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Nevada Division of Environmental Protection
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**WORK PLAN FOR SOIL REMOVAL ACTION – PARCEL C
NEVADA ENVIRONMENTAL RESPONSE TRUST SITE
HENDERSON, NEVADA**

Dear Mr. Dong:

June 13, 2016

On behalf of the Nevada Environmental Response Trust (NERT or the Trust), Ramboll Environ US Corporation (Ramboll Environ) provides this work plan for proposed soil excavation activities in the northeastern portion of the NERT site, specifically, an approximately 5-acre area in the eastern portion of Parcel C. The purpose of this letter is to describe the proposed work for the soil removal activities to take place on Trust property. Although the proposed work area is outside of the boundaries covered by the Site Management Plan (SMP) for the NERT Site, this work plan incorporates relevant requirements for excavation and soil handling from the Site Management Plan, Revision 2, dated July 17, 2015, as a guideline for best practices to be employed during the field activities.

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PROJECT BACKGROUND

In May 2015, the Trust noted that the eastern boundary of Parcel C (as defined by sale of property documents) differed from the boundary historically used by Tronox LLC (Tronox), and used in subsequent work by Ramboll Environ. Specifically, an approximately 5-acre trapezoidal area in the northeastern corner of the site (near Warm Springs Road), identified in the 2014-2015 Remedial Investigation (RI) field investigation as "Area 5," was previously understood to be outside the boundary of Parcel C (see Figure 1). A significant portion of Area 5 was subsequently determined to be within Parcel C. As part of the RI, 25 soil samples from 10 locations within Area 5 were analyzed for arsenic. Previous investigations in this area also included collection of 7 soil samples from 2 locations that were analyzed for arsenic. The soil boring locations are shown on Figure 2 and the analytical results for arsenic are provided in Table 1. While the majority of arsenic concentrations were below the site-specific soil remediation goal (SRG) of 7.2 milligrams per kilogram (mg/kg), exceedances were identified in two RI samples, at

concentrations of 8.8 mg/kg (RISB-46, 10 to 10.5 feet [ft] below ground surface [bgs]) and 11 mg/kg (RISB-44, 0.5 to 1 ft bgs). The SRG was also exceeded in three samples from the prior investigation, at concentrations of 14.8 mg/kg (RSAI7, 29.5 to 31 ft bgs), 14.3 mg/kg (RSAI7, 31.5 to 33 ft bgs) and 10.6 mg/kg (TSB-CJ-09, 10 to 11.5 ft bgs). As discussed by Ramboll Environ, the Trust, Nevada Division of Environmental Protection (NDEP), and NDEP's consultants during a meeting at NDEP's office in Las Vegas, Nevada on October 13, 2015, surficial soils with arsenic concentrations above the SRG will be removed from Area 5. For the purpose of this work plan and proposed excavation activities, surficial soils include soils from the 0 to 10 ft depth interval. This depth interval is consistent with the potential exposure depth interval identified in the NDEP-approved March 2010 Health Risk Assessment Work Plan.

EXCAVATION APPROACH

A compilation of all previous arsenic sampling results in soil in Area 5 is provided in Table 1. The only location where the surficial soil (i.e., soil at depths less than 10 ft bgs) concentration exceeds the SRG in this dataset is boring RISB-44 (11 mg/kg in a sample obtained from 0.5 to 1 foot bgs). Based on the arsenic concentration from a soil sample collected from this boring at a depth of 5-5.5 ft bgs (3.2 mg/kg), the vertical extent of arsenic concentrations above the SRG is limited to less than 5 ft bgs. Therefore, this work plan outlines an approach to conduct excavation activities to remove arsenic impacted soil in the vicinity of RISB-44 from the ground surface to a maximum depth of 5 feet bgs. As discussed below, additional sampling is proposed to potentially reduce the depth of excavation to less than 5 ft. Consistent with previous soil removal activities conducted at the NERT site, the lateral extent of the excavation area surrounding RISB-44 will be determined based on other available soil boring analytical data and using Thiessen polygons; the proposed additional delineation efforts may also result in reducing the lateral extent of excavation, as further described below.

