Site Management Plan, Revision 1

Nevada Environmental Response Trust Site
Henderson, Nevada

Prepared for:
Nevada Environmental Response Trust

Prepared by:
ENVIRON International Corporation
Emeryville, California

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ENVIRON

Site Management Plan, Revision 1

Nevada Environmental Response Trust Site
(Former Tronox LLC Site)
Henderson, Nevada

Nevada Environmental Response Trust (NERT) Representative Certification
I certify that this document and all attachments submitted to the Division were prepared at the request of, or under the direction or supervision of NERT. Based on my own involvement and/or my inquiry of the person or persons who manage the system(s) or those directly responsible for gathering the information or preparing the document, or the immediate supervisor of such person(s), the information submitted and provided herein is, to the best of my knowledge and belief, true, accurate, and complete in all material respects.

Office of the Nevada Environmental Response Trust

Le Petomane XXVII, Inc., not individually, but solely in its representative capacity as the Nevada Environmental Response Trust Trustee

Signature: _____, not individually, but solely in his representative capacity as President of the Nevada Environmental Response Trust Trustee

Name: Jay A. Steinberg, not individually, but solely in his representative capacity as President of the Nevada Environmental Response Trust Trustee

Title: Solely as President and not individually

Company: Le Petomane XXVII, Inc., not individually, but solely in its representative capacity as the Nevada Environmental Response Trust Trustee

Date: 10/25/13

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Responsible Certified Environmental Manager (CEM) for this project

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and, to the best of my knowledge, comply with all applicable federal, state and local statutes, regulations and ordinances.

October 30, 2013

John M. Pekala, PG
Senior Manager

Date

Certified Environmental Manager
ENVIRON International Corporation
CEM Certificate Number: 2347
CEM Expiration Date: September 20, 2014

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Acronyms

2,3,7,8-TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
ACM	asbestos-containing material
BACM	Best Available Control Measures
B(a)P	benzo(a)pyrene
BCL	Basic Comparison Level
BEC	Basic Environmental Company
bgs	below ground surface
BMI	Black Mountain Industrial
BMP	Best Management Practice
CEM	Certified Environmental Manager
COPC	chemical of potential concern
DAQ	Clark County Department of Air Quality
ECA	Excavation Control Area
Envirogen	Envirogen Technologies, Inc.
ENVIRON	ENVIRON International Corporation
EPA	U.S. Environmental Protection Agency
ERMP	Environmental Risk Management Plan
Facility	Tronox operations portion of the Site
ft	foot
GES	Geotechnical & Environmental Services
GWETS	groundwater extraction and treatment system
HASP	health and safety plan
HCB	hexachlorobenzene
HRA	health risk assessment
LOU	Letter of Understanding
MCL	maximum contaminant level
mg/kg	milligram per kilogram
msl	mean sea level
NDEP	Nevada Division of Environmental Protection
NERT	Nevada Environmental Response Trust
NFA	No Further Action

Northgate	Northgate Environmental Management, Inc.
OCP	organochlorine pesticide
OSHA	Occupational Safety and Health Administration
OSSM	Olin Chlor Alkali/Stauffer/Syngenta/Montrose
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl
PID	photo ionization detector
PPE	personal protective equipment
ppt	parts per trillion
RAW	Removal Action Work Plan
RI/FS	Remedial Investigation and Feasibility Study
RZ	remediation zone
Site	Nevada Environmental Response Trust Site
SMP	Site Management Plan
SVOC	semi-volatile organic compound
SWPPP	Storm Water Pollution Prevention Plan
TDS	total dissolved solids
TEQ	toxicity equivalent
TIMET	Titanium Metals Corporation
Tronox	Tronox LLC
Trust	Nevada Environmental Response Trust
UST	underground storage tank
VOC	volatile organic compound
WAPA	Western Area Power Administration

Executive Summary

The Site Management Plan (SMP) provides a decision framework for the management of residual chemicals in soil and groundwater at a 410-acre site located within Sections 1, 12, and 13 of Township 22 S, Range 62 E within the Black Mountain Industrial (BMI) Complex in unincorporated Clark County and surrounded by the City of Henderson, Nevada (the Site). The Site has a long, complex ownership and operational history, beginning with industrial operations in 1942. It was most recently owned and operated by Tronox LLC (Tronox) until February 14, 2011, on which date the Nevada Environmental Response Trust (NERT or the Trust) took title to the Site in conjunction with the settlement of Tronox's bankruptcy proceeding.[1] The SMP describes procedures to address the known remaining environmental conditions at the Site, as well as contingency actions to be taken if previously unknown environmental conditions are encountered.

The SMP addresses the following:

- Procedures for long-term compliance with the SMP; and
- Risk management measures to be implemented during construction activities.

The SMP applies to the following areas of the Site:

- Areas of the Site that have been designated as Excavation Control Areas (ECAs), where known impacted soil has been left in-place. ECAs are identified and discussed in Appendix B of the SMP;
- Areas of the Site where unexpected environmental contamination is encountered during construction/demolition/excavation/investigation activities; and
- Areas of the Site where concentrations of contaminants in groundwater exceed current regulatory standards.

Activities undertaken at the Site that qualify as either a "Utility Project" or an "Emergency Project" (as defined herein) are subject only to a specific set of requirements under the SMP, as described in more detail in Sections 4.6 (Utility Projects) and 4.7 (Emergency Projects) and Section 5.0 (Risk Management for Groundwater). All owners, operators, tenants, lessees, project managers, and other entities with responsibility for Site activities (collectively "Site Occupants"), or a third party performing a Utility Project or an Emergency Project, must comply with SMP Sections 4.6 and 4.7, and Section 5.0.

[1] The Site includes several parcels that NERT is currently in the process of remediating and has either requested or is in the process of preparing requests for "No Further Action" (NFA) letters from the Nevada Division of Environmental Protection. Once an NFA is obtained for a parcel, which will include the recording of an Environmental Covenant, that parcel will no longer be subject to the SMP.

Site Occupants shall have the independent obligation to:

1. Review available information concerning Site environmental conditions;
2. Determine the applicability of this SMP with respect to the expected and actual Site conditions and the intended land use;
3. Establish management procedures to ensure that the risk management measures outlined in this SMP are properly implemented and maintained; and
4. Comply with applicable policies, environmental covenants, laws, and regulations.

Existing Environmental Conditions

Numerous potential contaminant source areas have been investigated and remediated at the Site. Subsequent to completion of soil remediation activities in 2012, some areas of impacted soil remain on the Site, and these ECAs are subject to the provisions of this SMP. A regional groundwater plume containing perchlorate, hexavalent chromium, and other contaminants underlies most of the Site. The portions of the groundwater plume that are subject to the provisions of this SMP are those areas where the plume exceeds regulatory levels. Additionally, any areas of the Site where unexpected contamination is encountered are also subject to the provisions of this SMP.

General Risk Management

This SMP describes measures that will be implemented to mitigate risks to human health and the environment related to potential exposure to any residual chemicals of potential concern (COPCs) during periods of typical operations and non-construction activity. These measures include:

- Providing required notification to current and future Site Occupants of the known environmental conditions at the Site and the requirements of the SMP;
- Conducting additional risk analysis and modification of the SMP, as appropriate, if there is any significant change in land use proposed for the Site, or if any significant change in toxicity values for COPCs occurs;
- Modifying the SMP at least biennially[2] at a minimum to address any changes to each ECA, including additional characterization data and/or new limits, based on work conducted during the previous years;
- Ensuring that groundwater from the Site is not used for drinking water or any other purpose unless the Nevada Division of Environmental Protection (NDEP) approves its use;
- Following appropriate health and safety procedures (including use of appropriate personal protective equipment [PPE]) for activities that disturb subsurface Site soil (e.g., utility repairs);

[2] This was revised from annual updates as specified in the 2012 SMP, dated April 2012, approved by NDEP on June 1, 2012.

- Conducting appropriate ongoing operation and maintenance to verify the continued adequacy of risk management measures, such as evaluating ongoing environmental monitoring data (e.g., groundwater monitoring data) to determine if there are any significant changes in Site environmental conditions that require potential modification of this SMP;
- Monitoring changes in COPC toxicity parameters to assess if additional or lesser mitigation may be needed based on an updated understanding of toxicity of the COPCs at the Site; and
- Inspecting the Site as necessary to verify that risk management controls are being implemented and that they are effective in limiting potential exposure to COPCs at the Site.

Soil Screening Levels

Soil screening levels (including Basic Comparison Levels (BCLs) as well as asbestos, arsenic, and dioxins/furans limits), have been developed for the Site (Table 1). The most recent version of the BCLs, which can be found on the NDEP website (http://ndep.nv.gov/bmi/technical.htm) should be used. These screening levels will be used to evaluate whether or not:

- Excavated soil can be reused as fill at the Site; and
- Additional soil removal should be considered at locations where soil contamination is observed during construction activities.

As explained in the *Removal Action Work Plan for Phase B Soil Remediation of Remedial Zones RZ-B through RZ-E (RAW), Tronox LLC, Henderson, Nevada,* revised May 28, 2010 (Northgate, 2010b), for purposes of designating potential remediation areas, "contaminated" soil is generally defined as concentrations exceeding NDEP worker BCLs, or modified risk-based goals as agreed upon by NDEP. For metals where background concentrations exceed NDEP BCLs (e.g., arsenic), "contaminated" soil is defined as concentrations greater than background. A target remediation goal of 7.2 milligrams per kilogram (mg/kg) for arsenic was approved by NDEP on August 20, 2010 (NDEP, 2010d) in response to Tronox's August 13, 2010 errata to the RAW (Northgate, 2010b). There are no NDEP BCLs for asbestos; therefore, "contaminated" soil is defined as one or more long amphibole protocol structures and greater than five long chrysotile protocol structures counted per sample, which were the criteria used in the NDEP-approved RAW (Northgate, 2010b) and in the *Interim Soil Removal Action Completion Report* (ENVIRON, 2012a). Based on a bioaccessibility study performed in 2010 (Northgate, 2010a), NDEP has approved a Site-specific soil screening level for dioxins/furans (as 2,3,7,8-tetrachlorodibenzo-p-dioxin toxicity equivalents [2,3,7,8-TCDD TEQ]) of 2,700 parts per trillion (ppt) (NDEP, 2010b,c).

Toxicity criteria used for calculating BCLs for four COPCs were updated since the 2012 SMP was submitted to NDEP. Based on updated toxicity criteria from NDEP's August 2013 BCLs (NDEP, 2013), the cadmium BCL is approximately 2-fold higher, the cyanide BCL is nearly 500-fold lower, the manganese BCL is approximately 4-fold lower, and the thallium BCL is approximately 1.1-fold lower than those reported in the 2012 SMP.

Since the 2012 SMP was submitted to NDEP, BCLs were also added for two COPCs (delta-BHC and platinum). In addition, BCLs for some COPCs (bromide, fluoride, nitrate, and nitrate) not previously listed in Table 1 of the 2012 SMP were added.

Risk Management During Construction Activities

This SMP summarizes risk management measures and procedures to be implemented during construction to mitigate potential risks to human health and the environment from potential exposure to COPCs, and to manage soil and groundwater during construction activities. These measures and procedures include:

- Development and implementation of a project-specific health and safety plan (HASP) that describes health and safety training requirements for on-site workers, PPE to be used, and other precautions to be undertaken to minimize direct contact with soil and groundwater;
- Implementation of mitigation measures, such as dust and odor control, decontamination of construction and transportation equipment, and storm water pollution prevention controls;
- Sampling and analysis of groundwater generated during construction dewatering activities to determine appropriate storage and disposal practices;
- Management of abandoned underground storage tanks (USTs), sumps, pipes, and buried drums or containers that may be encountered during Site construction activities;
- Protection of the existing groundwater remediation systems during Site construction activities and implementation of NDEP-approved modifications to the existing systems; and
- Management of soil potentially impacted by COPCs that is handled during construction activities. Soil management protocols include identifying COPC-impacted soil that may be excavated during Site construction activities and contingencies if previously unknown soil contamination is encountered. Appropriate handling and disposition of contaminated soil that are excavated is described.

Groundwater Risk Management Considerations

Due to the groundwater contamination in the aquifer underlying the Site, measures must be taken to prevent new construction from creating additional potential pathways for migration of COPCs in groundwater. For example, if new construction requires deep pile foundations, mitigation measures must be included to reduce the potential for vertical cross-contamination or for creating conduits for downward contaminant migration. The Site Occupant will prepare a design report for review by NDEP and the Trust describing the measures that will be taken and demonstrating their effectiveness in preventing potential migration pathways of COPCs caused by new construction.

The Trust currently operates a groundwater remediation system at the Site. This system is required to operate continuously. New construction must not interfere with operation of the remediation system. Procedures have been developed to coordinate construction activities to minimize disturbance to the remediation system, and if necessary, to allow the system to be modified in a way that does not adversely affect its operation.

1.0 Introduction

On behalf of the Nevada Environmental Response Trust (NERT or the Trust), ENVIRON International Corporation (ENVIRON) has prepared this Site Management Plan (SMP) for the Nevada Environmental Response Trust Site (the Site) located in unincorporated Clark County, surrounded by the City of Henderson, Nevada. The Site is a 410-acre area[3] that is part of the larger Black Mountain Industrial (BMI) Complex. Tronox LLC (Tronox) formerly owned and operated the Site. In conjunction with the settlement of Tronox's bankruptcy, the Trust took title to the Site. The exclusive purpose and functions of the Trust include, but are not limited to: (i) own the Site for purposes of implementing the Settlement Agreement; (ii) carry out administrative and property management functions related to the Site; and (iii) manage and/or fund implementation of Environmental Actions for the Henderson Legacy Conditions that are approved by the Nevada Division of Environmental Protection (NDEP). Tronox has a long-term lease for approximately 114 acres of the Site and continues its manufacturing operations at the Site. The general location of the Site is shown on Figure 1, and the locations of key Site features are shown on Figure 2.

On behalf of Tronox, Northgate Environmental Management Inc. (Northgate) prepared a draft Environmental Risk Management Plan (ERMP) for the Site, dated December 20, 2010 (Northgate, 2010d). The draft ERMP assumed that each area of the Site, which contained environmental media with chemical concentrations above regulatory criteria and standards, would be covered by an individual and discrete Environmental Covenant/Institutional Control. Subsequent to the February 14, 2011 effective date, the Trust, in consultation with NDEP, decided to pursue a general Environmental Covenant for the (entire 410-acre[4]) Site. Therefore, the draft ERMP was revised by ENVIRON (on behalf of the Trust) to reflect this change in approach. Where appropriate and applicable, portions of this document (now called the SMP) have been taken directly from the draft ERMP completed by Northgate, as revised based on NDEP comments issued to the Trust on March 11, 2011.

This SMP was prepared following extensive environmental investigations and human health risk analyses that were performed at the Site for over 25 years with oversight from NDEP. The extensive investigations and remedial activities that have been conducted at the Site are summarized in the draft Remedial Investigation and Feasibility Study (RI/FS) Work Plan (ENVIRON, 2012b).

Three drafts of the SMP were submitted to NDEP between March 2011 and April 2012. Each revision incorporated NDEP's comments. On May 23 and May 30, 2012 errata were submitted to address NDEP's May 14, 2012 comments. The April 2012 SMP and two May 2012 errata letters (hereafter referred to as the 2012 SMP) were approved by NDEP on June 1, 2012.

One draft of this SMP was submitted to NDEP on September 30, 2013, for which NDEP provided comments in a letter to the Trust dated October 16, 2013. This SMP was revised in response to these comments. The annotated response to comments is included in Appendix A.

