Camp Bird – Removal Assessment
Sampling and Analysis Plan/Quality Assurance Project Plan

To:	Martin McComb
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TDD#:	0001/1606-06
Date:	7/18/2016
DCN:	W0267.1E.00533
Re:	Addendum 1 to Camp Bird – Removal Assessment SAP/QAPP – Additional Soil and Water Sampling and Data Collection

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Comments: This is Addendum 1 to the Camp Bird – Removal Assessment SAP/QAPP, dated 4/15/15. This Addendum provides the following:

1. Written protocol for collecting soil and surface water samples from the mine and mill area, as well as the nearby creeks.
2. List of analytes and corresponding method detection limits by laboratory.
3. ERT Standard Operating Procedures for Soil and Surface Water Sampling.

Purpose and Scope

START will collect surface soil samples to characterize depositional impacts from the Camp Bird Mine and Mill. Anticipated sampling locations include, but are not limited to:

- Tailings piles
- Disturbed soil
- Stream and creek banks

Sample points will be determined in the field and will be located with a Global Positioning System (GPS) device to be used for mapping purposes and to document sample locations selected in the field. If sampling locations become inaccessible, alternate sampling locations which provide similarly adequate or sufficient data as the original will be identified and sampled based upon the best judgment of the inspector/sampler, if necessary. For surface water sample locations, water quality data will also be collected using a Horiba (U-50) water quality meter and recorded.

Sampling and Field QC Procedures

Sampling will include collection of soil samples from the following depth intervals: surface (0 in) and 0-6 in below ground surface (bgs). At both intervals 20-point composite samples will be collected. Surface water samples will also be collected from nearby creek. Field filtering will be completed using a peristaltic pump with disposable tubing and filters. Sample collection procedures will follow those in ERT SOP 2012. Soil samples will be analyzed for total metals using methods 6010B, 6020A, and 7471A. Surface water samples will be analyzed for target analyte list (TAL) and dissolved metals using methods 6200 and 6010.

Requirements for the sample container, volume, preservation, and QC samples are presented on Worksheet 19 & 30 (Sample Containers, Preservation and Hold Times) and Worksheet 20 (Field Quality Control Sample Summary) of the QAPP. The following table lists surface soil screening criteria that may be used to evaluate the analytical results of the surface soil samples and corresponding method detection limits by laboratory. START personnel will collect field duplicate and matrix spike/matrix spike duplicate (MS/MSD) samples and QA/QC samples as needed during the sampling activities. QA/QC samples will be collected as presented in Worksheet 20 of the QAPP.

Metal	CAS	Units	EPA Soil RSLs		EPA Eco-SSL				CLP		
			Residential	Industrial	Avian	Invertebrate	Mammalian	Plants	6010B	6020A	7471A
Aluminum	7429-90-5	mg/Kg	77000	1100000	NE	NE	NE	NE	3.10	2.10	--
Antimony	7440-36-0	mg/Kg	31	470	NE	78	0.27	NE	0.820	0.100	--
Arsenic	7440-38-2	mg/Kg	0.68	3	43	NE	46	18	0.800	0.100	--
Barium	7440-39-3	mg/Kg	15000	220000	NE	330	2000	NE	0.160	0.0600	--
Beryllium	7440-41-7	mg/Kg	160	2300	NE	40	21	NE	0.0100	0.0150	--
Cadmium	7440-43-9	mg/Kg	71	980	0.77	140	0.36	32	0.100	0.0150	--
Calcium	7440-70-2	mg/Kg	NE	NE	NE	NE	NE	NE	5.20	6.3	--
Chromium	7440-47-3	mg/Kg	NE	NE	NE	NE	NE	NE	0.210	0.0100	--
Cobalt	7440-48-4	mg/Kg	23	350	120	NE	230	13	0.100	0.110	--
Copper	7440-50-8	mg/Kg	3100	47000	120	NE	230	13	0.170	0.130	--
Iron	7439-89-6	mg/Kg	55000	820000	NE	NE	NE	NE	5.30	3.50	--
Lead	7439-92-1	mg/Kg	400	800	11	1700	56	120	0.340	0.0500	--
Magnesium	7439-95-4	mg/Kg	NE	NE	NE	NE	NE	NE	8.90	3.30	--
Manganese	7439-96-5	mg/Kg	1,800	40	4300	450	4000	220	0.100	0.120	--
Mercury	7439-97-6	mg/Kg	9.4	40	NE	0.1	NE	0.3	--	--	0.008
Molybdenum	7439-98-7	mg/Kg	390	5800	NE	NE	NE	2	0.130	0.0800	--
Nickel	7440-02-0	mg/Kg	1500	22000	210	280	130	38	0.380	0.260	--
Potassium	7440-09-7	mg/Kg	NE	22000	NE	NE	NE	NE	2.50	9.10	--
Selenium	7782-49-2	mg/Kg	390	5800	1.2	4.1	0.63	0.52	0.970	0.100	--
Silver	7440-22-4	mg/Kg	390	5800	4.2	NE	14	560	0.0600	0.0100	--
Sodium	7440-23-5	mg/Kg	1.3	16	NE	NE	NE	NE	48.0	10.0	--
Thallium	7440-28-0	mg/Kg	0.78	12	NE	NE	NE	1	0.600	0.0500	--
Vanadium	7440-62-2	mg/Kg	390	5800	7.8	NE	280	2	0.100	0.270	--
Zinc	7440-66-6	mg/Kg	23000	350000	46	120	79	160	0.700	1.00	--

mg/Kg milligrams per kilogram

NE None Established