. Aliquot locations will be shot in situ with the XRF instrument and results will be recorded as monitoring data.

Surface samples will be collected using a disposable plastic scoop. In the event that the ground is too hard for use of a disposable scoop a decontaminated stainless steel scoop will be used. Each aliquot will be placed into a zip-top bag creating a composite sample with the zone location and information on the bag in indelible ink. The sample will then be homogenized for analysis at a later time by START.

Sub-surface soil samples will be collected with a hand auger or sharp shooter shovel down to a depth of 12" bgs unless professional judgment dictates otherwise. Sub-surface soil samples are to be composited from soil cores at each location determined by the OSC. One composite will be collected from 10-30 flagged locations in each sampling zone at two depths: surface and down to 12". A composite soil core sample is to be prepared which will be representative of each depth interval for every sampling zone; i.e. each sampling zone will have 1 corresponding subsurface

sample down to 12".

Sampling data will be documented in a Scribe mobile application form on an iPad or a Scribe compatible data dictionary on a Trimble GPS unit and entered into a Site-specific Scribe database for data management and reporting purposes. The Scribe database will be published to Scribe.net to allow for incorporation into EPA's geospatial viewer. A latitude and longitude will be recorded at each aliquot location per sampling zone to allow for visual representation of sampling activities on EPA's geospatial viewer. Sampling activities will be photo documented, and photos will be uploaded to EPAOSC.net to allow for incorporation into EPA's geospatial viewer.

Sediment Sampling

Sediment samples will be collected as opportunity samples from stream beds adjacent to source areas to determine if contamination has migrated off site into the stream. Sediment samples will be collected as composites or grabs, depending on the availability of fine grained materials in the drainage. Sediment samples will be collected using a disposable plastic scoop or a decontaminated stainless steel scoop. Each grab sample will be placed into a zip-top bag (or each aliquot will be placed into a zip top bag creating a composite sample) with the zone location and information on the bag in indelible ink. The sample will then be homogenized for analysis at a later time by START.

Sampling data will be documented in a Scribe mobile application form on an iPad or a Scribe compatible data dictionary on a Trimble GPS unit and entered into a Site-specific Scribe database for data management and reporting purposes. The Scribe database will be published to Scribe.net to allow for incorporation into EPA's geospatial viewer. A latitude and longitude will be recorded at each aliquot location per sampling zone to allow for visual representation of sampling activities on EPA's geospatial viewer. Sampling activities will be photo documented, and photos will be uploaded to EPAOSC.net to allow for incorporation into EPA's geospatial viewer.

Surface Water Sampling

Surface water samples will be collected as grab samples by immersing sample bottles into stream surface while pointing the sample container upstream. Samples will be collected from the center of the stream segment in a downstream to upstream order. Samples will be collocated with sediment samples. Water samples will be collected prior to sediment samples to eliminate raised sediment disturbance. Total metals samples will be collected in 250 mL poly bottles preserved with HNO_3 after collection to a pH<2. Dissolved metals samples will be collected in 250 mL poly bottles and filtered in the field prior to preservation with HNO_3 to a pH<2.

2 Digit Area ID (the same area ids used in Sample Ids)
2 Digit Sequential Monitoring Id
2 Digit Depth reference (02: 0-2", 12: 2-12")

Example: in situ monitoring location NC-01-02 will be the first monitoring location north of Canyon Creek collected on the surface.

Sampling Logistics and Contingencies

- *Sampling Schedule Considerations*

  Samples do not require any special time or climate requirements. They will be analyzed and sent to the laboratory to meet the deadlines outlined in SAP Worksheet 14 & 16.

- *Sample Information Importance and Data Variability*

  The purpose of this sampling is outlined in SAP Worksheet 11, the concentrations of TAL metals and in particular lead, arsenic and zinc are being measured and are of high importance.

  Soil and sediment samples for the project will be combined to create composite samples. By creating the composite samples from the independent aliquots data variability should be identifiable and minimized.

- *Potential Sampling Problems and Corrective Action*

  As noted above, if soil conditions prevent the use of disposable scoops, a decontaminated stainless steel scoop will be used for sample collection.

  If sediment samples harden during drying time, samples may undergo grinding process to facilitate XRF analysis.

Any changes from the planned equipment and/or methods will be documented in the field logbook.