Additional Delineation and Development of Excavation Area

Figure 2 shows a Thiessen polygon, surrounding location RISB-44 based on the existing soil sampling data within Area 5. Due to the spacing of existing sampling points, the Thiessen polygon covers an area of approximately 24,400 square feet, which extends to the property boundary. In an effort to improve the lateral and vertical delineation of arsenic concentrations surrounding RISB-44, soil samples from up to 12 locations (as shown on Figure 2) will be collected at depths of approximately 0.5 to 1 ft bgs and 2 to 2.5 ft bgs. A soil sample will also be collected from the location of former boring RISB-44 from a depth interval of approximately 2 to 2.5 ft bgs.

The soil samples will be analyzed for arsenic by United States Environmental Protection Agency (USEPA) Methods 6010/6020 in a phased approach. Samples from the four borings closest to RISB-44, as well as the sample from the location of RISB-44 (2 to 2.5 feet bgs) will initially be analyzed. If the results are below the SRG, no further laboratory analyses will be performed from the remaining borings and the excavation extent will be determined based on a Thiessen polygon analysis using the four new borings and RISB-44. If arsenic concentrations in any of the samples exceed the SRG, then samples from the remaining "step-out" soil borings will be analyzed in an effort to laterally delineate the arsenic concentrations that exceed the SRG. Following the additional analyses from step-out locations, if any, a Thiessen polygon will be designated for the lateral extent of excavation to remove arsenic that exceeds the SRG. The vertical extent of excavation will be determined based on the results from samples obtained at 2 to 2.5 feet below grade: if a result is below the SRG, then the excavation within the corresponding Thiessen polygon will terminate at a depth of 2 ft. Otherwise,

the excavation will extend to 5 feet bgs, and a set of confirmation samples from the base and sidewalls of the excavation will be collected and analyzed for arsenic. If the results of confirmation sampling indicate that remaining soil exceeds the SRG, additional excavation and confirmation sampling will be conducted, as necessary, until a set of confirmation samples has been collected that demonstrates that arsenic concentrations are below the SRG. Details regarding sampling methods, including delineation and post-excavation confirmation samples are provided below.

SOIL SAMPLING PROCEDURES AND EQUIPMENT

It is anticipated that the proposed soil borings can be drilled and soil samples can be collected using hand tools (i.e., hand-auger and slide hammer sampler). Field activities will be documented using appropriate field logs, photographic records, and other records, as necessary. All field procedures will be completed in accordance with the NDEP-approved Remedial Investigation and Feasibility Study Work Plan (ENVIRON, 2014a) and Field Sampling Plan (ENVIRON, 2014b).

Site Access

Access to the proposed sampling and excavation area currently requires vehicles to travel through property owned by Henderson Groundwater LLC. Access will be necessary for sampling and excavation activities, as well as for hauling soil (off-site for disposal, and on-site for restoration). Access agreements between the Trust and Henderson Groundwater LLC will be developed prior to conducting the work.

Subsurface Utility Clearance

Prior to performing soil sampling and excavation activities, a subsurface utility clearance will be performed. The utility clearance will include contacting the Underground Service Alert to request that any utilities entering the proposed work area be marked. A private subsurface utility locator will also be retained to identify any utilities or other detectable subsurface features within the proposed sampling/excavation areas.

Grab Soil Sampling

Grab soil sampling will be used to obtain delineation soil samples from the soil borings and confirmation samples following excavation. Grab soil sampling will be performed using a slide hammer sampler (steel cylinder, approximately six inches long) equipped with a brass, steel or plastic sample liner. In the soil borings, the slide hammer will be used after advancing borings to each target depth using the hand auger. If the soil material is loose and unconsolidated and cannot be retained in the slide hammer sampling assembly, the hand auger or a plastic or steel hand trowel may be used to remove soil from the borehole and transfer it into a sample container. If drilling refusal is encountered using the hand auger, locations will be adjusted by a few feet, and additional attempts will be made.