[3] See footnote 1, *supra*.

[4] See footnote 1, *supra*.

1.1 Scope of the Site Management Plan

This SMP applies to the following conditions at the Site:

- Areas of the Site where impacted soil has been left in-place. These areas have been designated as Excavation Control Areas (ECAs) and are discussed in detail in the Summary of Excavation Control Areas, which is Appendix B of this SMP;
- Areas of the Site where concentrations of contaminants in groundwater exceed current regulatory standards; and
- Areas of the Site where unexpected environmental contamination is encountered during construction/excavation/demolition activities.

Activities undertaken at the Site that qualify as either a "Utility Project" or an "Emergency Project" (as defined herein) are subject only to a specific set of requirements under the SMP, as described in more detail in Sections 4.6 (Utility Projects) and 4.7 (Emergency Projects) and Section 5.0 (Risk Management for Groundwater). All owners, operators, tenants, lessees, project managers, and other entities with responsibility for Site activities (collectively "Site Occupants"), or a third party performing a Utility Project or an Emergency Project on ECA soils or on previously unknown contaminated soils, must comply with SMP Sections 4.6 and 4.7 and Section 5.0. A Site Occupant or a third party performing a Utility Project or an Emergency Project is not required to collect confirmation samples from in-place soils at the limits of the Utility Project or Emergency Project excavation. Additionally, if the Site Occupant or a third party performing a Utility Project or an Emergency Project encounters soil that is visibly stained, discolored, shiny, or oily, or that has a noticeable solvent- or hydrocarbon-like odor, contingency actions are not required.

This SMP provides a decision framework to manage residual chemicals in soil and groundwater at the Site in a manner that:

- Protects human health and the environment;
- Is consistent with current and planned future land uses;
- Satisfies NDEP and other involved regulatory agencies with oversight authority; and
- Satisfies the property owner's concerns.

1.2 Organization of the SMP

This SMP contains the following sections:

- Section 2 – A description of the Site background, including current and future planned land use and hazards associated with existing structures;
- Section 3 – A description of general risk management measures to mitigate potential long-term risks to human health and the environment, which includes procedures for long-term compliance with this SMP;
- Section 4 – A description of risk management measures for soil for new construction and existing buildings at the Site;

- Section 5 – A description of risk management measures for groundwater for new construction and existing buildings at the Site;
- Section 6 – A list of references cited in this report; and
- Requirements – A certification of compliance with the SMP and a checklist of notification and reporting requirements to NDEP and the Trust for Site Occupants and their contractors.

1.3 Responsibilities

All Site Occupants will be provided with copies of this SMP and have the responsibility to ensure that the risk management measures and procedures described herein are fully implemented in any applicable activity or operation. The Trust will provide a copy of the most current SMP to a Site Occupant upon the start of the Site Occupant's occupancy at the Site, and each time the SMP is revised or updated. The Site Occupant is responsible for providing a copy of the SMP to its contractors or any other third party invited to the Site by the Site Occupant. Each Site Occupant shall certify that it will comply with the provisions herein, consistent with the model certification provided as Requirement 1 immediately following the text of this report.

The Trust, as property owner, shall have the primary obligation to:

- Ensure that the risk management measures and procedures described in this SMP reflect conditions actually encountered and the intended land use;
- Comply with applicable policies, laws, and regulations including any Environmental Covenants that are recorded for the Site;
- Establish procedures for inspection, maintenance, and monitoring of the risk management measures that are implemented, and establish protocols for future sub-surface activities to ensure long-term compliance with the SMP; and
- Assure that the SMP is reviewed by qualified environmental professionals and updated, as necessary, to address significant changes in environmental conditions, land uses, and/or applicable laws and regulations.

1.4 Compliance with the SMP

The Trust, as property owner, shall be responsible for providing the requirements of this SMP to Site Occupants.

A checklist of notification and reporting requirements to NDEP and the Trust for Site Occupants is provided as Requirement 2 immediately following the text of this report. The checklist serves only as a reference; compliance with the requirements listed thereon is not a substitute for compliance with this entire SMP. The Trust, as property owner, shall maintain documentation of the notifications and written documentation provided by the Site Occupants.

The Trust will inspect the Site as necessary to verify that risk management controls are being implemented and that they are effective in limiting potential exposure to chemicals of potential

concern (COPCs) at the Site. The Trust will record incidents of non-compliance with the SMP. The Trust is responsible for tracking and overseeing the correction of non-compliant incidents.

1.5 Regulatory Oversight and Status

NDEP provides regulatory oversight for this project. Tronox (formerly Kerr-McGee Chemical LLC) and NDEP signed several agreements, dated between 1986 and 2005, that governed much of the activities performed at the Site. The Trust and NDEP have entered into the following agreements, which govern activities currently being performed at the site:

- 2011: Interim Consent Agreement; and
- 2011: Action Memorandum.

Both of these documents address those portions of the previous agreements between Tronox and NDEP that NDEP has determined were not completed by Tronox.

1.6 Representations and Limitations

The risk management protocols specified in this SMP are based on an understanding of current Site environmental conditions and current policies, laws, and regulations. No representation is made as to the applicability of this SMP to future Site conditions, which may vary from current conditions, as conditions may change or new information may become available. This plan is not intended to conflict with or supplant any laws or regulations regarding on-going operations at the Site.

In the event of changed Site conditions or new information, further Site investigation and evaluation may be necessary to assess human health risks and to establish the specific procedures for remediation or containment of hazardous materials on the Site.

2.0 Site Background

This section provides an overview of the Site, including a Site description, current and future land use, and hazards associated with existing structures.

2.1 Site Description and Land Use

The following sections describe the physical characteristics and current and planned land use of the Site.

2.1.1 Physical Characteristics

The Site is a 410-acre property[5] (Figure 2) that is generally rectangular in shape with the long side in the north-south direction. Elevations across the Site range from 1,677 to 1,873 feet (ft) above mean sea level (msl). The land surface slopes toward the north at a gradient of approximately 0.023 ft per foot (ft/ft). The developed portions of the Site have been modified by grading to accommodate plant facility buildings, surface impoundments, access roads, a former landfill, and other Site features.

2.1.2 Current Land Use

Tronox currently operates processes on a portion of the Site (Facility) to produce manganese dioxide, boron trichloride, elemental boron, and batteries. The Facility includes numerous buildings, sheds, labs, ponds, tanks, and pipelines related to the production of manganese dioxide, boron trichloride, elemental boron, and batteries. The current operating areas are shown on Figure 2.

The major buildings on the Facility include Unit Buildings 1 through 6, which are aligned in a row extending in a west-east direction across the center of the Site. These buildings were constructed during World War II for magnesium production. Tronox currently uses Units 5 and 6 for production of manganese dioxide, and Unit 5 is also used for storage. Units 1 and 2 are no longer used and have been partially demolished. A portion of Unit 4 has also been retrofitted and houses an advanced industrial battery material manufacturing process. Tronox currently uses Unit 3 for office and storage activities. In addition, Tronox produces boron products within a Boron Plant to the north of Unit 4, and production of manganese sulfate solution (for use in the manganese dioxide production process) is performed within a Leach Plant north of Units 5 and 6. Other buildings present on the Facility include an administration building, a change house, a laboratory building, a maintenance shop, a steam plant, and various storage buildings (Figure 2).

The Site is generally rectangular, but certain interior portions of the rectangle have been carved out and are owned and used by other companies, such as Lhoist (formerly Chemstar, a lime producer), Titanium Metals Corporation (TIMET), and the Western Area Power Administration (WAPA). In addition, an area within the northwestern portion of the subject Site consists of groundwater treatment facilities, which are operated on behalf of the Trust by an outside

[5] See footnote 1, *supra*.

contractor, Envirogen Technologies, Inc. (Envirogen)[6]. Tronox operates four lined ponds on the Site that contain process-related wastewater. Another pond, AP-5, is out of use. Pond GW-11 is part of the groundwater extraction and treatment system (GWETS) system and is operated by the GWETS operator. In addition, the Site is traversed (from west to east) by a drainage ditch known as the Beta Ditch that historically conveyed liquid wastes from the Site (and other sites located to the west). The Beta Ditch, which is currently blocked by an earthen dam near its eastern end, has been re-graded, channelized, and now includes a retention basin. The west end of the Beta Ditch at the Site continues to receive storm water drainage from the neighboring property to the west.

The Site is crossed by asphalt and concrete roads, dirt roads, active utility lines, a high-pressure chlorine line, and railroad spurs. An extensive network of active and inactive underground utility lines is present under the roads and open areas at the Site. Figure 3 shows a map of the known utilities present on the Site. The map of utilities on the Site should not be considered all inclusive, as many unknown utilities exist on the Site.

Within the boundaries of the Site, and as shown on Figure 2, are Parcels A, B (a portion was sold to Robert and Sandra Ellis in 2008), C, D, E (contains extraction wells related to the Olin Chlor Alkali/Stauffer/Syngenta/Montrose [OSSM] Groundwater Treatment System), F, G, and H.[7]. Parcel I was sold to Rolly Properties LLC in 2008, and Parcel J was sold to Robert and Sandra Ellis in 2008. These parcels are at the edges of the Site at the north, west, and south. Most of the parcels are not currently in use and have had soil remediation completed and health risk assessments (HRAs) completed or planned. Impacted soil on Parcels A and B was scraped and removed following the Phase 2 investigation (Basic Environmental Company [BEC], 2008a) and impacted soil on Parcels C, D, F, G, and H was excavated in accordance with the removal action work plan submitted to and approved by NDEP (BEC, 2008b). Excavation and removal of soil from Parcels A and B was completed in 2007 (BEC, 2008a) and excavation and removal of soil from Parcels C, D, F, G, and H began in March 2010 and was completed in April 2010 (Northgate, 2013). A screening-level HRA was completed for exposure to soils at Parcels A and B, as presented in the *Technical Memorandum Data Review* (BEC, 2008a). Based on the Parcels A and B investigation data and the results of the HRA, NDEP issued a No Further Action (NFA) letter for soil in the 0 to 10 ft depth interval, with conditions specified for deeper soils and groundwater (NDEP, 2008). A separate screening-level HRA was conducted for the vapor intrusion (indoor air) pathway for Parcels A and B as presented in the *Revised Technical Memorandum: Screening-Level Indoor Air Health Risk Assessment* (Northgate, 2010c), for which NDEP provided comments on May 23, 2011 in a letter and on July 26, 2013 during a conference call. ENVIRON responded to these comments on May 3, 2013 and on August 23, 2013, respectively (ENVIRON, 2013a,c). Additionally, in the August 23, 2013 deliverable, ENVIRON submitted a request for NFA for soils less than 10 ft below ground surface (bgs), which is currently under NDEP review. An HRA for the soil pathway for Parcels C, D, F, G, and H, *Post-Remediation Screening Health Risk Assessment Report for Parcels C,*

[6] Envirogen is referred to as the groundwater extraction and treatment system (GWETS) operator.

[7] NERT is currently in the process of remediating these parcels and has either requested or is in the process of preparing requests for "No Further Action" (NFA) letters from the NDEP. Once an NFA is obtained for a parcel, which will include the recording of an Environmental Covenant, that parcel will no longer be subject to the SMP.

D, F, G, and H (Northgate, 2013), was submitted to NDEP on June 27, 2013, and a separate HRA, *Soil Gas Investigation Report and Health Risk Assessment for Parcels C, D, F, G, and H* (ENVIRON, 2013b), for the volatile organic compound (VOC) inhalation pathway for Parcels C, D, F, G, and H, was submitted to NDEP on August 23, 2013. NDEP commented on both HRAs, and ENVIRON and Northgate are currently in the process of responding to these comments. No investigation or remediation on Parcel E has been performed or is planned due to the continued operation of the OSSM Groundwater Treatment System for the foreseeable future (NDEP, 2010a).

2.1.3 Planned Future Land Use

Tronox currently leases portions of the Site for its manufacturing activities and intends to continue such operations indefinitely. Several parcels within the Site have been sold (Figure 2). The Site area is zoned for industrial/commercial use. Given the highly industrialized nature of the 5,000-acre BMI complex (which includes the Site), and the long-term lease with Tronox, future use of the Site and parcels is expected to remain industrial/commercial.

2.2 Hazards Associated with Existing Structures

Information regarding existing subsurface structures that may require removal and hazardous materials associated with existing structures and operations are described below.

2.2.1 Existing Subsurface Structures That May Require Future Removal

While some of the original ponds and pipelines within the Site area have been removed, a number of these structures still remain in-place, supporting ongoing operations, and may need to be removed during future development of the Site area.

2.2.2 Hazardous Materials Associated with Existing Structures and Current Operations

Many of the existing buildings within the Site are either known or suspected to contain hazardous materials, such as asbestos-containing materials (ACM), lead-based paints, and equipment/materials containing polychlorinated biphenyl (PCBs) and mercury. In addition, hazardous materials have been or are being stored, and hazardous waste has been or is being generated at existing buildings within the Site. Hazardous materials associated with existing structures or operations within the Site area are outlined below:

- Many of the existing buildings within the Site are known or suspected to contain ACM due to their age and construction (Converse Consultants, 2010).
- Given the age of buildings within the Site and the common use of lead-based paints before 1978, lead-based paints were most likely used on the majority of buildings/structures within the Site.
- Transformers or capacitors containing PCBs may be present within the Site. In addition, buildings with fluorescent lighting may contain PCBs and mercury in the light ballasts, and caulking used in the buildings may contain PCBs.

- Tronox currently operates processes to produce manganese dioxide, boron trichloride, and elemental boron. These operations involve the use of hazardous materials and generate wastes that are managed in accordance with federal, state, and local laws and regulations.

Future demolition, repair, and/or redevelopment activities at the Site need to incorporate measures to assess the presence of these hazardous materials and specify how they will be addressed within the planned action.

3.0 General Risk Management

This section of the SMP addresses actions that shall be implemented to mitigate risks to human health and the environment related to potential exposure to COPCs during periods of general (non-construction) Site activity. Any construction that will disturb the soil, building foundations, or pavement shall be completed in a manner that is consistent with the applicable procedures detailed in Sections 4 and 5 of this SMP. Components of the SMP addressing general risk management are as follows:

- Providing required notification to current and future Site Occupants of the known environmental conditions at the Site and the requirements of the SMP;
- Ensuring that future land uses are consistent with the planned land use assumed in this SMP in terms of exposure risk assumptions;
- Prohibiting the use of untreated groundwater at the Site;
- Establishing a notification procedure and protocols for future subsurface activity to ensure long-term compliance with this SMP;
- Reviewing at least biennially and modifying this SMP, as necessary, to address:[8]
  - Any new COPCs encountered at the Site;
  - Any newly-developed toxicological data relating to COPCs;
  - Any significant changes in exposure assumptions because of an intended land use that is different from the planned land use upon which this SMP is based;
  - Any changes to each ECA, including additional characterization data and/or new limits, based on work conducted during the previous year;
  - Any change in ownership of all or portions of the Site (e.g., sale of parcels);
  - Any new processes or hazardous materials handled by the Site Occupants; and
  - Any new tenants on the Site.
- Evaluating groundwater monitoring data collected to determine if there is any need to modify this SMP; and
- Inspecting the Site as necessary to verify that risk management controls are being implemented and that they are effective in limiting potential exposure to COPCs at the Site.

3.1 Notifications and Approvals

The Trust, as property owner, shall be responsible for providing this SMP to Site Occupants. All current and future Site Occupants shall be provided a copy of this SMP and shall certify that they will comply with the provisions herein (see Requirement 1 immediately following the text of this report).