Sample Analysis

Soil sample analysis will be performed onsite by START personnel in the START field laboratory. Surface and sub-surface soil samples will be analyzed via XRF instrumentation, with 10% of the total number of soil samples collected sent for laboratory confirmation analysis. Sediment samples may undergo a grinding process after drying to facilitate XRF analysis.

Surface water samples will be sent to the laboratory for total and dissolved metals analysis.

Sample Identification and Handling

Samples will be placed into zip top plastic bags labeled with the sample ID in indelible ink. Sample IDs will begin with the letters "CB" indicating the sample is part of the Camp Bird sampling event, followed by "SS" for surface soil, "SB" for subsurface soil, ~~"WA"~~ SW for water or "SE" for sediment, followed by AOI location (NO-north ~~of Canyon Creek~~ Pile, SO-south ~~of Canyon Creek~~ Pile) followed by a 2-digit sequential sampling number. Surface soil samples will have no further sample nomenclature. Sample collection method (grab vs. composite) will be recorded in the "Sample Collection" field in the Scribe Mobile Application. AD for adit

Example: sample CBSSNC01will indicate a surface composite soil sample collected from north of Canyon Creek.

Example: sample CBSBSC02 will indicate a subsurface (2-12") composite soil sample collected from south of Canyon Creek.

Sample cross contamination will be reduced by using disposable plastic scoops for each sample. If a stainless steel scoop is used, it will be decontaminated between samples with a brush to remove gross particulate and a nitric acid rinse, followed by a distilled water rinse. The scoop will then be allowed to gravity drain.

Samples will be analyzed for the parameters listed on Worksheet 15. In addition, requirements for the sample container, volume, preservation, and QC samples are listed on Worksheet 19 & 30 of the QAPP. Table 2 summarizes the information from Worksheet 15 and Worksheet 19 & 30.

Monitoring Data

In situ XRF monitoring locations will be captured in both the Scribe Mobile Application on the GPS enabled iPad or Scribe compatible data dictionary on the Trimble GPS and in the XRF instrument, to allow for a join of locational data with in situ results.

Monitoring Ids will consist of the following:

Worksheet 18 — Sampling Locations and Methods

(UFP-QAPP Manual Section 3.1.1 and 3.1.2)
(EPA 2106-G-05 Sections 2.3.1 and 2.3.2)

Sampling Location / ID	Matrix	Depth (inches)	Type	Analyte/Analytical Group	Sampling SOP Reference[1]	Comments
CBSSNC01/CBSSSC01	Soil	surface	Composite/Grab	TAL Metals	See Worksheet 21	Surface soil
CBSBNC02/CBSBNC02	Soil	0-12	Composite/Grab	TAL Metals	See Worksheet 21	Sub surface soil
CBSENC03/CBSESC03	Sediment		Grab	TAL Metals	See Worksheet 21	Sediment
CBWA03	Surface Water		Grab	TAL Metals (total and dissolved)	See Worksheet 21	Surface Water

[1] Sampling SOPs references are provided in Worksheet 21.

Worksheet 19 & 30 — Sample Containers, Preservation, and Hold Times

(UFP-QAPP Manual Section 3.1.2.2)
(EPA 2106-G-05 Section 2.3.2)

Matrix	Analyte/ Analyte Group	Method/ SOP[1]	Accreditation Expiration Date	Container(s) (number, size & type per sample)[2]	Preservation	Preparation Holding Time	Analytical Holding Time	Data Package Turnaround
Soil	TAL Metals	6200 (field analysis)	TBD	Zip-top baggie	Store @ < 4°C	NA	180 days	Standard
Soil	TAL Metals	6010 C (lab analysis)	TBD	XRF Cup	Store @ < 4°C	N/A	180 days	Standard
Sediment	TAL Metals	6200 (field analysis)	TBD	Zip-top baggie	Store @ < 4°C	NA	180 days	Standard
Sediment	TAL Metals	6010 C (lab analysis)	TBD	8 oz jar	Store @ < 4°C	N/A	180 days	Standard
Surface Water	TAL Metals	6020 A (lab analysis)	TBD	250 mL poly bottle	HNO3 pH<2	N/A	180 days	Standard

[1] Refer to the Analytical SOP References table (Worksheet 23).

[2] The minimum sample size is based on analysis allowing for sufficient sample for reanalysis. Additional volume is needed for the laboratory MS/MSD sample analysis.