Decontamination Procedures

Non-dedicated sampling equipment (such as hand augers, slide-hammer sampler, and soil sampling tubes) that are exposed to environmental contaminants will be thoroughly decontaminated prior to first use and between uses. At a minimum, decontamination procedures will include scrubbing the equipment with a brush or sponge in a solution of Alconox detergent (or equivalent) in potable water, followed by a first rinse in potable water and a second rinse in deionized water. Decontamination fluids will be contained in 5-gallon buckets or 55-gallon drums. The containers will be sealed and

labeled describing the content of each container. Decontamination fluids will be taken to and placed into the GW-11 pond at the NERT site.

Sample Management

Samples will be collected, handled, and stored in such a manner that they are representative of their original condition and chemical composition. All samples will be properly identified and maintained under chain-of-custody protocol to protect sample integrity. Sample naming will follow the following convention: location type (SB - soil boring); location number (i.e., C1, C2, etc.), sample start depth, and the date in YYYYMMDD format. All sample containers will be clearly labeled using waterproof, permanent ink. Samples will be labeled immediately upon collection, and recorded on chain-of-custody forms.

As part of the delineation and confirmation sampling programs, field QA/QC samples will be collected, including equipment blanks, and/or field duplicates. QA/QC samples will be collected at the following frequencies: one for every 20 samples for equipment blanks, and one for every 10 samples for field duplicates.

Given the proposed analyses (arsenic in soil), sample containers will not require chemical preservation. However, all sample containers will be placed in airtight plastic bags, and refrigerated or placed in a cooler with ice to chill and maintain sample temperatures of 4° ($\pm 2^\circ$) C. Bubble wrap will be used around sample containers to minimize the potential for breakage or damage during shipment. The chain-of-custody form will be placed in a separate plastic bag and taped to the cooler lid or placed inside the cooler. A custody seal will be affixed to the cooler.

SOIL EXCAVATION

Depending on the results of the additional soil sampling discussed above, the depth of excavation will range from a minimum of approximately 2 feet to a maximum of 5 feet below grade. Excavation activities will be conducted such that a 2:1 (horizontal:vertical) safety slope will be maintained. In addition, risk management activities outlined in the SMP will be used to guide field activities, including elements discussed below.

Construction Impact Mitigation Measures

Measures will be implemented to mitigate the potential impacts of the following activities:

1. Dust generation associated with soil excavation and loading activities, construction or transportation equipment traveling over site soils, and wind traversing stockpiles.

Dust mitigation measures will be implemented as necessary, including:

- o Limit vehicle speeds on unpaved or off-road areas to 5 miles per hour;
- o Control excavation activities and the pace or speed of work;
- o Minimize drop heights during excavation or loading activities; and
- o Utilize water trucks (or water tanks/sprayers mounted on support trucks or trailers) to conduct wet suppression at areas where work activities have the potential to generate significant dust.

As described above, the area of the soil excavation will be determined based on the results of additional soil sampling. If the area of the proposed excavation exceeds 0.25 acres (10,890

square feet) in size, additional dust control measures will be necessary to comply with Sections 90-94 of the Clark County Air Quality Regulations, which are administered and enforced by the Clark County Department of Air Quality (DAQ). Specifically, a Dust Control Permit must be obtained from the DAQ, and a Dust Mitigation Plan must be prepared (per Section 94 of the Clark County Air Quality Regulations). The Dust Control Permit and Dust Mitigation Plan will be provided to the Trust and NDEP prior to commencing excavation activities, if the total excavation area will exceed 0.25 acres. In addition to the above listed mitigation measures, the Dust Mitigation Plan may require dust monitoring during all intrusive activities. If a Dust Control Permit from Clark County is required, all permit requirements will be followed. All field activities that have the potential to generate dust will include dust control Best Management Practices (BMPs), and will be conducted in conformance with the County's regulations for prevention of fugitive dust emissions from the site and the NERT Site-Wide Dust Control Work Plan.