[8] Any modifications to the SMP during the biennial review will consist of issuing replacement pages for the revised portions of the SMP to insert into the full 2013 SMP document.

Site Occupants are required to notify NDEP and the Trust of the following activities:

- Prior to disturbing any soil within an ECA (as defined in Section 4.1 below) including, but not limited to, disturbances during future demolition work, grading, foundation excavation, Utility Projects (as defined in Section 4.6), Emergency Projects (as defined in Section 4.7), facility maintenance activities, or other construction-related activity, a work plan must be submitted for approval by NDEP and the Trust.
- Within 24 hours of discovering previously unknown soil contamination or buried debris at the Site. In addition, the NDEP 24-hour Spill Notification Line must be called (1-888-331-6337 or 775-687-9485) whenever unknown soil contamination or buried debris is discovered at the Site. See Section 4.3: Contingency Actions for Encountering Previously Unknown Contaminated Soil.
- When the results of chemical testing from excavated soil indicate the soil contains COPCs at concentrations that exceed the soil screening levels (Table 1) for the Site.
- Within 24 hours of receiving post-excavation confirmation sample results that indicate COPCs are present in remaining soils at concentrations that exceed soil screening levels.
- Prior to the implementation of any activity that may affect groundwater (e.g., excavation to groundwater table, dewatering, etc.) at the Site. If these types of activities are anticipated or planned, a mitigation plan must be submitted to NDEP and the Trust for approval.
- At least five working days before commencement of any activity that could impact the groundwater remediation systems or monitoring wells on-site. Any proposed modification to the groundwater treatment system, including temporary shutdown of the system or restricted access to system components, must be approved by both NDEP and the Trust.
- Prior to conducting any activity where Site workers could potentially come in contact with contaminated soil or groundwater.

In addition, Site Occupants are required to notify the Trust of the following activities:

- Prior to the use or addition of new processes or hazardous materials by Site Occupants.

A checklist of notification and reporting requirements to NDEP and the Trust for Site Occupants is provided in Requirement 2 immediately following the text of this report. The checklist serves only as a reference; compliance with the requirements listed thereon is not a substitute for compliance with this entire SMP.

3.2 Prohibiting Use of Site Groundwater

Perchlorate, hexavalent chromium, VOCs, and other chemicals are known to be present in groundwater at concentrations that exceed U.S. maximum contaminant levels (MCLs) and Nevada Basic Comparison Levels (BCLs) for drinking water and Nevada surface water standards applicable to the Las Vegas Wash. Therefore, groundwater beneath the Site may not be used for drinking water or for any other purpose until a risk assessment is performed that demonstrates the proposed use of groundwater does not represent a significant risk and the use of groundwater at the Site is approved by NDEP.

3.3 Health and Safety Plans for Future Subsurface Activities

Site Occupants must require each contractor with workers that may contact groundwater or disturb soil at the Site to prepare its own project-specific health and safety plan (HASP). The requirement for preparation of a project-specific HASP also applies to activities involving work in utility vaults or other sub-grade areas (e.g., utility maintenance or modifications in subfloor areas of buildings) where potential exposure to accumulated VOC vapors may occur. A project-specific HASP is not required, however, for approved Utility Projects and Emergency Projects (as defined herein).

Every Site Occupant has the responsibility to manage its operations in a safe manner and in compliance with all State and Federal occupational safety and health requirements. Each project-specific HASP must be consistent with State and Federal Occupational Safety and Health Administration (OSHA) standards for hazardous waste operations (29 Code of Federal Regulations 1910.120) and any other applicable health and safety standards. Each contractor will provide copies of its HASP to the Site Occupant who has contracted for the contractor's work and to the property owner (upon request). Among other things, a contractor's HASP will include a description of health and safety training requirements for on-site personnel, a description of the level of personal protective equipment (PPE) to be used, air monitoring requirements, confined space entry procedures, if applicable (e.g., work in utility vaults), and any other applicable precautions to be undertaken to minimize direct contact with contaminated soil and groundwater or exposure to COPC vapors. Site workers must have the appropriate level of health and safety training and must use the appropriate level of PPE, as determined in the relevant HASP. The Site Occupant who has contracted for such services is responsible for ensuring the above requirements are met.

3.4 Long-Term Compliance; Periodic Review and Update of SMP

The Trust, as property owner, shall maintain documentation of notification of the requirements of this SMP to Site Occupants. Site Occupants will inform their employees, contractors, or any other third party invited to the Site about the SMP, as needed, to ensure compliance. To the extent that subsurface work is performed, documentation shall be maintained by the Site Occupant to show that the protocols for the subsurface activities were followed as required by the SMP.

This SMP, and any addenda, will be reviewed by the Trust at least annually and be revised every two years at a minimum. The review will address new COPCs encountered at the Site and not addressed in the existing SMP; any newly available toxicological data relating to COPCs; any significant changes in land use from the planned land use on which this SMP is based; any updates to the ECAs, including modifications to the description and/or limits; addition of new ECAs if previously unknown contamination is found and then left in-place; any change in ownership of all or portions of the Site; any new processes or hazardous materials handled by the Site Occupants; and any new tenants on the Site. The Trust will update the SMP, as needed, based on the periodic review of the SMP and annual review of Site conditions. If the annual review warrants any revisions to the SMP prior to the biennial update, the SMP will be revised and submitted to NDEP for review and approval. Any modifications will be submitted as replacement pages to be inserted into the full 2013 SMP document following approval of this

document. Once approved, the Trust will distribute copies of the updated SMP to Site Occupants, as necessary.

3.4.1 Evaluation of Groundwater Monitoring Data

The Trust, as property owner, will compile and review groundwater monitoring data to determine if there has been any significant change in the nature, extent, or concentration of COPCs in groundwater that would require potential modification of this SMP. The groundwater monitoring data will be evaluated in accordance with a schedule proposed by the Trust and approved by NDEP. Currently, NDEP requires that groundwater data are reviewed on a semi-annual basis.

3.4.2 Annual Report

The Trust, as property owner, shall prepare an annual report summarizing and evaluating the results of the inspection/maintenance/monitoring activities and documenting the continued adequacy of the implemented risk management measures. This report shall include documentation that appropriate notifications have been made, as discussed in Section 3.1, and that appropriate protocols for subsurface activities have been implemented. In addition, the annual report shall summarize any changes to each ECA, including additional characterization data and/or new limits, based on work conducted during the previous year. This annual report shall be submitted to NDEP for review and approval.

4.0 Risk Management for Soil

This section addresses precautions that will be taken to mitigate potential risks to human health and the environment from COPCs in soil during future Site activities. Precautions to be taken during any soil disturbing activity will include the following:

- Implementation of procedures to characterize and manage Site soil during construction excavation and trenching activities, as established in this Section;
- Implementation of best management practices (BMPs) for construction sites, including control of dust generation at the Site, decontamination of equipment, and prevention of sediment from leaving the Site in storm water runoff; and
- Implementation of proper health and safety precautions, as discussed in Section 3.3.

4.1 Soil Management Protocols

Future demolition work, grading, foundation excavation, facility maintenance activities, and other construction-related activities may require soil to be excavated or relocated within the Site.

Soils that may be encountered during these future activities are divided into two categories:

1) ECA Soils:
   a. Areas of Known Soil Contamination Left In-Place: Soil located in areas of known soil contamination that are being left in-place. ENVIRON notes that, if a majority of an ECA is to be excavated, consideration will be given to the feasibility of complete removal of soils in that entire ECA;
   b. Building Perimeter Soils: The top 3 inches of soil located within 10 ft of Site building footprints that is potentially impacted by lead or asbestos (i.e., adjacent to buildings known to have exterior lead paint or asbestos-containing siding); and
   c. Uncharacterized Potentially Contaminated Soils: Soil located in areas that are likely to be contaminated (e.g., underneath the Unit Buildings), but have not been previously characterized due to the presence of structures or other obstructions.
2) Previously Unknown Contaminated Soils: Soil encountered during construction/demolition/development/investigation or other soil disturbing activities that is visibly stained, discolored, shiny, or oily, or that has a noticeable solvent- or hydrocarbon-like odor that has not previously been discovered or characterized. These soils are not within an ECA.

Areas of known soil contamination that are being left in-place (i.e., ECAs) are identified in Appendix B. Figures 1 through 6 of Appendix B show the locations of each of the ECAs on the Site. Prior to the disturbance of soil within any ECA, NDEP and the Trust must be notified. A work plan for disturbing any soil within an ECA must be submitted for approval by NDEP and the Trust, prior to disturbance of any ECA soil.

Whenever soil in known or suspected contaminated areas is being excavated or exposed, the entity performing the work shall characterize the soil to determine if the soil is contaminated with

COPCs. Soil management protocols are also applicable when previously unknown soil contamination is encountered during construction/demolition/development/investigation or other soil disturbing activities.

Subsequent to completing activities outlined in approved work plans, the Site Occupant must prepare a written report summarizing the remedial actions completed (see Section 4.5).

4.2 Soil Management Actions for ECA Soils

There are a number of areas within the Site where it is likely that soil containing COPCs may be encountered during construction/demolition/development/investigation or other soil disturbing activities. This section describes the soil-handling procedures that will be implemented for ECA soils.

4.2.1 Excavated Soil Management for ECA Soils

ECA soils that are excavated may be stockpiled or placed in plastic-lined roll-off containers for chemical analysis if required for disposal or reuse on-site, as described in Section 4.2.2. As it is NDEP's preferred method, the Site Occupant will place soil in covered, plastic-lined roll-off containers, whenever feasible, to contain the material prior to off-site disposal or on-site reuse. If not feasible, the Site Occupant can place soil in stockpiles on a double-layer plastic liner and cover the stockpile with plastic sheeting or tarp at all times except when material is being handled. The top covering will be adequately secured so that all surface areas are covered. Berms will be constructed around the stockpile area to control precipitation run-on and run-off.

4.2.2 Sampling and Analysis of Excavated Soil for ECA Soils

The sampling and analysis requirements for off-site disposal and on-site reuse of excavated ECA soils are described in the sections below.

4.2.2.1 Off-Site Disposal

If sampling is required for off-site disposal of excavated soil (e.g., where existing characterization data are insufficient for landfill disposal), one composite sample will be collected from random locations from within every 250 cubic yards of excavated soil for the first 1,000 cubic yards and per every 1,000 cubic yards for each additional 1,000 cubic yards. Composite soil samples shall consist of at least four subsamples representative of the excavated soil. The Site Occupant may request, and NDEP may approve, a lesser amount of samples as specified in the approved work plan. All samples will be submitted to a state-certified laboratory and analyzed for those analytes required for proper disposal off-site in accordance with all applicable laws and regulations.

4.2.2.2 On-Site Reuse

If excavated soil is being considered for reuse on-site, one composite sample will be collected from random locations from within every 250 cubic yards of excavated soil for the first 1,000 cubic yards and per every 1,000 cubic yards for each additional 1,000 cubic yards. Composite soil samples shall consist of at least four subsamples representative of the excavated soil. The Site Occupant may request, and NDEP may approve, a lesser amount of samples as specified in the approved work plan. All samples will be submitted to a state-certified laboratory and analyzed for an appropriate suite of chemicals based upon the following criteria:

- Soil from an individual ECA area of known soil contamination left in-place, will be analyzed for the analytes listed in the Summary of ECAs Table B-1 in Appendix B; and
- Soil from areas within 10 ft of the perimeter of Site buildings potentially impacted by lead or asbestos will be analyzed for lead using U.S. Environmental Protection Agency (EPA) Method 6010 and asbestos by the EPA Method 600/R-93-116 for the determination of asbestos in bulk building materials as listed in Table 4; or
- Soil from uncharacterized potentially contaminated ECA areas will be analyzed for the same broad suite of chemicals as was done previously for uncharacterized ECAs (see Section 4.3). The analytical requirements for these ECA areas are also included in the Summary of ECAs Table B-1 in Appendix B.

A summary of excavated soil sampling requirements for ECA soils is provided in Table 2. In the alternative, the Site Occupant may request and NDEP may approve an alternative analytical suite.

4.2.3 Disposition of Sampled Excavated Soil of ECA Soils

Analytical results will be compared to the soil screening levels provided in Table 1.[9] If chemical concentrations in the excavated soil samples do not exceed the soil screening levels, the soil can be reused at the Site for backfill, either within the project area from where it was excavated, or in other areas of the Site, subject to approval from the Trust.

If chemical concentrations in the excavated soil samples exceed the soil screening levels, the soil will be managed in accordance with all applicable laws and regulations. NDEP and the Trust will be notified when the results of chemical testing indicate excavated soil contains COPCs at concentrations that exceed the soil screening levels for the Site.

4.2.4 Confirmation Sampling for ECA Excavations

When excavation of ECAs is undertaken, confirmation soil samples shall be collected from the limits of excavation as follows:

- Sidewall samples will be collected from discrete locations from freshly exposed soil at a depth equal to approximately one half of the excavation depth at a minimum frequency of every 50 linear ft of sidewall excavation face. If the excavation depth is less than 2 ft, then no sidewall samples are required.
- Bottom confirmation samples will be collected from excavation bottoms at discrete locations on approximately 50-ft centers for areas greater than approximately 2,500 square ft. For excavations that are less than 2,500 square ft, one bottom confirmation sample will be collected.

[9] The soil screening levels in Table 1 are the current August 2013 BCLs, the NDEP-approved Site-specific comparison level for dioxins/furans, NDEP-approved background levels, and the criteria used as the basis for asbestos remediation of the Site. If, in the future, any of these comparison levels change, the soil screening levels in Table 1 will be updated to reflect the most current comparison levels. At all times, the most recent version of the BCLs, which can be found on the NDEP website (http://ndep.nv.gov/bmi/technical.htm) should be used.

- If visible or otherwise noticeable contamination remains at the limits of the planned excavation, then field judgment will be used to collect the confirmation samples within the visible/noticeable contamination. This procedure will document the level and location of contamination that is requested to remain in-place.

Laboratory analysis of the confirmation soil samples shall include the same analyses that were used for the excavated soil (see Section 4.2.2 and the Summary of ECAs Table B-1 in Appendix B), or any alternative analytical suite approved by NDEP. A summary of confirmation sampling requirements is provided in Table 2. The results of all confirmation sampling will be reported to NDEP and the Trust. If the results of the confirmation soil sampling indicate that all COPC concentrations are below soil screening levels, no additional excavation is required. If the results of the confirmation soil samples indicate COPC concentrations above the soil screening levels, further overexcavation and additional confirmation sampling is required unless otherwise approved by NDEP and the Trust. Further, the Trust and NDEP must be notified within 24 hours of receiving post-excavation confirmation sample results that indicate COPCs are present in remaining soils at concentrations that exceed soil screening levels.

4.3 Contingency Actions for Encountering Previously Unknown Contaminated Soil

In addition to the ECA soil areas at the Site, previously unknown contaminated soil may be observed during earthwork activities or building demolition, such as when existing building slabs are removed, during grading work, or within excavations for trenches or building foundations. If during any earthwork, building demolition, or other activities at the Site, soil is encountered that is visibly stained, discolored, shiny, or oily, or that has a noticeable solvent- or hydrocarbon-like odor, contingency actions must be taken as summarized below. In addition, soils within any excavation that extend to greater than 10 ft below grade (unless previously characterized) shall be covered by the contingency actions described in this section.