Worksheet 20 — Field Quality Control Sample Summary

(UFP-QAPP Manual Sections 3.1.1 and 3.1.2)
(EPA 2106-G-05 Section 2.3.5)

Matrix	Analyte/Analytical Group	No. of Field Samples[1]	No. of Field Duplicates	No. of MS/MSD	No. of Field Blanks	No. of Equip. Blanks	No. of Trip Blanks	No. of Other	Total No. of Samples to Laboratory
Soil	TAL Metals (field analysis)	TBD	10% of # field samples	TBD	TBD	TBD	0	TBD	TBD
Soil	TAL Metals (lab analysis)	TBD	TBD	TBD	TBD	TBD	0	TBD	10% of # field samples
Sediment	TAL Metals (lab analysis)	TBD	10% of # field samples	TBD	TBD	TBD	0	TBD	TBD
Surface Water	TAL Metals (lab analysis)	TBD	10% of # field samples	TBD	TBD	TBD	0	TBD	TBD

1 Samples that are collected at different depths at the same location and analyzed separately are counted as separate field samples. Even if they are taken from the same container as the parent field sample, MS/MSDs are counted separately because they are analyzed separately. If composite samples or incremental samples are collected, only the sample that will be analyzed will be included; subsamples and increments will not be listed separately.

2 Equipment blanks will be collected only if non-disposable sampling equipment is used.

Quality Assurance Assessment and Corrective Actions are found in QAPP Worksheet #28.

Worksheet 21 — Field SOPs

(UFP-QAPP Manual Section 3.1.2)
(EPA 2106-G-05 Section 2.3.2)

SOP Number or Reference	Title, Revision, Date, and URL (if available)	Originating Organization	SOP Option or Equipment Type (if SOP provides different options)	Modified for Project? Y/N	Comments
2006	Sampling Equipment Decontamination, 6/2011	U.S. EPA, ERT		N	SOPs available in QAPP Appendix B
2012	Soil Sampling, 6/2011	U.S. EPA, ERT		N	SOPs available in QAPP Appendix B
2016	Sediment Sampling, 6/2011	U.S. EPA, ERT		N	SOPs available in QAPP Appendix B
2049	IDW Management, 6/2011	U.S. EPA, ERT		*N*	SOPs available in QAPP Appendix B
G-12	Specifications and Guidance for Contaminant-Free Sample Containers, 12/1992	U.S. EPA, Office of Solid Waste and Emergency Response		N	SOPs available in QAPP Appendix B
2001	General Field Sampling Guidelines, 6/2011	U.S. EPA, ERT		N	SOPs available in QAPP Appendix B
N/A	InnovX Omega Operating Manual	InnovX		N	
N/A	Geoprobe® Soil Sampling – System Operation Manual	Geoprobe®		N	

Investigation Derived Waste

During sampling activities, IDW may be generated. IDW may consist of decontamination fluids, excess sampled media (e.g., soil, sediment, water, etc.), disposable sampling supplies, and PPE (e.g., Tyvek/Saranex coveralls, gloves, booties, etc.). Handling of IDW will be performed according with SOP 2049 as listed above as well as procedures described in *Management of Investigation Derived Wastes during Site Inspections (May 1991)*(QAPP Appendix S). Waste disposal for IDW will be dependent upon classification of the waste as either RCRA hazardous or RCRA nonhazardous waste.

IDW will also include waste soil generated during the XRF soil preparation process. Waste soil will be containerized in the on-site lab and returned to the site prior to demobilization. Waste soil will be added to an existing waste pile in a manner that does not create or exacerbate existing mobilization concerns.

Decontamination

General decontamination procedures are described in EPA ERT SOP #2006 Sampling Equipment Decontamination.

Decontamination will be limited to the augur/shovel/pick (tools) in the event they are used. It is anticipated that START sample collection will exclusively use dedicated/disposable sampling tools. Tool decontamination will consist of initial brushing to remove gross particulate, a rinse with Alconox and/or nitric acid, followed by a distilled water rinse.