2. Tracking of soil off the site with construction or transportation equipment.

Tracking of soils outside of the work area will be mitigated by equipment and vehicle decontamination. In general, dry decontamination methods will be used including brushing, scraping, or vacuuming of equipment bodies, wheels or treads, and vehicle tires. Scrapings will be maintained within the work area.

Close attention will be paid to the effectiveness of dry decontamination methods, and if dry methods are not effective (for example: due to wet or muddy conditions), wet decontamination methods, including pressure washing or steam cleaning, will be employed. Any wet decontamination will be performed within the work area, and rinse water will be contained within these areas.

3. Transporting sediments from the site in surface water run-off.

USEPA regulations [40 CFR 122.26(b) (15)] require National Pollutant Discharge Elimination System (NPDES) storm water discharge permit coverage for discharges from construction activities that disturb one or more acres. Since this project is not anticipated to impact an area greater than 1 acre, it is not anticipated that a construction stormwater permit will be required. However, BMPs generally associated with stormwater control will be implemented, as necessary, to control potential storm water, dust control water, and sediment run-off from the site, including:

- o Structural practices including silt fences, fiber rolls ("straw wattles"), earth dikes, or other erosion control measures, if applicable.
- o Administrative practices including limiting dust control water spraying to the amount necessary for dust suppression.
- o Placing of clean fill dirt stockpiles and excavated clean soil stockpiles on plastic sheeting within a silt fence.
- o Covering of soil stockpiles with plastic sheeting when not actively being excavated or loaded.
- o Daily checks of weather forecast and communication of predicted rain events by the construction contractor.

Backfill and Compaction Requirements

Since the future development plans for the soil removal area are unknown, specific backfill and compaction requirements for such future development are unknown. Therefore, soil backfill and compaction will be conducted in accordance with previous restoration activities conducted at the NERT site, and generally consistent with industry standards of practice, including:

- Use of select or granular backfill materials (tested to meet prescribed standards prior to importing) as specified in Uniform Standard Specifications for Public Works Construction Off-Site Improvements (USS), Clark County, Nevada, Subsections 207.02.01 and 207.02.02, respectively.
- Fill materials will be placed in equal continuous layers not exceeding compacted depths of 6 inches (granular fill) or 8 inches (soil fill).
- Backfill materials will be moisture conditioned as required, and compacted to a minimum of 92 percent dry density and within 2 percent of optimum moisture content as determined by ASTM D1557, Method C.
- Density and moisture content of compacted backfill materials will be determined by nuclear method ASTM D6938 or sand cone method ASTM D1556.

Excavated Soil Management and Sampling

If feasible, soil that will be stockpiled/stored prior to loading, transport and disposal will be placed in covered, plastic-lined roll-off containers. Alternatively, stockpiles may be managed in the following manner:

- The stockpiles will be placed on a double layer plastic liner and will be covered with plastic sheeting at all times except when being handled.
- The top cover will be adequately secured, and berms will be constructed around the stockpile to control run-on and run-off in the event of precipitation.

Profiling and Disposal of Excavated Soil

Soil characterization (for landfill disposal purposes) will include one composite sample from every 250 cubic yards for the first 1,000 cubic yards, and one composite sample from every 1,000 cubic yards thereafter. Based on our review of previous analytical results from testing soil in Area 5, composite soil samples from waste soil in stockpiles/bins will be tested for metals (USEPA Methods 6010/6020 and USEPA Method 7471), perchlorate (USEPA Method 314.0 or 6850), semi-volatile organic compounds (SVOCs; USEPA Method 8270D [including hexachlorobenzene and benzo(a)pyrene]) and dioxins/furans (USEPA Method 8290). Depending on the analytical results of the soil testing, additional testing using the toxicity characteristic leaching potential (TCLP) method may be performed to complete the characterization of the waste soil for off-site disposal. A waste disposal profile will be established using these analytical results. If characterized as nonhazardous waste, the soil is expected to be disposed at Apex Regional Landfill in Clark County, Nevada.