If previously unknown soil contamination or buried debris is observed at the Site, NDEP and the Trust shall be notified within 24 hours. In addition, the NDEP 24-hour Spill Notification Line must be called (1-888-331-6337 or 1-775-687-9485) whenever unknown soil contamination or buried debris is discovered at the Site. If contamination is discovered by odors, then the soil must be field tested with a photo ionization detector (PID) for contamination. A sample of the visibly contaminated or odorous soil must be collected for laboratory analysis and analyzed for the full suite of analytes, at a minimum, for Site COPCs by the following analytical methods, which are also summarized in Table 4:

- Asbestos by EPA Method 600/R-93-116;
- Cyanide by EPA Method 9012;
- Dioxins/Furans by EPA Method 8290;
- Hexavalent chromium by EPA Method 7196A or 7199;
- Inorganic anions (bromide, chloride, fluoride, nitrate as nitrate, sulfate, nitrite as N, nitrate as N, and orthophosphate as phosphate) by EPA Method 9056;
- Mercury by EPA Method 7471;

- Metals by EPA Methods 6010 or 6020;
- Organochlorine Pesticides (OCPs) by EPA Method 8081A;
- Polycyclic Aromatic Hydrocarbons (PAHs) by EPA Method 8310 or 8270D;
- PCBs by EPA Method 8082;
- Perchlorate by EPA Method 314.0 or 6850;
- pH by EPA Method 9045D;
- Sulfide by EPA Method 9034;
- Semi-Volatile Organic Compound (SVOCs) (incl. Hexachlorobenzene [HCB] and Benzo(a)pyrene [B(a)P]) by EPA Method 8270D; and
- VOCs by EPA Method 8260B.

In the alternative, the Site Occupant may request and NDEP may approve an alternative analytical suite.

The results of the initial soil analyses must be submitted to NDEP and the Trust. If there is evidence that other chemicals may be present that could present a potential health risk through direct contact by Site workers, additional analyses shall be performed as requested by NDEP and the Trust. If it is determined that no additional analyses beyond the initial analyses are required, as approved by NDEP and the Trust, soil excavation may proceed to the extent needed to continue construction activities. The excavated soil will be managed in stockpiles or in covered, plastic-lined roll-off containers as described below in Sections 4.3.2 and 4.3.3.

If the results of the evaluation sample indicate COPCs are present in soil at concentrations above the soil screening levels, NDEP and the Trust must be notified within 24 hours, and the Site Occupant must receive approval from NDEP and the Trust prior to continued construction or backfilling activities. Additional actions may also be necessary (e.g., submittal of a work plan for approval by NDEP and the Trust for management of the soil, additional excavation, use of additional PPE to prevent or limit worker exposure), as described in Section 4.3.1.

4.3.1 Soil Management of Previously Unknown Contaminated Soil

The Site Occupant conducting the work will manage soils remaining in-place in areas of previously unknown contaminated soil, as discussed in this Section. Prior to commencement of any work, the Site Occupant must prepare and submit a work plan detailing any proposed sampling activities, investigations or remediation (collectively referred to as “remedial actions”) for approval by NDEP and the Trust. Remedial actions will not commence prior to the approval of the work plan by both NDEP and the Trust.

Depending on the apparent extent of contamination, the level of contamination, the construction schedule, and physical constraints, management of the contaminated soil could be handled in different ways. Examples of potential proposed remedial action approaches, which would be detailed in the work plan, for these areas are outlined below:

- Excavate and Remove, Collect Confirmation Samples. Unsaturated zone soils that potentially contain chemicals above soil screening levels are excavated and either stockpiled or placed in covered, plastic-lined roll-off containers. The excavated soil is managed as described in Sections 4.3.2 and 4.3.3. Confirmation soil samples are then collected from the excavation sidewalls and floor to verify that impacted soils have been removed. Confirmation samples shall be collected at the frequency described in Section 4.3.5. Excavation is considered complete if confirmation soil sample results are below soil screening levels. After soil excavation is considered complete and approved by both NDEP and the Trust, the excavation may be backfilled with clean soil, and development work may continue.
- *In Situ* Characterization. The extent of impacted soils is characterized *in situ* by collecting soil samples from soil borings prior to excavation (i.e., the extent is characterized in advance using samples collected from soil borings). Based on the nature and extent of contamination, the Site Occupant may proceed with the excavation and disposal of impacted soils, as well as collection of post-excavation confirmation sampling (as described above), or evaluate and implement other remedial measures, as appropriate.

If known soil contamination is left in-place, the area would be designated as an ECA and managed as such. Reasons for leaving known soil contamination in-place could include: 1) if complete excavation is not practicable at that time (e.g., there are physical constraints such as a building); or 2) if operation of the regional groundwater remediation system adequately addresses any potential impact due to the identified impacted soil. NDEP would consider specific cases for ceasing excavation with confirmation samples exhibiting concentrations greater than soil screening levels. If approved by NDEP, the Site Occupant would have to provide data and documentation in a written report for the approved excavation limits.

Subsequent to completing activities outlined in the approved work plan, the Site Occupant must prepare a written report summarizing the remedial actions completed (see Section 4.5). The report must be submitted to and approved by both NDEP and the Trust.

4.3.2 Excavated Soil Management for Previously Unknown Contaminated Soil

Previously unknown contaminated soils that are excavated may be stockpiled or placed in plastic-lined roll-off containers for chemical analysis if required for disposal or reuse on-site, as described in Section 4.3.3. As it is NDEP's preferred method, the Site Occupant will place soil in covered, plastic-lined roll-off containers, whenever feasible, to contain the material prior to off-site disposal or on-site reuse. If not feasible, the Site Occupant can place soil in stockpiles on a double-layer plastic liner and cover the stockpile with plastic sheeting or tarp at all times except when material is being handled. The top covering will be adequately secured so that all surface areas are covered. Berms will be constructed around the stockpile area to control precipitation run-on and run-off.

4.3.3 Sampling and Analysis of Excavated Soil for Previously Unknown Contaminated Soil

If sampling is required for disposal of excavated soil (e.g., where existing characterization data are insufficient for landfill disposal or if excavated soil is being considered for reuse on-site), one composite sample will be collected from random locations from within every 250 cubic yards of

excavated soil for the first 1,000 cubic yards and per every 1,000 cubic yards for each additional 1,000 cubic yards. Composite soil samples shall consist of at least four subsamples representative of the excavated soil. The Site Occupant may request, and NDEP may approve, a lesser amount of samples as specified in the approved work plan. All samples shall be submitted to a state-certified laboratory and analyzed for one of the following: (1) analytes required for proper disposal of the soil off-site (only if the Site Occupant intends to dispose of the soil off-site); (2) any chemicals that were identified, in the sampling performed following discovery of the previously unknown contaminated soil (see Section 4.3), as exceeding the screening levels provided in Table 1 (if the Site Occupant intends to reuse the soil as backfill); or (3) any other analytical suite approved by NDEP.

A summary of excavated soil sampling requirements for previously unknown contaminated soil is provided is Table 3.

4.3.4 Disposition of Sampled Excavated Soil for Previously Unknown Contaminated Soil

Analytical results will be compared to the soil screening levels provided in Table 1.[10] If chemical concentrations in the excavated soil samples do not exceed the soil screening levels, the soil can be reused at the Site for backfill, either within the project area from where it was excavated, or in other areas of the Site, subject to approval from the Trust.

If chemical concentrations in the excavated soil samples exceed the soil screening levels, the soil will be managed in accordance with all applicable laws and regulations. NDEP and the Trust will be notified when the results of chemical testing indicate excavated soil contains COPCs at concentrations that exceed the soil screening levels for the Site.

4.3.5 Confirmation Sampling for Excavations in Areas of Previously Unknown Contaminated Soil

For excavations in previously unknown contamination areas, confirmation samples will be collected from in-place soils at the limits of the excavation as follows:

- Sidewall samples will be collected from discrete locations from freshly exposed soil at a depth equal to approximately one half of the excavation depth at a minimum frequency of every 50 linear ft of sidewall excavation face. If the excavation depth is less than 2 ft, then no sidewall samples are required;
- Bottom confirmation samples will be collected from excavation bottoms at discrete locations on approximately 50-ft centers for areas greater than approximately 2,500 square ft. For excavations that are less than 2,500 square ft, one bottom confirmation sample will be collected; and

[10] The soil screening levels in Table 1 are the current August 2013 BCLs, the NDEP-approved Site-specific comparison level for dioxins/furans, NDEP-approved background levels, and the criteria used as the basis for asbestos remediation of the Site. If, in the future, any of these comparison levels change, the soil screening levels in Table 1 will be updated to reflect the most current comparison levels. At all times, the most recent version of the BCLs, which can be found on the NDEP website (http://ndep.nv.gov/bmi/technical.htm) should be used.

- If visible or otherwise noticeable contamination remains at the limits of the planned excavation, then field judgment will be used to collect the confirmation samples within the visible/noticeable contamination. This procedure will document the level and location of contamination that is requested to remain in-place.

Laboratory analysis of the confirmation soil samples shall include the same analyses that were used for the excavated soil, or any alternative analytical suite approved by NDEP. A summary of confirmation sampling requirements is provided in Table 3. The results of all confirmation sampling will be reported to NDEP and the Trust. If the results of the confirmation soil sampling indicate that all COPC concentrations are below soil screening levels, no additional excavation is required. If the results of the confirmation soil sampling indicate COPC concentrations above the soil screening levels, further overexcavation and additional confirmation sampling is required, unless otherwise approved by NDEP and the Trust.

4.4 Construction Impact Mitigation Measures

This section outlines measures that must be implemented to mitigate potential impacts to human health and the environment during earthwork construction. Measures must be implemented to mitigate the potential impacts of the following activities:

- Dust generation associated with soil excavation and loading activities, construction or transportation equipment traveling over on-site soil, and wind traversing COPC-containing soil stockpiles;
- Tracking soil off the Site with construction or transportation equipment; and
- Transporting sediments from the Site in surface water run-off.

The mitigation measures for these potential activities will include, but are not limited to, the following:

- Implementing dust control measures (Section 4.4.1);
- Decontaminating construction and transportation equipment (Section 4.4.2); and
- Implementing Storm Water Pollution Prevention Plans (SWPPPs), BMPs, and applicable controls (Section 4.4.3).

These mitigation measures are discussed in more detail below. Prior to beginning any soil disturbing activities, earthwork or construction, the Site Occupant conducting the work shall prepare and submit to the appropriate authorities, including NDEP and the Trust, a plan describing mitigation measures that will be implemented during Site excavation, sampling, and construction activities. The mitigation measures must be approved by NDEP and the Trust (and any other relevant agency) prior to implementation of soil disturbing activities. The Site Occupant shall also provide copies of all permits required for construction in the ECAs to the Trust prior to starting any construction.

4.4.1 Dust Control Measures

Dust control measures will be implemented during construction activities at the project area to minimize dust generation in compliance with Section 94 (Permitting and Dust Control for Construction Activities) of the Clark County Department of Air Quality (DAQ) regulations. As

required by Section 94 regulations, the Site Occupant must obtain a Dust Control Permit, which shall include a Dust Mitigation Plan with appropriate control measures from the *Construction Activities Dust Control Handbook* (DAQ, 2003), prior to engaging in any construction activity except during the following activities:

- Emergency activities that may disturb the soil, conducted by any utility or government agency in order to prevent public injury or restore critical utility to functional status;
- Soil disturbing or construction activities less than 0.25 acres in overall area;
- Mechanized trenching less than 100 ft in length;
- Mechanical demolition of any structure smaller than 1,000 square ft; and
- Weed removal or dust palliative application projects conducted solely for the purpose of compliance with weed abatement or vacant land dust control regulations, wherein no grade elevation changes, no soil or rock is imported or exported, or no cut and fill operations occur.

For soil disturbing or construction projects 10 acres or larger in size, trenching activities one mile or more in length and structural demolition using implosive or explosive techniques, a Supplement to the Dust Mitigation Plan is required. Additionally, the permit holder shall notify DAQ in writing within 10 days following the cessation of active operations on all or part of a construction site when cessation will extend 30 days or longer.

Dust Control Monitoring is required during the following construction activities:

- Any construction project with 50 acres or more of actively disturbed soil at any given time requires a Dust Control Monitor to ensure that dust control measures are implemented, including inspections, record keeping, deployment of resources, and shut-down or modification of construction activities as needed; and
- Any individually permitted construction projects with less than 50 acres of actively disturbed soil requires a Dust Control Monitor if they are either 1) under common control and are either contiguous or separated by a public or private roadway and cumulatively have 50 acres or more of actively disturbed soil; or 2) under common control and not contiguous, but are contained within a common master-planned community and cumulatively have 50 acres or more of disturbed soil.

The Dust Control Monitor is no longer required once all of the following criteria are achieved:

- The area of actively disturbed soil becomes less than 50 acres;
- The previously disturbed areas have been stabilized in accordance with the requirements of Section 94; and
- The stabilization has been approved and the acreage verified by the DAQ.

It is particularly important to minimize the exposure of on-site construction workers to dust containing COPCs, and to prevent nuisance dust and dust containing COPCs from migrating off-site. Dust generation may be associated with excavation activities, truck traffic, ambient wind traversing soil stockpiles, loading of transportation vehicles, and other earthwork. Even if a

Dust Control Permit is not required, Best Available Control Measures (BACM) shall be employed, as set forth in the Construction Activities Dust Control Handbook (DAQ, 2003), to control dust for any construction activity and comply with the soil stabilization and emission standards listed in Section 94 of the DAQ regulations.

Dust control measures may include the following:

- Mist or spray reclaimed water while performing excavation activities and loading transportation vehicles;
- Limit vehicle speeds on the property to 5 miles per hour;
- Control excavation activities to minimize dust generation; and
- Minimize drop heights while loading transportation vehicles.

As it is NDEP's preferred method, soils that are excavated will be placed in covered, plastic-lined roll-off containers, whenever feasible, to contain the material prior to off-site disposal or on-site reuse. If not feasible, soils will be placed in stockpiles and will be underlain with double-layer plastic liner and covered with plastic sheeting or tarps.

4.4.2 Decontaminating Vehicles and Construction Equipment

Construction equipment and transportation vehicles that contact soil that potentially contains COPCs or has been confirmed to contain COPCs within the project area will be decontaminated before they leave the project area, to minimize the potential for their tracking COPC-containing soil onto roadways.

A decontamination plan for the decontamination of vehicles and construction equipment must be included in the mitigation measures plan referenced above in Section 4.4. Decontamination methods will include scraping, brushing, and/or vacuuming to remove dirt on vehicle exteriors and wheels. If these dry decontamination methods are not adequate, methods such as steam cleaning, high-pressure washing, and use of cleaning solutions will be used, as necessary, to remove soil. Wash water resulting from decontamination activities must be collected and managed in accordance with all applicable laws and regulations.

4.4.3 Storm Water Pollution Controls

The Site is subject to storm water regulations. To ensure that the Site complies with these regulations, all construction activities shall conform to NDEP storm water management requirements, including requirements for development and implementation of BMPs as specified in a SWPPP. Any Site Occupant performing work at the Site that is subject to NDEP storm water management requirements must implement specific BMPs appropriate to the construction plans and specifications.

4.5 Documentation of Remedial Actions Taken

After completion of a remedial action for either ECA soils or previously unknown contaminated soils, the Site Occupant must prepare a report that describes the field activities, findings, remedial actions taken, and analytical results. The report shall be submitted to NDEP and the Trust for approval within 45 business days after completion of the remedial action.

The report shall include, at a minimum, the following information:

- An excavation summary;
- A figure depicting the location where the remedial action was taken;
- GPS coordinates for the limits of excavation within ECAs or due to discovered contaminated soils;
- A summary of laboratory analytical results of excavated soil and soil post-excavation confirmation sampling, as well as a compilation of laboratory analytical data reports and laboratory quality control reports;
- An estimate of the volume—and approximate location—of excavated soil that exceeded soil screening levels, if applicable;
- A summary of excavated soil transported to an off-site disposal facility, including the dates the soil was transported and the estimated quantity of soil transported; and
- Proof of proper disposal of contaminated soil.