Worksheet 22 — Field Equipment Calibration, Maintenance, Testing, and Inspection

(UFP-QAPP Manual Section 3.1.2.4)
(EPA 2106-G-05 Section 2.3.6)

Field Equipment	Calibration Activity	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Title or Position of Responsible Person	Verification	SOP Reference[1]
Sampling Tools (Disposable Scoops)	NA	NA	NA	Visually inspect for obvious defects or broken parts	Prior to use	NA	Replace	Field personnel	WAM/COR	NA
Metal sampling equipment as necessary (trowels)	NA	Clean prior and after each use	NA	Visually inspect for cleanliness	Prior to use	Should be covered from previous decontamination procedure	Perform decontamination procedure again as needed	Field personnel	NA	Metal sampling equipment as necessary (trowels)
GPS	NA	Check Battery	NA	Visually inspect for damage, ensure proper battery function, ensure receiver is able to obtain satellite reception	Prior to use	Proper battery function, satellite reception	Refer to instrument SOP	Field personnel	NA	NA
X-Ray Florescence (XRF)	Check factory calibration with known standards	Check battery	Calibration check	Visually inspect for external damage (e.g., perforated lens, etc.)	Refer to instrument SOP	Refer to instrument SOP	Refer to instrument SOP	Field personnel	WAM/COR	1707

[1] Refer to Field SOPs (Worksheet 21) and Analytical SOPs (Worksheet 23).

Worksheet 23 — Analytical SOPs

(UFP-QAPP Manual Section 3.2.1)
(EPA 2106-G-05 Section 2.3.4)

Lab SOP Number[1]	Title, Revision Date, and/or Number and URL (if available)	Screening or Definitive Data	Matrix/Analytical Group	SOP Option or Equipment Type	Modified for Project? (Y/N)
TBD	Method 6200 FIELD PORTABLE X-RAY FLUORESCENCE SPECTROMETRY FOR THE DETERMINATION OF ELEMENTAL CONCENTRATIONS IN SOIL AND SEDIMENT http://www.epa.gov/osw/hazard/testmethods/sw846/pdfs/6200.pdf	Screening	Soil, sediment	TBD	N
TBD	METHOD 6010C INDUCTIVELY COUPLED PLASMA-ATOMIC EMISSION SPECTROMETRY (ICP-AES), 11/2000, http://www.epa.gov/osw/hazard/testmethods/sw846/pdfs/6010c.pdf	Definitive	Soil, sediment, debris, aquatic animal tissue, air/metals (no mercury)	ICP-AES	N
TBD	METHOD 6020A INDUCTIVELY COUPLED PLASMA-MASS SPECTROMETRY (ICP-AES), 11/2000, http://www.epa.gov/osw/hazard/testmethods/sw846/pdfs/6020a.pdf	Definitive	Water, waste extracts, digests	ICP-MS	N

Worksheet 24 — Analytical Instrument Calibration

(UFP-QAPP Manual Section 3.2.2)
(EPA 2106-G-05 Section 2.3.6)

As stated in Worksheet 22, WESTON field personnel are responsible for the calibration of WESTON and sub-contractor provided analytical field equipment. Documented and approved procedures will be used for calibrating measuring and testing equipment. Widely accepted procedures, such as those published by U.S. EPA and ASTM, or procedures provided by manufacturers in equipment manuals will be adopted.

The responsibility for the calibration of laboratory equipment rests with the selected laboratories. Each type of instrumentation and each U.S. EPA-approved method have specific requirements for the calibration procedures, depending on the analytes of interest and the sample medium. The calibration procedures and frequencies of the equipment used to perform the analyses will be in accordance with requirements established by the U.S. EPA. The laboratory QA manager will be responsible for ensuring that the laboratory instrumentation is maintained in accordance with specifications. Individual laboratory SOPs will be followed for corrective actions and preventative maintenance frequencies. Laboratory quality control, calibration procedures, corrective action procedures, and instrument preventative maintenance will be included in an addendum to this QAPP once the laboratories have been selected for each of the TBA sites. Items may include, but are not limited to those identified in the table below.

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Title/Position Responsible for CA	SOP Reference[1]
Portable XRF Analyzer	Refer to Worksheet 22	Refer to Worksheet 22	Refer to Worksheet 22	Refer to Worksheet 22	Refer to Worksheet 22	1707
ICP-AES	See 6010C	Calibration and initial calibration verification after instrument set up, then daily; continuing calibration verifications. Upper range within 10%. New upper range limits should be determined whenever a significant change in instrument response or every six months. Low-level continuing calibration verification (LLCCV) standard with 30%.	Initial and continuing calibration verification within ± 10% of upper range true values and ± 30% LLCCV true values.	Inspect system; correct problem; re-run calibration and affected samples	Lab Manager/ Analyst	6010C