Contractor Requirements

The contractor retained to perform the work will use field personnel who have completed 40-hour HAZWOPER training and all associated certificates for 8-hour HAZWOPER refresher training, annual respirator fit testing, and annual medical monitoring. The contractor will be required to operate in accordance with the following regulations:

U.S. Department of Labor, Occupational Safety and Health Standards for Construction (29 CFR 1926).

- *Hazardous Waste Operations and Emergency Response (29 CFR 1926.65)*
- *Hearing Protection (29 CFR 1926.101 and 29 CFR 1926.52)*
- *Eye and Face Protection (29 CFR 1926.102)*
- *Respiratory Protection (29 CFR 1926.103)*
- *Material Handling Equipment (29 CFR 1926.602)*

U.S. Department of Labor, OSHA Standards for General Industry (29 CFR 1910).

- *Hazardous Waste Operations and Emergency Response (29 CFR 1910.120)*
- *PPE General Requirements (29 CFR 1910.132)*
- *Eye and Face Protection (29 CFR 1910.133)*
- *Respiratory Protection (29 CFR 1910.134)*
- *Head Protection (29 CFR 1910.135)*
- *Foot Protection (29 CFR 1910.136)*
- *Hand Protection (29 CFR 1910.138)*
- *Medical Services and First Aid (29 CFR 1910.151)*
- *Portable Fire Extinguishers (29 CFR 1910.157)*
- *Hazard Communication Standard (29 CFR 1910.1200)*
- *Control of Hazardous Energy (LOTO) (29 CFR 1910.147)*

U.S. Department of Labor, Recording and Reporting Occupational Injuries and Illnesses, (29 CFR 1904).**REPORTING**

A letter report describing the soil characterization, excavation, and site restoration activities will be prepared, which is anticipated to include the following:

- Soil characterization activities summary;
- Soil excavation summary (extent, methods, and observations);
- Figure depicting the location of the soil removal action;
- Surveyed coordinates for the limits of excavation;
- Summary of laboratory analytical results for pre-excavation characterization sampling and for waste soil sampling (if deemed necessary), as well as a compilation of laboratory analytical reports and data validation reports;
- An estimate of the volume of excavated soil that exceeded the arsenic SRG;

- A summary of excavated soil transported to an off-site disposal facility, including the dates of transport and the estimated quantity of soil transported;
- Proof of proper disposal of contaminated soil; and
- A summary of site restoration activities, including the sources and amounts of imported material used for backfill.

SCHEDULE

It is anticipated that this project can be implemented within 60 days following receipt of approval of this work plan from NDEP and budget authorization from the Trust, assuming that the necessary access agreements can be obtained and based on contractor availability. A final report is anticipated to be submitted to NDEP within 45 days of completing the field work.

CLOSURE

Ramboll Environ appreciates NDEP's prompt review of this work plan. Please contact John Pekala at (602) 734-7710 or jpekala@ramboll.com if you have any comments or questions concerning this work plan.

Sincerely,



John M. Pekala, PG
Senior Manager
Nevada CEM #2347, expires 9/20/2016



Allan J. DeLorme, PE
Principal

Attachments

List of Tables

Table 1 Arsenic Soil Data in Area 5 – Eastern Portion of Parcel C

List of Figures

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Figure 2 Proposed Boring Locations

References

ENVIRON International Corporation (ENVIRON), 2014a. Remedial Investigation and Feasibility Study Work Plan, Revision 2, Nevada Environmental Response Trust Site, Henderson, Nevada. June 19. NDEP Approved July 2, 2014.