4.6 Utility Projects

Any activity performed at the Site that qualifies as a "Utility Project" is subject to only the requirements contained in this Section 4.6 and in Section 5.0. A "Utility Project" is defined as activities related to the installation, maintenance, repair, or replacement of equipment and structures used for the provision or storage of utilities, including but not limited to water, gas, electricity, and telecommunications. Prior to performing activities related to a Utility Project, the Site Occupant must notify NDEP of the activities and receive a determination from NDEP that the activities qualify as a Utility Project under the SMP.

Whenever a Utility Project is performed at the Site, the Site Occupant must take the following precautions:

- Implement procedures to characterize and manage Site soil during construction, excavation, and trenching activities, as established in this Section;
- Implement proper health and safety precautions (although no project-specific HASP is required).

Prior to performing any Utility Project, a work plan must be submitted to NDEP and the Trust for review and approval. The work plan shall describe the dust control measures, procedures for decontamination of vehicles and construction equipment, and storm water runoff controls that will be implemented during the Utility Project. Copies of all permits required for the Utility Project shall be provided to NDEP and the Trust prior to implementation of the Utility Project.

4.6.1 Utility Projects Within an ECA

For Utility Projects within an ECA, the procedures described in the following sections for excavated soil management, sampling and analysis of excavated soils, and disposition of sampled excavated soil shall be followed.

4.6.1.1 Excavated Soil Management

Soil that is excavated from within an ECA must be stockpiled or placed in plastic-lined roll off containers for chemical analysis if required for disposal or reuse on-site, as described in Section 4.6.1.2. As it is NDEP's preferred method, the Site Occupant will place soil in covered, plastic-lined roll-off containers, whenever feasible, to contain the material prior to off-site disposal or on-site reuse. If not feasible, the Site Occupant can place soil in stockpiles on a double-layer plastic liner and cover the stockpile with plastic sheeting or tarp at all times except when material is being handled. The top covering shall be adequately secured so that all surface areas are covered. Berms will be constructed around the stockpile area to control precipitation run-on and run-off.

4.6.1.2 Sampling and Analysis of Excavated Soil

Soil excavated from within an ECA shall be collected and analyzed prior to disposal (e.g., landfill disposal or reuse on-site) as follows: one composite sample shall be collected from within every 250 cubic yards of excavated soil for the first 1,000 cubic yards and per every 1,000 cubic yards for each additional 1,000 cubic yards. The Site Occupant may request, and NDEP may approve, a lesser amount of samples as specified in the approved work plan. Composite soil samples shall consist of at least four subsamples representative of the excavated soil. All samples shall be submitted to a state-certified laboratory and analyzed for one of the following: (1) analytes required for proper disposal of the soil off-site (only if the Site Occupant intends to dispose of the soil off-site); (2) the Site COPCs identified for the specific ECA being affected (if the Site Occupant intends to reuse the soil as backfill); or (3) any other analytical suite approved by NDEP.

4.6.1.3 Disposition of Sampled Excavated Soil

If the Site Occupant intends to reuse excavated soil for backfill, analytical results shall be compared to the current BCLs, the NDEP-approved Site-specific comparison level for dioxins/furans, and NDEP-approved background levels. If chemical concentrations in the excavated soil samples do not exceed the soil screening levels, the soil may be reused for backfill from within the project area from which it was excavated or properly disposed of off-site in accordance with all applicable laws and regulations. If chemical concentrations in the excavated soil samples exceed the soil screening levels, NDEP and the Trust must be notified and the soil must be managed and disposed of off-site in accordance with all applicable laws and regulations, and replaced with clean fill. Any soil approved by NDEP for a reduced analytical suite must be disposed of as directed by NDEP.

4.6.2 Utility Projects in a Non-ECA

For Utility Projects in a non-ECA area, if soil is encountered that is visibly stained, discolored, shiny, or oily, or that has a noticeable solvent- or hydrocarbon-like odor, or buried debris is observed at the Site, NDEP and the Trust shall be notified within 24 hours. In addition, the NDEP 24-hour Spill Notification Line must be called (1-888-331-6337 or 1-775-687-9485) whenever unknown soil contamination or buried debris is discovered at the Site. If contamination is discovered, the Site Occupant performing the Utility Project shall assess and address as necessary any threats to worker health and safety related to the previously unknown contaminated soil.

4.6.2.1 Excavated Soil Management

Previously unknown contaminated soil that is excavated during a Utility Project may be stockpiled or placed in plastic-lined roll-off containers for chemical analysis, as described in Section 4.6.2.2. As it is NDEP's preferred method, the Site Occupant shall place soil in covered, plastic-lined roll-off containers, whenever feasible, to contain the material prior to off-site disposal or on-site reuse. If not feasible, the Site Occupant can place soil in stockpiles on a double-layer plastic liner and cover the stockpile with plastic sheeting or tarp at all times except when material is being handled. The top covering will be adequately secured so that all surface areas are covered. Berms will be constructed around the stockpile area to control precipitation run-on and run-off.

4.6.2.2 Sampling and Analysis of Excavated Soil

Soil excavated with previously unknown contamination shall be collected and analyzed prior to disposal (e.g., landfill disposal or reuse on-site) as follows: one composite sample shall be collected from within every 250 cubic yards of excavated soil for the first 1,000 cubic yards and per every 1,000 cubic yards for each additional 1,000 cubic yards. The Site Occupant may request, and NDEP may approve, a lesser amount of samples as specified in the approved work plan. Composite soil samples shall consist of at least four subsamples representative of the excavated soil. All samples shall be submitted to a state-certified laboratory and analyzed for one of the following: (1) analytes required for proper disposal of the soil off-site (only if the Site Occupant intends to dispose of the soil off-site); (2) the Site COPCs identified in Table 4 (if the Site Occupant intends to reuse the soil as backfill); or (3) any reduced analytical suite approved by NDEP.

4.6.2.3 Disposition of Sampled Excavated Soil

If the Site Occupant intends to reuse excavated soil for backfill, analytical results shall be compared to the current BCLs, the NDEP-approved Site-specific comparison level for dioxins/furans, and NDEP-approved background levels. If chemical concentrations in the excavated soil samples do not exceed the soil screening levels, the soil may be reused at the Site for backfill or properly disposed off-site in accordance with all applicable laws and regulations. If chemical concentrations in excavated soil samples exceed the soil screening levels, NDEP and the Trust shall be notified and the soil shall be managed and disposed of off-site in accordance with all applicable laws and regulations, and replaced with clean fill. Any soil approved by NDEP for a reduced analytical suite must be disposed of as directed by NDEP.

4.6.3 Documentation of Actions Taken

After completion of a Utility Project in an ECA, or in a non-ECA where previously unknown contaminated soils were discovered, the Site Occupant shall prepare a report that describes the field activities, findings and analytical results. The report shall be submitted to NDEP and the Trust within 45 business days after completion of the Utility Project.

The report shall include, at a minimum, the following information:

- An excavation summary;
- A figure depicting the location where any soil was removed;

- GPS coordinates for the limits of excavation within ECAs or in a non-ECA where previously unknown contaminated soils were discovered;
- A summary of laboratory analytical results of excavated soil sampling, as well as a compilation of laboratory analytical data reports and laboratory quality control reports;
- An estimate of the volume—and approximate location—of excavated soil that exceeded soil screening levels, if applicable;
- A summary of excavated soil transported to an off-site disposal facility, including the dates the soil was transported and the estimated quantity of soil transported; and
- Proof of proper disposal of contaminated soil.

4.7 Emergency Projects

Any soil disturbing activity performed at the Site that qualifies as an "Emergency Project" is subject to only the SMP requirements contained in this Section 4.7 and in Section 5.0. An "Emergency Project" is defined as the assessment of, response to, and remediation of contaminants or materials suddenly or abruptly spilled or otherwise released onto the Site as a result of conditions or circumstances beyond the reasonable control of the entity that owns or is otherwise responsible for the contaminants or materials, including, but not limited to, as a result of flood, lightning, natural disaster, acts of God, war, terrorism, or civil disturbances. Prior to performing activities related to an Emergency Project, the entity seeking to perform the work must notify NDEP of the activities and receive a determination from NDEP that the activities qualify as an Emergency Project under the SMP. In addition, before beginning the work, a work plan describing the proposed activities, including a description of the procedures for soil sampling, analysis, management, and disposal, must be submitted to NDEP for review and approval.

Whenever an Emergency Project is performed at the Site, the entity performing the work must take the following precautions:

- Implement procedures to characterize and manage Site soil during construction, excavation, and trenching activities, as established in this Section;
- Implement BMPs for construction sites, including control of dust generation at the Site, decontamination of equipment, and prevention of sediment from leaving the Site in storm water runoff; and
- Implement proper health and safety precautions (although no project-specific HASP is required).

4.7.1 Soil Management of Previously Unknown Contaminated Soil

For all Emergency Projects, if soil unrelated to the event giving rise to the project is encountered that is visibly stained, discolored, shiny, or oily, or that has a noticeable solvent- or hydrocarbon-like odor, or buried debris is observed at the Site, NDEP and the Trust shall be notified within 24 hours. In addition, the NDEP 24-hour Spill Notification Line must be called (1-888-331-6337 or 1-775-687-9485) whenever unknown soil contamination or buried debris is discovered at the

Site. If contamination is discovered, the entity performing the Emergency Project shall assess and address as necessary any threats to worker health and safety.

4.7.2 Backfill Requirements

Prior to placing backfill on the Site, an entity performing an Emergency Project must provide to NDEP and the Trust sufficient information regarding the source of backfill material and showing that the backfill material is not contaminated or from a contaminated source. This information should include:

- The source name and location for the proposed backfill material;
- Current and prior land use at the source location; and
- If there is potential for contamination in the backfill material based on the source location and land use, provide results of testing for possible contaminants using an appropriate suite of analyses depending on the location and land use.

To the extent historical discolored soil is encountered as a result of the Emergency Project, GPS coordinates of the extent of this discolored soil must be determined and recorded.

4.7.3 Documentation of Actions Taken

Following completion of backfill placement, the Site Occupant performing the Emergency Project must provide to NDEP and the Trust a report detailing the release, investigation, remediation, and site restoration activities, including at a minimum a photographic log, summary of actions completed, laboratory analytical results, the GPS coordinates of the extent of any historical discolored soil encountered during the Emergency Project, and any other information required by NDEP.

5.0 Risk Management for Groundwater

This section addresses risk management for groundwater, including limiting the potential for creating migration pathways during construction, dewatering considerations, and protection/removal/relocation of monitoring wells and remediation system components.

5.1 Reducing the Potential for Creating Conduits to Groundwater During Deep Construction Activities

Because subsurface material at the Site includes sands and gravels, most construction at the Site utilizes a slab on grade. However, it is possible that designs for new construction will include deep foundations. If deep foundations are required for new construction at the Site, they will be cast in place, reducing the potential to create vertical conduits for migration of soil vapor from groundwater into overlying buildings. In areas where significant concentrations of VOCs are present, the use of additional measures such as sub-slab depressurization or vapor barriers, as applicable, will be considered.

It is unlikely that piles or deep excavations will be used during future construction activities, because of the nature of the subsurface material. However, if piles or deep excavations are planned that would penetrate the first aquifer zone underlying the Site (i.e., approximately 30 ft bgs), mitigation measures will be employed to minimize:

- The potential to drive shallow, chemically-impacted soil into deeper soils;
- The potential to create conduits for the migration of shallow, chemically-impacted groundwater to deeper groundwater; and
- The potential to create conduits for the migration of soil vapor from groundwater into overlying buildings.

Mitigation measures may include pre-drilling through chemically-impacted soil or groundwater and using conductor casing to prevent downward or upward migration of COPCs. Alternatively, if a geotechnical evaluation indicates that the aquitard sediments will seal around the installed piles to prevent formation of conduits, piles may be installed using a cone-shaped tip on the end of the pile to prevent soil from migrating to deeper zones. Other mitigation measures that can effectively reduce the potential for driving impacted soil deeper, or creating conduits for groundwater migration, may also be used, if their effectiveness can be demonstrated to the satisfaction of NDEP and the Trust.

NDEP and the Trust must be notified prior to the implementation of any activities that will affect groundwater (e.g., excavation to groundwater table, dewatering, etc.). If these types of activities are anticipated or planned in areas of known groundwater contamination, a mitigation plan must be submitted to NDEP and the Trust. The mitigation plan will at a minimum describe the mitigation measures that will be implemented and demonstrate their effectiveness in preventing downward or upward migration of COPCs. Both NDEP and the Trust must approve the mitigation plan prior to implementation of these activities.

5.2 Dewatering

NDEP and the Trust must be notified prior to commencement of any on-site dewatering activities.

If dewatering is to be performed, then the groundwater must be sampled in planned work areas and analyzed for the analytical parameters listed in Table 5 to determine appropriate management practices. In addition, dewatering activities must be properly permitted.

5.3 Protection and Removal/Relocation of Existing Groundwater Monitoring Wells and Remediation System Components

The GWETS operator to the Trust operates groundwater remediation systems located on the Site, as well as in off-site locations. The layout of major features of the existing groundwater treatment systems are shown on Figure 2. Components of the remediation systems include an on-site bentonite-slurry barrier wall, three different areas of groundwater extraction wells, single and double-contained pipelines, air relief structures, electrical power and instrumentation conduits, fiber-optic instrument systems, electrical field control panels, leak detection systems, radio frequency communication links, settlement pin monuments, three groundwater treatment systems, ponds, and a network of groundwater monitoring wells. Existing groundwater monitoring and extraction wells are identified on Figure 4.

The groundwater remediation systems operate continuously, except when it is necessary to shut them off for required maintenance. Any parties planning any activities that could impact the groundwater remediation systems or monitoring wells on-site, including construction work within 50 ft of the groundwater remediation systems or monitoring wells (as shown on Figure 5), where the use of construction equipment may accidentally damage a well or other component of the system, must notify and receive approval from NDEP and the Trust prior to commencement of work. Additionally, the Trust will notify the GWETS operator.

The planned construction work must take appropriate measures to protect the integrity of these features. These measures should allow for the continued operation of these systems and wells while minimizing any shutdowns of system components. Issues that should be considered include:

- Procedures for planning and implementing remedial system modifications that may be necessary due to Site development activities; and
- Measures to be taken to protect remedial system components during construction.

5.3.1 Removal or Relocation of Remediation System Components and Monitoring Wells

If the location of existing remediation system wells and pipelines conflicts with any planned activity, it may be possible to remove or relocate the affected well or pipeline; however, this will only be considered when no other alternatives are feasible or acceptable.

Any proposed modification to the groundwater treatment system(s), including temporary shutdown of the system(s), must be approved by both NDEP and the Trust. Potential conflicts between future construction projects and the location of existing remediation system components should be identified and resolved during the design stage. Relocation or removal

of any remediation system components may only occur with the prior approval of NDEP and the Trust.

5.3.2 Protection of Existing Groundwater Wells and Remediation System Components

Before any activity starts, the Site Occupant shall confirm with the Trust the location of all extraction and monitoring wells that are within or near the construction zone. Before commencing construction work, the Site Occupant shall appropriately protect all groundwater monitoring and extraction wells. The Site Occupants shall provide and place steel plate or equivalent protective measures over the existing pipelines and power and control conduits during construction activities.