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Title/Position Responsible for CA	SOP Reference[1]
ICP/ ICP-MS	See 6010C, 6020A, ISM01.3	Calibration and initial calibration verification after instrument set up, then daily; continuing calibration verification 10% or every 2 hours, whichever is more frequent	Calibration r^2>0.995; initial and continuing calibration verification within ± 20% of true values	Inspect system; correct problem; re-run calibration and affected samples	Lab Manager/ Analyst	6010C, 6020A, ISM01.3

Worksheet 26 & 27 — Sample Handling, Custody, and Disposal

(UFP-QAPP Manual Section 3.3)
(EPA 2106-G-05 Manual Section 2.3.3)

Examples of field form (QAPP Appendix F), chain-of-custody (QAPP Appendix G), and sample label and custody seal (QAPP Appendix H) documentation are in the QAPP. SOPs for sample handling are identified below and are located in QAPP Appendix I.

Sampling Organization: WESTON
Laboratories: TBD

Note –The OSC will review and approve the SAP prior to proceeding with lab procurement. Therefore this information will not be available until the lab procurement has been finalized.

Method of sample delivery (shipper/carrier): TBD
Number of days from reporting until sample disposal: TBD

Activity	Organization and Title or Position of Person Responsible for the Activity	SOP Reference
Sample Labeling	START Field Personnel	QAPP Appendix I, SOP G-1 & G-3
Chain-of-Custody Form Completion	START Field Personnel	QAPP Appendix I, SOP G-8
Sample Packaging	START Field Personnel	QAPP Appendix I, SOP G-9
Shipping Coordination	START Field Personnel	QAPP, Appendix I, SOP G-9
Sample Receipt, Inspection, & Log-in	Laboratory Sample Custodian	Laboratory SOP
Sample Custody and Storage	Laboratory Sample Custodian /Laboratory Analytical Personnel	Laboratory SOP
Sample Disposal	START Field Personnel/Laboratory Sample Custodian /Laboratory Analytical Personnel	QAPP Appendix I, SOP G-1 & G-3 Laboratory SOP

Supplies and consumables can be received at a WESTON office, U.S. EPA Warehouse or at a site. When supplies are received at a WESTON office or U.S. EPA Warehouse, the PM or PTL will sort the supplies according to vendor, check packing slips against purchase orders, and inspect the condition of all supplies before the supplies are accepted for use on a project. If the supplies do not meet the acceptance criteria, deficiencies will be noted on the packing slip and purchase order. The item will then be returned to the vendor for replacement or repair. Procedures for receiving supplies and consumables in the field are similar to those described above. Upon receipt, items will be inspected by the WESTON PM or PTL against the acceptance criteria. Any deficiencies or problems will be noted in the field logbook, and deficient items will be returned for immediate replacement.

Worksheet 36 — Data Validation Procedures

(UFP-QAPP Manual Section 5.2.2)
(EPA 2106-G-05 Section 2.5.1)

Data Validator: WESTON

Analytical Group/ Method	Data Deliverable Requirements	Analytical Specifications	MPC	Percent of Data Packages to be Validated	Percent of Raw Data Reviewed	Percent of Results to be Recalculated	Validation Procedure	Validation Code[1]	Electronic Validation Program/ Version
TAL Metals by laboratory analysis	Validation Memo	TAL Metals	Worksheets 11, 12, 19 & 30	10%	10%	10%	Consistent with NFG	S2aVM	NA
TAL Metals by XRF analysis	Validation Database	TAL Metals		100%	100%		Consistent with NFG		

[1] Validation Codes are provided in QAPP Appendix M.

Validation will be performed on all laboratory analytical data unless a defined quantity or percentage of samples is identified by the U.S. EPA in the Technical Direction Document or during the project scoping meeting on a project-specific basis. Project validation criteria as per QAPP Worksheets 12, 15, 19 & 30, 28, and 36, and cited EPA SW-846 methodology will be used. WESTON-contracted laboratory data packages will be verified and validated using a Stage 2A validation, as described in the EPA *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009) (QAPP Appendix J) unless otherwise specified by the U.S. EPA WAM/COR during the development of the DQOs. Validation Qualifiers will be applied using the following hierarchy: Region 8 UFP-QAPP for Removal Actions and Emergency Responses; the site-specific SAP, and/or QAPP; *EPA National Functional Guidelines for Organic Data Review* (QAPP Appendix K); *EPA National Functional Guidelines for Inorganic Data Review* (QAPP Appendix L); EPA Publication SW-846; and the laboratory-specific SOP. Methods for which no data validation guidelines exist will be validated following the guidance deemed most appropriate by the data validator.