ENVIRON, 2014b. Field Sampling Plan, Revision 1, Nevada Environmental Response Trust Site, Henderson, Nevada. July 18. NDEP Approved August 1, 2014.

cc: BMI Compliance Coordinator, NDEP, BISC, Las Vegas

ec: Steve Clough, NERT
Tanya O'Neill, Foley & Lardner LLP

Work Plan for Soil Removal Action – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

TABLE

TABLE 1. ARSENIC SOIL DATA

Work Plan for Soil Removal Action - Parcel C

Nevada Environmental Response Trust Site; Henderson, Nevada

Location	Sample ID	Sample Type	Sample Date	Start Depth (ft)	End Depth (ft)	Arsenic Concentration (mg/kg)
RISB-38	RISB-38-0.5-20141201	Primary	12/1/2014	0.5	1	5.9
	RISB-38-5.0-20141201	Primary	12/1/2014	5	5.5	3.9
RISB-39	RISB-39-0.5-20141121	Primary	11/21/2014	0.5	1	2.3
	RISB-39-5.0-20141121	Primary	11/21/2014	5	5.5	3.2
	RISB-39-5.0-20141121-FD	Duplicate	11/21/2014	5	5.5	3.1
RISB-40	RISB-40-0.5-20141121	Primary	11/21/2014	0.5	1	3.3
	RISB-40-5.0-20141121	Primary	11/21/2014	5	5.5	3.6
RISB-41	RISB-41-0.5-20141121	Primary	11/21/2014	0.5	1	2.3
	RISB-41-0.5-20141121-FD	Duplicate	11/21/2014	0.5	1	2.4
	RISB-41-5.0-20141121	Primary	11/21/2014	5	5.5	3.7
RISB-42	RISB-42-0.5-20141201	Primary	12/1/2014	0.5	1	2.2
	RISB-42-5.0-20141201	Primary	12/1/2014	5	5.5	3.2
RISB-43	RISB-43-0.5-20141121	Primary	11/21/2014	0.5	1	4.8
	RISB-43-5.0-20141121	Primary	11/21/2014	5	5.5	5.9
	RISB-43-5.0-20141121-FD	Duplicate	11/21/2014	5	5.5	5.2
RISB-44	RISB-44-0.5-20141121	Primary	11/21/2014	0.5	1	11
	RISB-44-5.0-20141121	Primary	11/21/2014	5	5.5	3.2
RISB-45	RISB-45-0.5-20141121	Primary	11/21/2014	0.5	1	3.4
	RISB-45-5.0-20141121	Primary	11/21/2014	5	5.5	3.0
RISB-46	RISB-46-0.5-20141117	Primary	11/17/2014	0.5	1	2.6
	RISB-46-5.0-20141117	Primary	11/17/2014	5	5.5	3.2
	RISB-46-10.0-20141117	Primary	11/17/2014	10	10.5	8.8
RISB-49	RISB-49-0.5-20141117	Primary	11/17/2014	0.5	1	3.1
	RISB-49-5.0-20141117	Primary	11/17/2014	5	5.5	3.3
	RISB-49-10.0-20141117	Primary	11/17/2014	10	10.5	4.9
RSAI7	RSAI7-0.5B	Primary	7/11/2008	0	0.5	2.3
	RSAI7-10B	Primary	7/11/2008	9.5	11	3.2
	RSAI7-20B	Primary	7/11/2008	19.5	21	5.5
	RSAI7-30B	Primary	7/11/2008	29.5	31	14.8
	RSAI7-32B	Primary	7/11/2008	31.5	33	14.3
TSB-CJ-09	TSB-CJ-09-0	Primary	6/12/2008	0	1.5	3.1
	TSB-CJ-09-10	Primary	6/12/2008	10	11.5	10.6