5.3.3 Shutdown of Remediation Systems

Planned shutdowns of the remediation system(s) must be identified in a work plan that will be submitted to NDEP, the Trust, and the GWETS operator for approval. If construction activities require a planned shutdown of any portion of the remediation system(s), previously approved procedures addressing such shutdown shall be followed. The work plan shall require that the Site Occupant provide NDEP, the Trust, and the GWETS operator with written notice at least 5 business days before the proposed shutdown, and NDEP, the Trust, and the GWETS operator must approve the planned shutdown.

If the Site Occupant's activities result in an unplanned shutdown (e.g., due to breaking a pipe that causes the release of untreated groundwater) of any component of the remediation system(s), they must immediately verbally notify and receive approval from both NDEP, the Trust, and the GWETS operator prior to system shutdown if possible. In addition, within 24 hours of the shutdown, the Site Occupant must provide a written explanation to NDEP, the Trust, and the GWETS operator of the reason for and the duration of the shutdown.

5.3.4 Remediation System Access

Site development must be performed where all groundwater wells, pull boxes, and the groundwater treatment system(s) and associated components can be accessed for sampling, operation, and maintenance. If access to a well or other remediation system component is planned to be restricted during construction activities, the Site Occupant must provide written notification to NDEP and the Trust of the reason for and the duration of the proposed restricted access and receive approval from both NDEP and the Trust before creating the restriction.

5.3.5 Accidental Releases of Untreated Groundwater

Before starting any activity within 50 ft of any component of the groundwater monitoring, extraction, and treatment systems, the Site Occupant shall prepare a contingency plan to outline actions that would be taken if damage is caused to any remediation system component in a manner that causes the release of untreated groundwater. The Site Occupant must submit the contingency plan to NDEP and the Trust for review and approval before starting any activities within 50 ft of remediation system components (see Figure 5).

The contingency plan shall identify any emergency equipment the Site Occupant may need to retain on-site during these activities to control or contain potential releases of untreated groundwater.

If Site activities result in the release of untreated groundwater, the Site Occupant shall immediately notify NDEP and the Trust of the release and the status of remediation system operations. If the remediation system(s) are shut down due to damage to the system(s) or to control the release of untreated groundwater, the Site Occupant must provide NDEP and the Trust with a written explanation for the shutdown. The Site Occupant must take immediate action to control the source of the spill, and contain untreated groundwater that has been released, in accordance with its approved contingency plan. Efforts shall be made to avoid release of untreated groundwater into storm sewers.

6.0 References

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NDEP, 2010d. Letter to Tronox LLC re: Response to: Errata to the Removal Action Work Plan for Phase B Soil Remediation of Remediation Zones RZ-B through RZ-E, Dated August 13, 2010. August 20, 2010.

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Requirement 1

Certification of Compliance with Site Management Plan

Certification of Compliance with Site Management Plan

The undersigned ("Site Occupant") acknowledges receipt of a copy of the Site Management Plan dated _____ (the "SMP") prepared by ENVIRON International Corporation pertaining to the Nevada Environmental Response Trust Site located in Clark County, Nevada (the "Site"), which Site is more thoroughly described in the SMP. Site Occupant affirms that it is an owner, operator, tenant, lessee, project manager or other entity with responsibility for activities at the Site. Site Occupant specifically acknowledges having read and understood the provisions of the SMP. Site Occupant further acknowledges that it has the responsibility to ensure that the risk management measures and procedures described in the SMP are fully implemented in any applicable activity or operation. Site Occupant certifies that it will comply with all provisions of the SMP applicable to its occupancy of or work upon the Site. Site Occupant further certifies that it has provided or will provide a copy of the SMP to its contractors and any third parties that Site Occupant may invite to the Site and shall ensure said contractors' or invitees' compliance with the SMP.

An executed copy of this Certification of Compliance must be submitted to the Trust representative at the Site before any activity at the Site begins.

Company: _____

By: _____

Printed Name: _____

Title: _____

Date: _____

Requirement 2

Checklist of Notification and Reporting Requirements to the Trust and NDEP for Site Occupants and Their Contractors

Checklist of Notification and Reporting Requirements to NDEP and the Trust for Site Occupants[1] and Their Contractors

Site Occupants are required to notify and receive approval from both the Trust and NDEP (unless otherwise noted) of the following activities:

General Site

___ Notify the Trust prior to the use or addition of new processes or hazardous materials (see Section 3.1 of the main Site Management Plan [SMP] document).

___ Notify the Trust and NDEP prior to conducting any activity where Site workers could potentially come in contact with contaminated soil or groundwater (see Section 3.1 of the main SMP document).

Soil

___ Notify the Trust and NDEP prior to performing a Utility Project or an Emergency Project, and comply with all applicable requirements in Section 4.6 (Utility Projects) or Section 4.7 (Emergency Projects). These are the only requirements of the SMP related to soil with which a Site Occupant performing an approved Utility Project or Emergency project must comply.

___ Notify the Trust and NDEP prior to disturbing any soil within an ECA (as defined in Section 4.0 of the main SMP document) including, but not limited to, disturbances during future demolition work, grading, foundation excavation, facility maintenance activities, or other construction-related activity. A work plan must be submitted for approval by NDEP and the Trust (see Section 4.1 of the main SMP document).

___ Notify the Trust and NDEP within 24 hours of discovering previously unknown soil contamination or buried debris. In addition, the NDEP 24-hour Spill Notification Line must be called (see Table 6 of the main SMP document for phone number) whenever unknown soil contamination or buried debris is discovered at the Site (see Section 3.1 of the main SMP document).

___ Notify the Trust and NDEP when the results of chemical testing from excavated soil samples indicate the soil contains COPCs at concentrations that exceed the soil screening levels for the Site (including Basic Comparison Levels [BCLs] as well as Site-specific levels (Table 1 of the main SMP document). The most recent version of the BCLs, which can be found on the NDEP website (http://ndep.nv.gov/bmi/technical.htm) should be used (see Section 3.1 of the main SMP document).

___ Notify the Trust and NDEP within 24 hours of receiving post-excavation confirmation sample results that indicate COPCs are present in remaining soils at concentrations that exceed soil screening levels (Table 1 of the main SMP document) for the Site (see Section 3.1 of the main SMP document).

Groundwater

___ Notify the Trust and NDEP prior to the implementation of any activity that may affect groundwater (e.g., excavation to the groundwater table, dewatering, etc.) (see Section 3.1 of the main SMP document).

Groundwater Treatment System

___ Notify the Trust and NDEP prior to commencement of any activity that could impact the groundwater remediation system or monitoring wells on-site (including any activity within 50 ft of the groundwater remediation systems or monitoring wells, where the use of construction equipment may accidentally damage a well or other component of the system; see Figure 5). Before Site work begins, confirm with the Trust the location of all extraction and monitoring wells that are within or near the construction zone. Before commencing Site work, appropriately protect existing groundwater wells and remediation system components (see Section 3.1 of the main SMP document).

___ At least 5 working days before any proposed temporary shutdown of the remediation system, provide written notice to the Trust, NDEP, and the groundwater extraction and treatment system (GWETS) operator for approval (see Section 3.1 of the main SMP document).

___ If the Site Occupant's activities result in an unplanned shutdown of any component of the remediation system(s), the immediately verbally notify and receive approval from both the Trust and NDEP prior to system shutdown if possible. In addition, within 24 hours of the shutdown, provide a written explanation to NDEP, the Trust, and the GWETS operator of the reason for and the duration of the shutdown (see Section 5.3.3 of the main SMP document).

___ Notify the Trust and NDEP prior to any proposed modification to the groundwater treatment system, including removal or relocation of remediation system components and monitoring wells. Any proposed modification to the groundwater treatment system(s) must be approved by both the Trust and NDEP. Potential conflicts between future construction projects and the location of existing remediation system components should be identified and resolved during the design stage. Relocation or removal of any remediation system components may only occur with the prior approval of NDEP and the Trust (see Section 5.3.1 of the main SMP document).

___ Notify the Trust and NDEP prior to any restricted access to groundwater system components. If access to a well or other remediation system component is planned to be restricted during any activities, provide written notification to NDEP and the Trust of the reason for and the duration of the proposed restricted access and receive approval from both NDEP and the Trust before creating the restriction (see Sections 5.3.1 and 5.3.4 of the main SMP document).

___ If any activities result in the release of untreated groundwater, immediately notify NDEP and the Trust of the release and the status of remediation system operations. If the remediation system is shut down due to damage to the system, provide NDEP and the Trust with a written explanation for the shutdown, take immediate action to control the source of the spill, and contain untreated groundwater that has been released (see Section 5.3.5 of the main SMP document).

Site Occupants are required to provide the following written documentation to both NDEP and the Trust (unless otherwise noted):

General

___ Provide the Trust and NDEP with executed certifications that they will comply with the provisions contained in the SMP, consistent with the model certification provided as Requirement 1 to the main SMP document (see Section 1.3 of the main SMP document).

Soil and Groundwater

___ ***Project-Specific Health and Safety Plan (HASP)***: Require each contractor with workers that may contact groundwater or disturb soil at the Site to prepare its own project-specific HASP. Each contractor will provide copies of its HASP to the Site Occupant who has contracted for the contractor's work and to the Trust (upon request). The requirement for preparation of a project-specific HASP also applies to activities involving work in utility vaults or other sub-grade areas (e.g., utility maintenance or modifications in subfloor areas of buildings) where potential exposure to accumulated volatile organic compound (VOC) vapors may occur (see Section 3.3 of the main SMP document). A project-specific HASP is not required for approved Utility Projects or Emergency Projects.

Soil

___ **Construction Impact Mitigation Measures Plan:** The Site Occupant conducting excavation, sampling, or construction activities shall prepare and submit to the appropriate authorities, including NDEP and the Trust, a plan describing mitigation measures (e.g., dust control measures, decontaminating vehicles and construction equipment, and storm water runoff controls) that will be implemented during Site excavation, sampling, and construction activities (see Section 4.4 of the main SMP document).

___ **Copies of Permits Required for Construction within ECAs**: Provide copies of all permits required for construction in the ECAs to the Trust prior to starting any construction (see Section 4.4 of the main SMP document).

___ **Sample Results for Previously Unknown Contaminated Soil:** When previously unknown soil contamination is observed, a sample of the visibly contaminated or odorous soil must be collected and analyzed for a list of COPCs listed in Section 4.3 and Table 4 of the main SMP document. The results of the initial soil analyses must be submitted to NDEP and the Trust. If it is determined that no additional analyses beyond the initial analyses are required, as approved by NDEP and the Trust, soil excavation may proceed to the extent needed to continue construction activities (see Section 4.3 of the main SMP document).

___ **Remedial Action Work Plan**: Prior to commencement of any activity in ECAs or in areas of previously unknown contaminated soil, prepare and submit a work plan detailing any proposed sampling activities, investigations or remediation (collectively

referred to as "remedial actions") for approval by NDEP and the Trust (see Sections 3.1, 4.1, and 4.3.1 of the main SMP document).

___ **Report for Leaving Known Soil Contamination In-Place**: If excavation of an area with confirmation samples exhibiting concentrations greater than soil screening levels is ceased, as approved by NDEP, provide data and documentation to NDEP and the Trust in a written report for the approved excavation limits (see Section 4.3.1 of the main SMP document).

___ **Remedial Action Completion Report.** After completion of a remedial action, prepare a written report that must be submitted to and approved by both NDEP and the Trust. The written report must describe the field activities, findings, actions taken, and analytical results, including all post-excavation confirmation sample results (see Section 4.5 of the main SMP document).

Groundwater

___ **Groundwater Impact Mitigation Measures Plan**: If activities are anticipated or planned that may affect groundwater (e.g., excavation to the groundwater table, dewatering, etc.), a mitigation plan must be submitted to NDEP and the Trust for approval (see Section 5.1 of the main SMP document).

Groundwater Treatment System

___ **Contingency Plan for Damage to Groundwater Treatment System Component**: Before starting any activity within 50 ft of any component of the groundwater monitoring, extraction, and treatment systems, prepare a contingency plan to outline actions that would be taken if any remediation system component is damaged in a manner that causes the release of untreated groundwater. Submit the contingency plan to NDEP and the Trust for review and approval before starting activities in the areas where remediation system components are located (see Section 5.3.5 of the main SMP document).

___ **Written Explanation of Unplanned Shutdown of Groundwater Treatment System(s)**: Within 24 hours of an unplanned shutdown of any component of a groundwater remediation system (e.g., due to damage to the system or to control the release of untreated groundwater), provide a written explanation to NDEP, the Trust, and the GWETS operator of the reason for and the duration of the shutdown (see Section 5.3.3 of the main SMP document)..

[1] "Site Occupant" is defined as any owner, operator, tenant, lessee, project manager, or entity exercising control over space at the Site. Each Site Occupant has the responsibility to ensure that the risk management measures and procedures described in the SMP are fully implemented in any applicable activity or operation. The Site Occupant is responsible for ensuring its employees and contractors comply with the SMP.

Tables

Table 1
Soil Screening Levels

Parameter of Interest	Chemical	Unit	NDEP 2013 Worker BCL or Site-Specific Screening Level[a]	Soil Screening Level Basis	BCL Basis
Organic Acids	Benzenesulfonic acid	mg/kg	100,000	BCL	max
	4-Chlorobenzenesulfonic acid	mg/kg	117	BCL	sat
	Diethyl phosphorodithioic acid	mg/kg	90,844	BCL	N
	Dimethyl phosphorodithioic acid	mg/kg	100,000	BCL	max
	Phthalic acid	mg/kg	100,000	BCL	max
Organophosphate Pesticides	Azinphos-Methyl	mg/kg	--	--	--
	Bolstar	mg/kg	--	--	--
	Chlorpyrifos	mg/kg	2,052	BCL	N
	Coumaphos	mg/kg	--	--	--
	Demeton-O	mg/kg	--	--	--
	Demeton-S	mg/kg	--	--	--
	Diazinon	mg/kg	616	BCL	N
	Dichlorvos	mg/kg	6.60	BCL	C
	Dimethoate	mg/kg	--	--	--
	Disulfoton	mg/kg	27.4	BCL	N
	EPN	mg/kg	--	--	--
	Ethoprop	mg/kg	--	--	--
	Ethyl Parathion	mg/kg	4,104	BCL	N
	Famphur	mg/kg	--	--	--
	Fensulfothion	mg/kg	--	--	--
	Fenthion	mg/kg	--	--	--
	Malathion	mg/kg	13,681	BCL	N
	Merphos	mg/kg	--	--	--
	Methyl Parathion	mg/kg	171	BCL	N
	Mevinphos	mg/kg	--	--	--
	Naled	mg/kg	1,368	BCL	N
	Phorate	mg/kg	--	--	--
	Ronnel	mg/kg	34,203	BCL	N
	Stirophos (Tetrachlorovinphos)	mg/kg	79.8[b]	BCL	C
	Sulfotep	mg/kg	--	--	--
	Thionazin	mg/kg	--	--	--
	Tokuthion	mg/kg	--	--	--
	Trichloronate	mg/kg	--	--	--
Organochlorine Pesticides	Aldrin	mg/kg	0.113	BCL	C
	Alpha-BHC	mg/kg	270	BCL	N
	Beta-BHC	mg/kg	53.9	BCL	N
	Delta-BHC	mg/kg	270	BCL	N
	Gamma-BHC (Lindane)	mg/kg	8.98	BCL	N
	Alpha-chlordane	mg/kg	--	--	--
	Gamma-chlordane	mg/kg	--	--	--
	Tech-Chlordane	mg/kg	7.19	BCL	C
	4,4'-DDD	mg/kg	11.1	BCL	C
	4,4'-DDE	mg/kg	7.81	BCL	C
	4,4'-DDT	mg/kg	7.81	BCL	C
	Dieldrin	mg/kg	0.120	BCL	C
	Endosulfan	mg/kg	4,104	BCL	N
	Endosulfan I	mg/kg	--	--	--