The data validator will receive all laboratory packages and analytical results electronically. Additionally, the validator will be required to submit final validation reports via PDF format and must provide an annotated laboratory analytical result EDD with applicable data validation qualifiers (QAPP Appendix M) identified in the site-specific SAP, and/or QAPP, and/or result value modifications. The Delegated QA Manager will use EPA document *Using Qualified Data to Document an Observed Release and Observed Contamination* (July 1996) to aid in determining the use of qualified data to document all observed release and observed contamination by chemical analysis under U.S. EPA's HRS. Approved data will be released by the Delegated QA Manager for reporting.

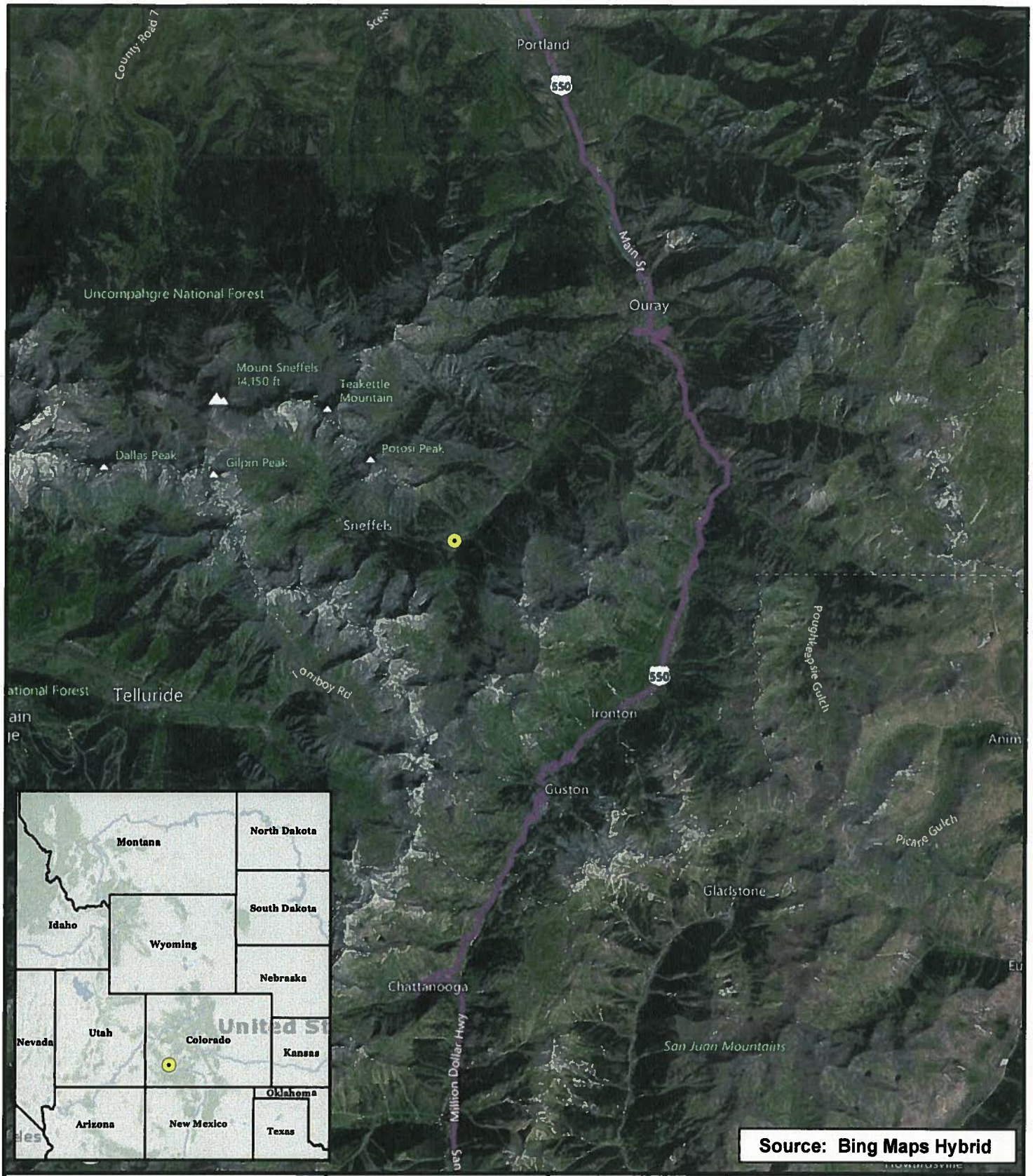
Worksheet 36 — Data Validation Procedures