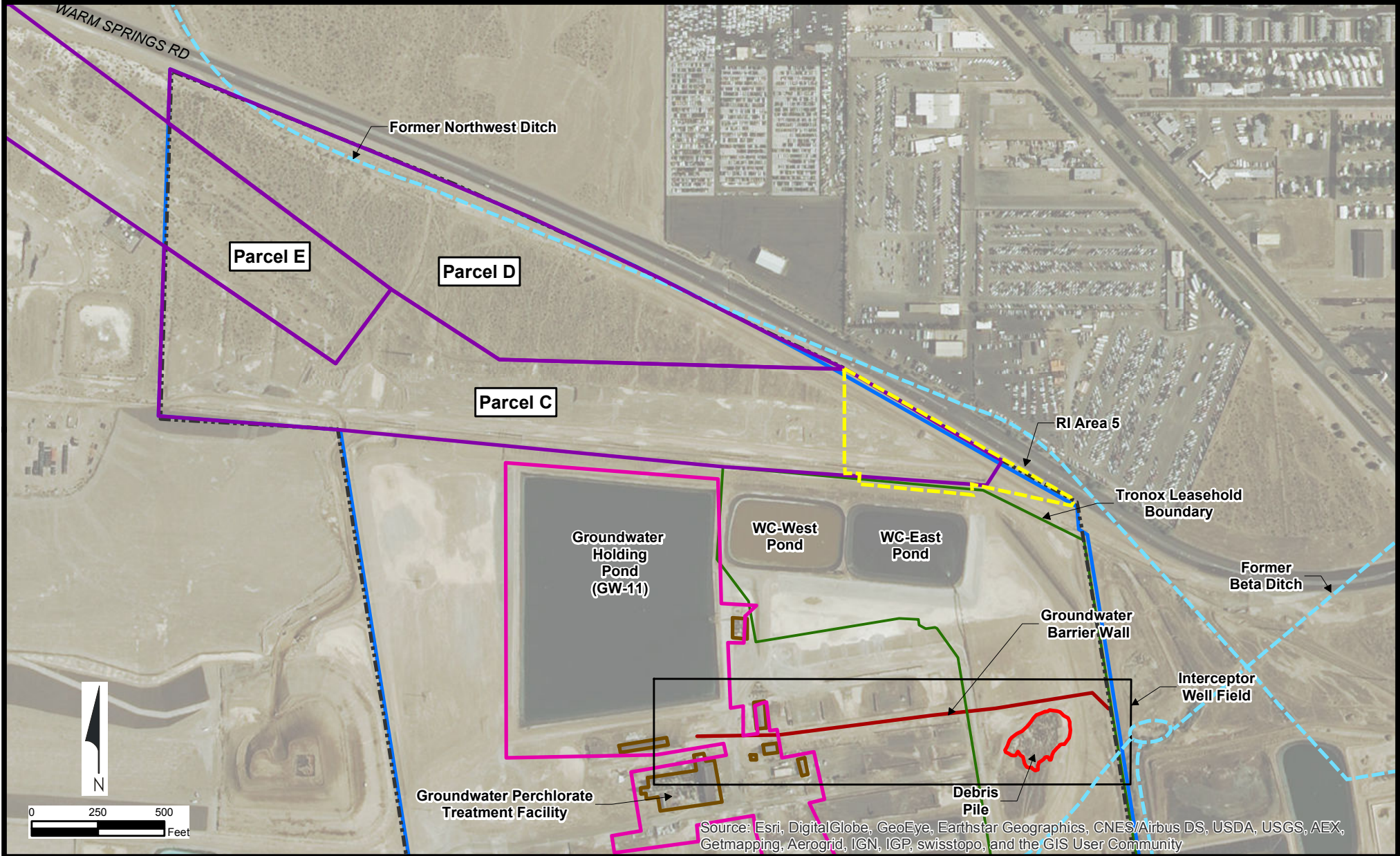
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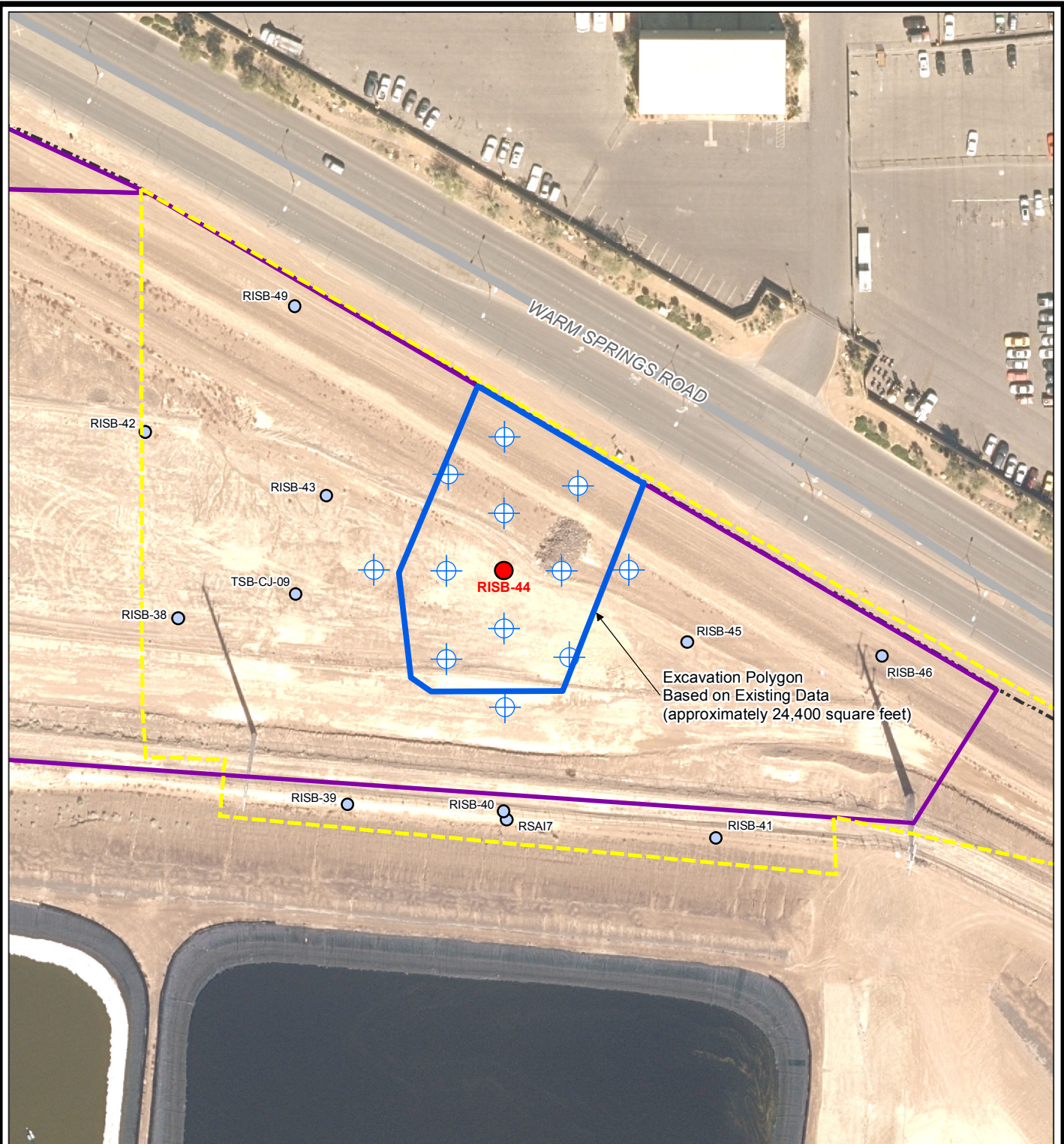
Bolded results are above the site-specific soil remediation goal (SRG) of 7.2 milligrams per kilogram (mg/kg).

J = Concentration is estimated.






Work Plan for Soil Removal Action – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

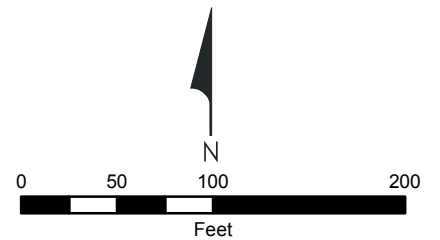
FIGURES





Legend

-  Proposed Soil Boring Location
-  Soil Boring With Exceedance of Site-Specific Soil Remediation Goal (SRG)
-  Soil Boring
-  Parcel C Boundary
-  Area 5 Soil Investigation



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Proposed Boring Locations
 Nevada Environmental Response Trust (NERT) Site
 Henderson, Nevada

FIGURE

2

DRAFTED BY: RS

DATE: 6/9/2016

21-38800A