Table 1
Soil Screening Levels

Parameter of Interest	Chemical	Unit	NDEP 2013 Worker BCL or Site-Specific Screening Level[a]	Soil Screening Level Basis	BCL Basis
Organochlorine Pesticides (Continued)	Endosulfan II	mg/kg	--	--	--
	Endosulfan Sulfate	mg/kg	--	--	--
	Endrin	mg/kg	205	BCL	N
	Endrin Aldehyde	mg/kg	--	--	--
	Endrin Ketone	mg/kg	--	--	--
	Heptachlor	mg/kg	0.426	BCL	C
	Heptachlor Epoxide	mg/kg	0.210	BCL	C
	Methoxychlor	mg/kg	3,420	BCL	N
	Toxaphene	mg/kg	1.74	BCL	C
PAHs	Acenaphthene	mg/kg	2,351	BCL	N
	Acenaphthylene	mg/kg	147	BCL	sat
	Anthracene	mg/kg	9,060	BCL	N
	Benz(a)anthracene	mg/kg	2.34	BCL	C
	Benzo(a)pyrene	mg/kg	0.234	BCL	C
	Benzo(b)fluoranthene	mg/kg	2.34	BCL	C
	Benzo(g,h,i)perylene	mg/kg	34,067	BCL	N
	Benzo(k)fluoranthene	mg/kg	23	BCL	C
	Chrysene	mg/kg	234	BCL	C
	Dibenz(a,h)anthracene	mg/kg	0.234	BCL	C
	Fluoranthene	mg/kg	24,447	BCL	N
	Fluorene	mg/kg	3,438	BCL	N
	Indeno(1,2,3-cd)pyrene	mg/kg	2.34	BCL	C
	Naphthalene	mg/kg	16	BCL	C
	Phenanthrene	mg/kg	25	BCL	sat
	Pyrene	mg/kg	19,340	BCL	N
SVOCs	Butyl benzyl phthalate	mg/kg	240	BCL	sat
	Di-N-Butyl phthalate	mg/kg	68,407	BCL	N
	Diethyl phthalate	mg/kg	100,000	BCL	max
	Dimethyl phthalate	mg/kg	100,000	BCL	max
	bis(2-Ethylhexyl)phthalate	mg/kg	137	BCL	C
	Hexachlorobenzene[c]	mg/kg	1.20	BCL	C
	2-Methylnaphthalene	mg/kg	--	--	--
	Nitrobenzene	mg/kg	14	BCL	C
	Octachlorostyrene	mg/kg	--	--	--
	Di-N-Octyl phthalate	mg/kg	--	--	--
	Pyridine	mg/kg	667	BCL	N
VOCs	Acetone	mg/kg	100,000	BCL	max
	Benzene	mg/kg	4.21	BCL	C
	Bromobenzene	mg/kg	695	BCL	sat
	Bromochloromethane	mg/kg	--	--	--
	Bromodichloromethane	mg/kg	3.36	BCL	C
	Bromoform	mg/kg	242	BCL	C
	Bromomethane	mg/kg	39	BCL	N
	2-Butanone	mg/kg	34,092	BCL	sat
	N-Butylbenzene	mg/kg	237	BCL	sat
	sec-Butylbenzene	mg/kg	223	BCL	sat
	tert-Butylbenzene	mg/kg	393	BCL	sat

Table 1
Soil Screening Levels

Parameter of Interest	Chemical	Unit	NDEP 2013 Worker BCL or Site-Specific Screening Level[a]	Soil Screening Level Basis	BCL Basis
VOCs (Continued)	Carbon tetrachloride	mg/kg	3.84	BCL	C
	Chlorobenzene	mg/kg	695	BCL	sat
	Chloroethane	mg/kg	1,096	BCL	C
	Chloroform	mg/kg	1.55	BCL	C
	Chloromethane	mg/kg	8.05	BCL	C
	2-Chlorotoluene	mg/kg	511	BCL	sat
	4-Chlorotoluene	mg/kg	--	--	--
	cis-1,2-Dichloroethene	mg/kg	737	BCL	N
	cis-1,3-Dichloropropene	mg/kg	--	--	--
	1,2-Dibromo-3-chloropropane	mg/kg	0.0529	BCL	C
	Dibromochloromethane	mg/kg	6.03	BCL	C
	Dibromomethane	mg/kg	191	BCL	N
	1,2-Dichlorobenzene	mg/kg	373	BCL	sat
	1,3-Dichlorobenzene	mg/kg	373	BCL	sat
	1,4-Dichlorobenzene	mg/kg	13.6	BCL	C
	Dichlorodifluoromethane	mg/kg	340	BCL	sat
	1,1-Dichloroethane	mg/kg	21.4	BCL	C
	1,2-Dichloroethane	mg/kg	2.24	BCL	C
	1,1-Dichloroethene	mg/kg	1,274	BCL	N
	trans-1,2-Dichloroethylene	mg/kg	547	BCL	N
	1,2-Dichloropropane	mg/kg	4.29	BCL	C
	1,3-Dichloropropane	mg/kg	64.6	BCL	N
	2,2-Dichloropropane	mg/kg	--	--	--
	1,1-Dichloropropene	mg/kg	--	--	--
	trans-1,3-Dichloropropene	mg/kg	--	--	--
	1,4-Dioxane	mg/kg	19.2	BCL	C
	Ethyl t-butyl ether	mg/kg	--	--	--
	Ethylbenzene	mg/kg	19.6	BCL	C
	Ethylene dibromide	mg/kg	0.177	BCL	C
	Hexachlorobutadiene	mg/kg	25	BCL	C
	2-Hexanone	mg/kg	1,933	BCL	N
	Isopropyl ether	mg/kg	--	--	--
	Isopropylbenzene	mg/kg	647	BCL	sat
	4-Isopropyltoluene	mg/kg	647	BCL	sat
	Methyl tert butyl ether	mg/kg	208	BCL	C
	4-Methyl-2-pentanone	mg/kg	17,196	BCL	sat
	Methylene chloride	mg/kg	58.5	BCL	C
	N-Propylbenzene	mg/kg	237	BCL	sat
	Styrene	mg/kg	1,734	BCL	sat
	t-Butyl alcohol	mg/kg	21,283	BCL	sat
	1,1,1,2-Tetrachloroethane	mg/kg	19.9	BCL	C
	1,1,2,2-Tetrachloroethane	mg/kg	2.54	BCL	C
	Tetrachloroethene	mg/kg	3.28	BCL	C
	Toluene	mg/kg	521	BCL	sat
	1,2,3-Trichloropropane	mg/kg	0.106	BCL	C
	1,2,3-Trichlorobenzene	mg/kg	--	--	--
	1,2,4-Trichlorobenzene	mg/kg	110	BCL	C

Table 1
Soil Screening Levels

Parameter of Interest	Chemical	Unit	NDEP 2013 Worker BCL or Site-Specific Screening Level[a]	Soil Screening Level Basis	BCL Basis
VOCs (Continued)	1,1,1-Trichloroethane	mg/kg	1,385	BCL	sat
	1,1,2-Trichloroethane	mg/kg	5.51	BCL	C
	Trichloroethene	mg/kg	5.49	BCL	C
	Trichlorofluoromethane	mg/kg	1,983	BCL	sat
	1,2,3-Trichloropropane	mg/kg	0.106	BCL	C
	1,2,4-Trimethylbenzene	mg/kg	604	BCL	N
	1,3,5-Trimethylbenzene	mg/kg	246	BCL	N
	Vinyl Chloride	mg/kg	1.862	BCL	C
	m-Xylene	mg/kg	214	BCL	sat
	o-Xylene	mg/kg	282	BCL	sat
	p-Xylene	mg/kg	375	BCL	sat
	Xylenes, total	mg/kg	214	BCL	sat
TPH	Oil Range Organics (TPH-oil)	mg/kg	100[d]	--	--
	TPH-diesel	mg/kg	100[d]	--	--
	TPH-gasoline	mg/kg	100[d]	--	--
PCBs	Aroclor-1016	mg/kg	23.6	BCL	C
	Aroclor-1221	mg/kg	0.826	BCL	C
	Aroclor-1232	mg/kg	0.826	BCL	C
	Aroclor-1242	mg/kg	0.826	BCL	C
	Aroclor-1248	mg/kg	0.826	BCL	C
	Aroclor-1254	mg/kg	0.826	BCL	C
	Aroclor-1260	mg/kg	0.826	BCL	C
	Total PCBs	mg/kg	0.826	BCL	C
	TCDD TEQ[e]	pg/g	2,700[f]	Site-Specific	--
General Chemistry	Cyanide	mg/kg	27.8	BCL	N
	Perchlorate	mg/kg	795	BCL	N
Dioxins/Furans	TCDD TEQ[g]	pg/g	2,700[f]	Site-Specific	--
Metals	Aluminum	mg/kg	100,000	BCL	max
	Antimony	mg/kg	454	BCL	N
	Arsenic	mg/kg	7.2[h]	Background	--
	Barium	mg/kg	100,000	BCL	max
	Beryllium	mg/kg	2,228	BCL	N
	Boron	mg/kg	100,000	BCL	max
	Cadmium	mg/kg	1,114	BCL	N
	Chromium (III)	mg/kg	100,000	BCL	max
	Chromium (VI)	mg/kg	1,226	BCL	C
	Cobalt	mg/kg	337	BCL	N
	Copper	mg/kg	42,178	BCL	N
	Iron	mg/kg	100,000	BCL	max
	Lead	mg/kg	800	BCL	--
	Magnesium	mg/kg	100,000	BCL	max
	Manganese	mg/kg	24,927	BCL	N
	Mercury	mg/kg	182	BCL	N
	Molybdenum	mg/kg	5,678	BCL	N
	Nickel	mg/kg	21,770	BCL	N
	Platinum	mg/kg	568	BCL	N
	Potassium	mg/kg	--	--	--

Table 1
Soil Screening Levels

Parameter of Interest	Chemical	Unit	NDEP 2013 Worker BCL or Site-Specific Screening Level[a]	Soil Screening Level Basis	BCL Basis
Metals (Continued)	Selenium	mg/kg	5,678	BCL	N
	Silver	mg/kg	5,678	BCL	N
	Sodium	mg/kg	--	--	--
	Strontium	mg/kg	100,000	BCL	max
	Thallium	mg/kg	74.9	BCL	
	Tin	mg/kg	100,000	BCL	max
	Titanium	mg/kg	100,000	BCL	max
	Tungsten	mg/kg	8,513	BCL	N
	Uranium	mg/kg	3,400	BCL	N
	Vanadium	mg/kg	5,678	BCL	N
	Zinc	mg/kg	100,000	BCL	max
Inorganic Anions	Bromide	mg/kg	100,000	BCL	max
	Chloride	mg/kg	--	--	--
	Fluoride	mg/kg	41,044	BCL	N
	Nitrate	mg/kg	100,000	BCL	max
	Nitrite	mg/kg	100,000	BCL	max
	Orthophosphate	mg/kg	--	--	--
	Sulfate	mg/kg	--	--	--
	Sulfide	mg/kg	--	--	--
Radionuclides	Radium-226	pCi/g	0.0230	BCL	C
	Radium-228	pCi/g	0.0410	BCL	C
	Thorium-228	pCi/g	0.0250	BCL	C
	Thorium-230	pCi/g	8.30	BCL	C
	Thorium-232	pCi/g	7.40	BCL	C
	Uranium-234	pCi/g	11.0	BCL	C
	Uranium-235	pCi/g	0.350	BCL	C
	Uranium-238	pCi/g	1.40	BCL	C
Asbestos	Long amphibole protocol structures	protocol structures	1 or more	Site-Specific	--
	Long chrysotile protocol structures	protocol structures	More than 5	Site-Specific	--

a - From User's Guide and Background Technical Document for Nevada Division of Environmental Protection (NDEP) Basic Comparison Levels (BCLs) for Human Health for the BMI Complex and Common Areas, Revision 12, August 2013. Values for the worker are the lower of the indoor and outdoor worker soil BCLs. Any user of Table 1 should use the most current version of the BCLs. Please check the NDEP website (at http://ndep.nv.gov/bmi/technical.htm) for the most current version of the BCLs.

b - BCL based on mixed isomer.

c - Hexachlorobenzene analyzed using both EPA Method 8270D.

d - 100 mg/kg total TPH value used for screening.

e - TCDD equivalents based on WHO 2005 TEFs for the 12 co-planer PCBs (van den Berg et al, 2006); the detection limit should be used for non-detect values.

f - Site-specific value (from NDEP, Letter to Tronox LLC re: Response to: Results of Bioaccessibility Study for Dioxin/Furans in Soil, Tronox LLC, Henderson, Nevada (Revised), May 25, 2010. (NDEP, 2010b).

g - TCDD equivalents based on WHO 2005 TEFs for the 17 dioxin and furan congeners.

h - Based on regional background concentrations as approved by NDEP on August 20, 2010 (NDEP, 2010d).

BCL = Basic comparison level
C = Cancer
N = Noncancer
NA = Not applicable
sat = soil saturation
max = risk-based value is greater than 100,000 mg/kg
-- = undefined or no value
mg/kg = milligrams per kilogram
pCi/g = picoCuries per gram
PAHs = Polycyclic aromatic hydrocarbons
PCBs = Polychlorinated biphenyls
TEF = Toxicity equivalent favor
TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin
TPH = Total petroluem hydrocarbons
SVOCs = Semi-volatile organic compounds
VOCs = Volatile organic compounds
WHO = World Health Organization

Table 2
Summary of Confirmation Sampling and Excavated Soil Sampling Requirements for ECA Soils

ECA Categories of Contaminated Soil	Definition of ECA Category	Laboratory Analysis for Confirmation and Excavated Soil Sampling[a]	Confirmation Sampling	Excavated Soil Sampling
1) Areas of Known Soil Contamination Left In-Place	Soil located in areas of known soil contamination that are being left in-place.	List of laboratory analyses required for individual ECAs included in Summary of ECAs Table in Appendix B.	• Sidewall samples will be collected from discrete locations from freshly exposed soil at a depth equal to approximately one half of the excavation depth at a minimum frequency of every 50 linear ft of sidewall excavation face. If the excavation depth is less than 2 ft, then no sidewall samples are required. • Bottom confirmation samples will be collected from excavation bottoms at discrete locations on approximately 50-ft centers for areas greater than approximately 2,500 square ft. For excavations that are less than 2,500 square ft, one bottom confirmation sample will be collected. • If visible or otherwise noticeable contamination remains at the limits of the planned excavation, then field judgment will be used to collect the confirmation samples within the visible/noticeable contamination. This procedure will document the level and location of contamination that is requested to remain in-place.	One composite sample will be collected from random locations from within every 250 cubic yards of excavated soil for the first 1,000 cubic yards and per every 1,000 cubic yards for each additional 1,000 cubic yards. Composite soil samples shall consist of at least four subsamples representative of the excavated soil. The Site Occupant may request, and the NDEP may approve, a lesser amount of samples as specified in the approved work plan.
2) Building Perimeter Soils	The top 3 inches of soil located within 10 ft of Site building footprints that is potentially impacted by lead or asbestos (i.e., adjacent to buildings known to have exterior lead paint or asbestos-containing siding).	Lead by EPA Method 6010 or 6020; & Asbestos by the EPA Method 600/R-93-116 for the determination of asbestos in bulk building materials		
3) Uncharacterized Potentially Contaminated Soils	Soil located in areas that are likely to be contaminated (e.g., underneath the Unit Buildings), but have not been previously characterized due to the presence of structures or other obstructions.	All confirmation and excavated soil samples will be submitted to a state-certified laboratory and analyzed for the full suite of analytes for Site COPCs by the following analytical methods: Metals by EPA Methods 6010 or 6020; Mercury by EPA Method 7471; Hexavalent chromium by EPA Method 7196A or 7199; Cyanide by EPA Method 9012; Perchlorate by EPA Method 314.0 or 6850; VOCs by EPA Method 8260B; SVOCs (incl. HCB and B(a)P) by EPA Method 8270D; PAHs by EPA Method 8310 or 8270D; Dioxins/Furans by EPA Method 8290; PCBs by EPA Method 8082; OCPs by EPA Method 8081A; pH by EPA Method 9045D; Inorganic anions by EPA Method 9056; Sulfide by EPA Method 9034; and Asbestos by EPA Method 600/R-93-116.		

a - For all three categories of ECA Soils, the Site Occupant may request and NDEP may approve an alternative analytical suite.