(UFP-QAPP Manual Section 5.2.2)
(EPA 2106-G-05 Section 2.5.1)

QAPP Worksheet 35 describes the issue resolution process and the individual responsible for conveying results to data users. For issues internal to the laboratory, the laboratory PM will be the responsible party for data resolution issues and will be responsible for conveying this information to the Delegate QA Manager or delegated authority. For external laboratory data and quality issues, the Delegated QA The QA Manager or delegated authority will provide issue resolution information and will be the responsible party for conveying this information to data users. For quality documents, reports, and field information, the Delegated QA Manager, delegated authority, or other persons identified in the table in QAPP Worksheet 35 will be responsible for issue resolutions of such items and will be the responsible party for conveying that information to data users.

FIGURES

ATTACHMENTS



Legend

- Site Location

0 0.75 1.5 3 Miles

N

Prepared for:
U.S. EPA Region 8

Contract No.:
EP-S8-13-01

TDD:
1503-07

TO:
0001

Prepared By:
Weston Solutions, Inc.
START IV

Suite 100
1435 Garrison Street
Lakewood, CO 80215

FIGURE 1
SITE LOCATION MAP
CAMP BIRD
OURAY COUNTY, COLORADO

Date: 4/21/2015

Legend

- Site Location

0 0.05 0.1 0.2 Miles

N

Prepared for:
U.S. EPA Region 8

Contract No.:
EP-S8-13-01

TDD:
1503-07

TO:
0001

Prepared By:
Weston Solutions, Inc.
START IV

Suite 100
1435 Garrison Street
Lakewood, CO 80215

FIGURE 2
SITE FEATURES MAP
CAMP BIRD
OURAY COUNTY, COLORADO

Date: 4/23/2015

ATTACHMENT A

Crosswalk

ATTACHMENT B

Site-Specific Data Management Plan (SSDMP)

This data management plan (DMP) is intended to provide guidance for data collection by field personnel and subsequent data management activities. The data collection and management practices presented in this plan are designed to ensure data integrity and consistency for all data collection personnel and from operational period to the next. This document is intended to be used in conjunction with a Region wide data management plan and only includes the details specific to the site. There may be appendices.

Site-Specific Data Management Plan

Project Name:	Camp Bird	**TDD Number/Site ID:**	1503-07
Author:	Jamie Miller	**Company:**	Weston Solutions
Date Initiated:	April 23, 2015	**Last Updated:**	April 23, 2015

Reviewed by: Megan Adamczyk **Date:** 5/8/2015

Data Processing

The following table outlines the specific requirements for various data types being collected during the project.

	Data Stream	R8 DMP or CB DMP	Required Information	Data Source	Site Specific Data Elements	Site Specific QA Process	Site Specific SOP	Data Repository	Reporting Task
1	Soil Sampling Data	☒ R8 DMP	Sample depth, sample depth to, sample type (grab/ composite),	Nomad Data Dictionary	No			Scribe.net	Results Report, Geospatial Viewer
2	Monitoring	☒ R8 DMP	XRF Monitoring Data	Nomad Data Dictionary	Lead/ Arsenic (necessary VVs for formatting db)	monitoring data formatting database to allow for importing monitoring data into Scribe		Scribe.net	Geospatial Viewer
3	Pile attributes	☐	Pile ID, Description of waste piles	Ipad-PhotosInfoPro metadata editor	TBD upon pile recon		NA	Scribe.net [Property Info Table]	Results Report
4	Images	☒ R8 DMP	Site photos	iPad with PhotosInfoPro				EPAOSC.org	Results Report
5	Geospatial Data	☒R8 DMP	Sampling and Monitoring Data point locations	GPS		Scribe QA Viewer		Scribe and Geospatial viewer	Geospatial Viewer
6	Site Documents	☒R8 DMP	SAP Addendum, HASP					EPAOSC.org	NA
7	Analytical	☒R8 DMP	Chain of Custody, Lab Deliverables	Scribe, Lab		Data Validation		Scribe.net	Results Report, Geospatial Viewer