Table 3
Summary of Confirmation Sampling and Excavated Soil Sampling Requirements for Previously Unknown Contaminated Soils

Definition of Category	Laboratory Analysis for Confirmation and Excavated Soil Sampling[a]	Confirmation Sampling	Excavated Soil Sampling
Soil encountered during construction/ demolition/ development/ investigation or other soil disturbing activities that is visibly stained, discolored, shiny, or oily, or that has a noticeable solvent- or hydrocarbon-like odor that has not previously been discovered or characterized.	All confirmation samples will be submitted to a state-certified laboratory and analyzed for the full suite of analytes for Site COPCs by the following analytical methods: Metals by EPA Methods 6010 or 6020; Mercury by EPA Method 7471; Hexavalent chromium by EPA Method 7196A or 7199; Cyanide by EPA Method 9012; Perchlorate by EPA Method 314.0 or 6850; VOCs by EPA Method 8260B; SVOCs (incl. HCB and B(a)P) by EPA Method 8270D; PAHs by EPA Method 8310 or 8270D; Dioxins/Furans by EPA Method 8290; PCBs by EPA Method 8082; OCPs by EPA Method 8081A; pH by EPA Method 9045D; Inorganic anions by EPA Method 9056; Sulfide by EPA Method 9034; and Asbestos by EPA Method 600/R-93-116. All excavated soil samples will be submitted to a state-certified laboratory and analyzed for one of the following: (1) analytes required for proper disposal of the soil off-site (only if the Site Occupant intends to dispose of the soil off-site); (2) any chemicals that were identified, in the sampling performed following discovery of the previously unknown contaminated soil (see Section 4.3), as exceeding the screening levels provided in Table 1 (if the Site Occupant intends to reuse the soil as backfill); or (3) any other analytical suite approved by NDEP.	• Sidewall samples will be collected from discrete locations from freshly exposed soil at a depth equal to approximately one half of the excavation depth at a minimum frequency of every 50 linear ft of sidewall excavation face. If the excavation depth is less than 2 ft, then no sidewall samples are required. • Bottom confirmation samples will be collected from excavation bottoms at discrete locations on approximately 50-ft centers for areas greater than approximately 2,500 square ft. For excavations that are less than 2,500 square ft, one bottom confirmation sample will be collected. • If visible or otherwise noticeable contamination remains at the limits of the planned excavation, then field judgment will be used to collect the confirmation samples within the visible/noticeable contamination. This procedure will document the level and location of contamination that is requested to remain in-place.	One composite sample will be collected from random locations from within every 250 cubic yards of excavated soil for the first 1,000 cubic yards and per every 1,000 cubic yards for each additional 1,000 cubic yards. Composite soil samples shall consist of at least four subsamples representative of the excavated soil. The Site Occupant may request, and the NDEP may approve, a lesser amount of samples as specified in the approved work plan.

a - In the alternative, the Site Occupant may request and NDEP may approve an alternative analytical suite.

Table 4 Analytical Parameters for Soil Sampling for Full Suite of COPCs
Analytical Parameters
Asbestos by EPA Method 600/R-93-116
Cyanide by EPA Method 9012
Dioxins/Furans by EPA Method 8290
Hexavalent chromium by EPA Method 7196A or 7199
Inorganic anions (bromide, chloride, fluoride, nitrate as nitrate, sulfate, nitrite as N, nitrate as N, and orthophosphate as phosphate) by EPA Method 9056
Mercury by EPA Method 7471
Metals (incl. manganese dioxide and iron oxide) by EPA Methods 6010 or 6020
OCPs by EPA Method 8081A
PAHs by EPA Method 8310 or 8270D
PCBs by EPA Method 8082
Perchlorate by EPA Method 314.0 or 6850
pH by EPA Method 9045D
Sulfide by EPA Method 9034
SVOCs (incl. HCB and B(a)P) by EPA Method 8270D
VOCs by EPA Method 8260B

Table 5 Analytical Parameters for Groundwater Sampling for Dewatering Activities
Analytical Parameters
Ammonia by EPA Method 350.1 or SM 4500
Fluoride by EPA Method SM 4500F-C
Hexavalent Chromium by EPA Method 7195, 7196A, or 7199
Inorganic Anions by EPA Method 300
Metals by EPA Method 200.7 or 200.8
Perchlorate by EPA Method 314
pH by EPA Method 150.1 or 9040B or C
Phenolic Compounds by EPA Method 420.1 or 420.2
Specific Conductance (EC) by EPA Method SM 2510B
Total Dissolved Solids (TDS) by EPA Method SM 2540C
Total Organic Carbon (TOC) by EPA Method SM 5310C
Total Organic Halogen (TOX) by EPA Method 9020B or SM 5320B

Table 6 Contact Information		
Entity Name	**Address and Phone Number**	**Contact Name**
Nevada Division of Environmental Protection (NDEP) Bureau of Corrective Actions Special Projects Branch http://ndep.nv.gov/bmi/index.htm	901 S. Stewart Street, Suite 4001 Carson City, Nevada 89701 (775) 687-9332 (office)	Primary Contact: James (JD) Dotchin, Supervisor, Special Projects Branch Weiquan Dong, P.E., Special Projects Branch Secondary Contact: Greg Lovato, Bureau Chief
NDEP Bureau of Corrective Actions 24-hour Spill Reporting Hotline http://ndep.nv.gov/bca/spil_rpt.htm	1-888-331-6337 or (775) 687-9485	No specific contact name
Nevada Environmental Response Trust (NERT or the Trust)	35 East Wacker Drive, Suite 1550 Chicago, IL 60601 (312) 505-2688 (office)	Jay A. Steinberg, not individually but solely as President of the Environmental Trust Trustee
	2200 Powell Street, Suite 700 Emeryville, CA 94608 (510) 655-7400 (office)	Allan J. DeLorme, ENVIRON, Principal John M. Pekala, ENVIRON, Senior Manager
	7150 Placid Street Las Vegas, NV 89119 (702) 365-1001 (office)	Kyle Hansen, Geotechnical & Environmental Services (GES), Project Geologist
Tronox, LLC (Lessee; Site Occupant)	P.O. Box 55 Henderson, NV 89009-7000 (702) 651-2233 (office)	Fredrick R. Stater, Plant Manager – Henderson
Envirogen Technologies, Inc. (Envirogen) (Groundwater Extraction and Treatment System [GWETS] Operator)	510 4th Street Henderson, NV 89015 (702) 371-9307 (mobile)	Wendy Prescott, Project Manager

Figures

NERT

Lhoist

N

0 750 1,500 3,000

Feet

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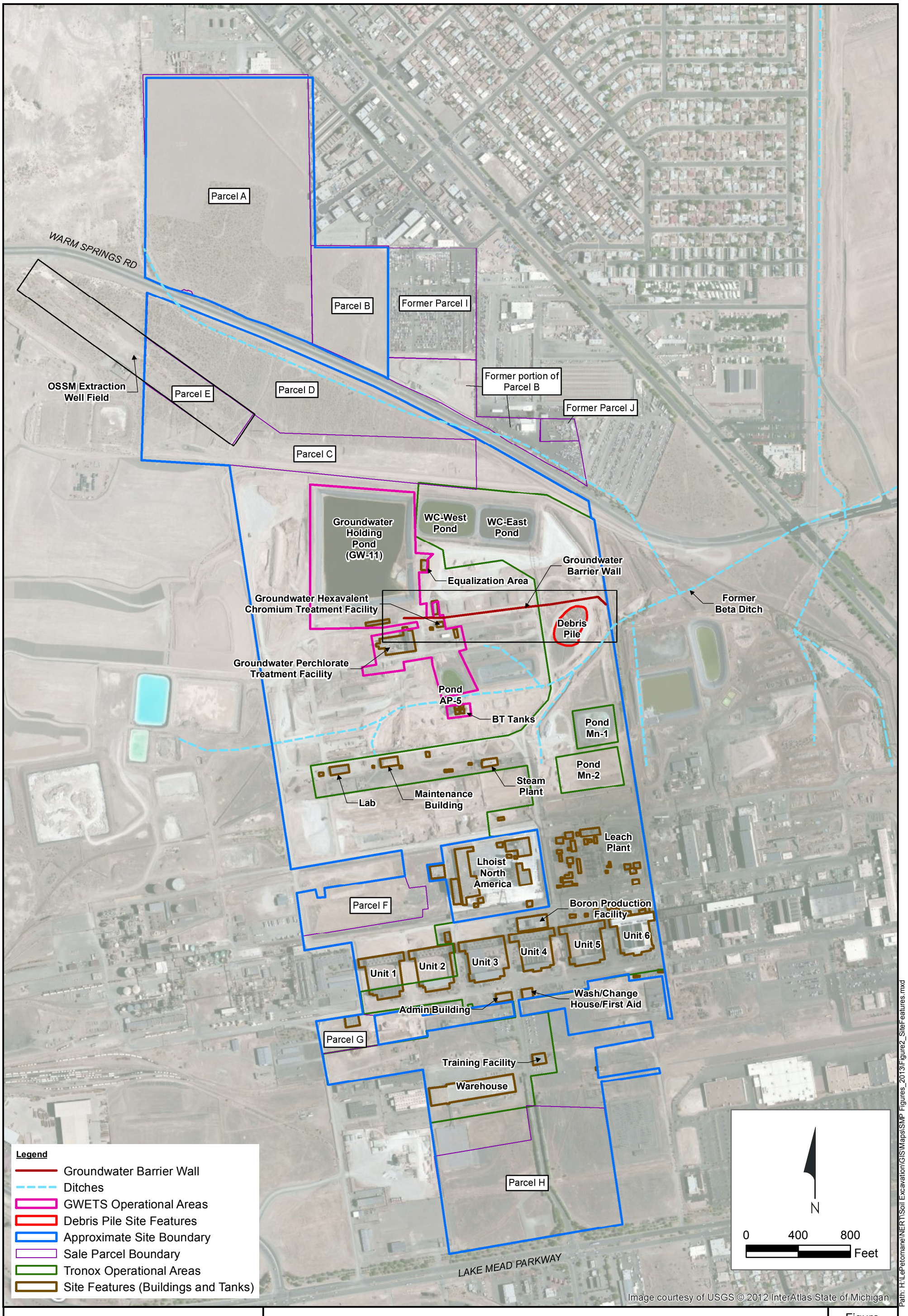
Site Location Map

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure 1

Drafter: EA Date: 10/30/13 Contract Number: 21-32100FA Approved by: Revised:

Path: H:\LePetomane\NERT\Soil Excavation\GIS\Maps\SMP Figures_2013\Figure1_Location_2013.mxd



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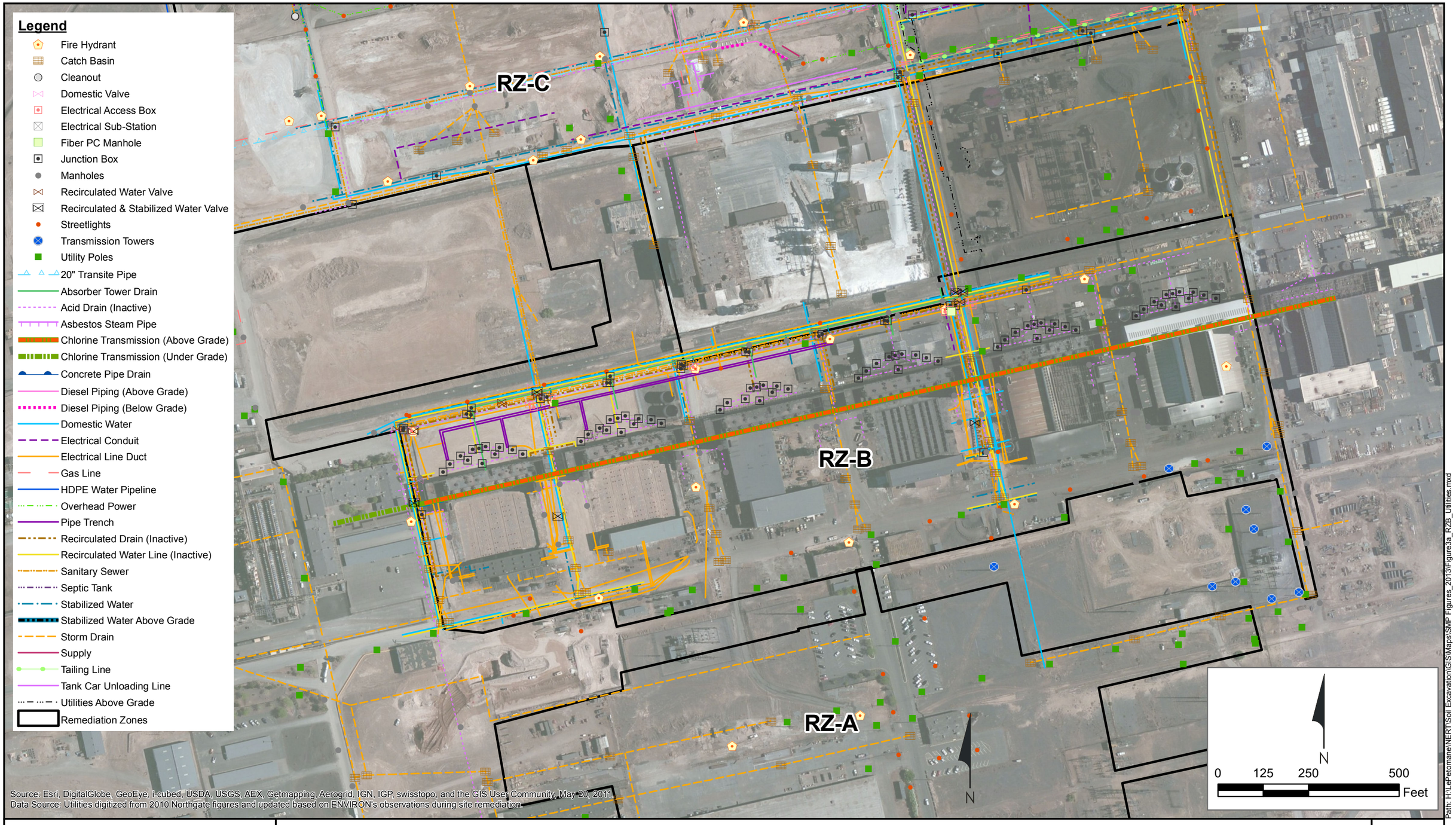
Site Features

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **2**

Drafter: EA | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: | Revised:



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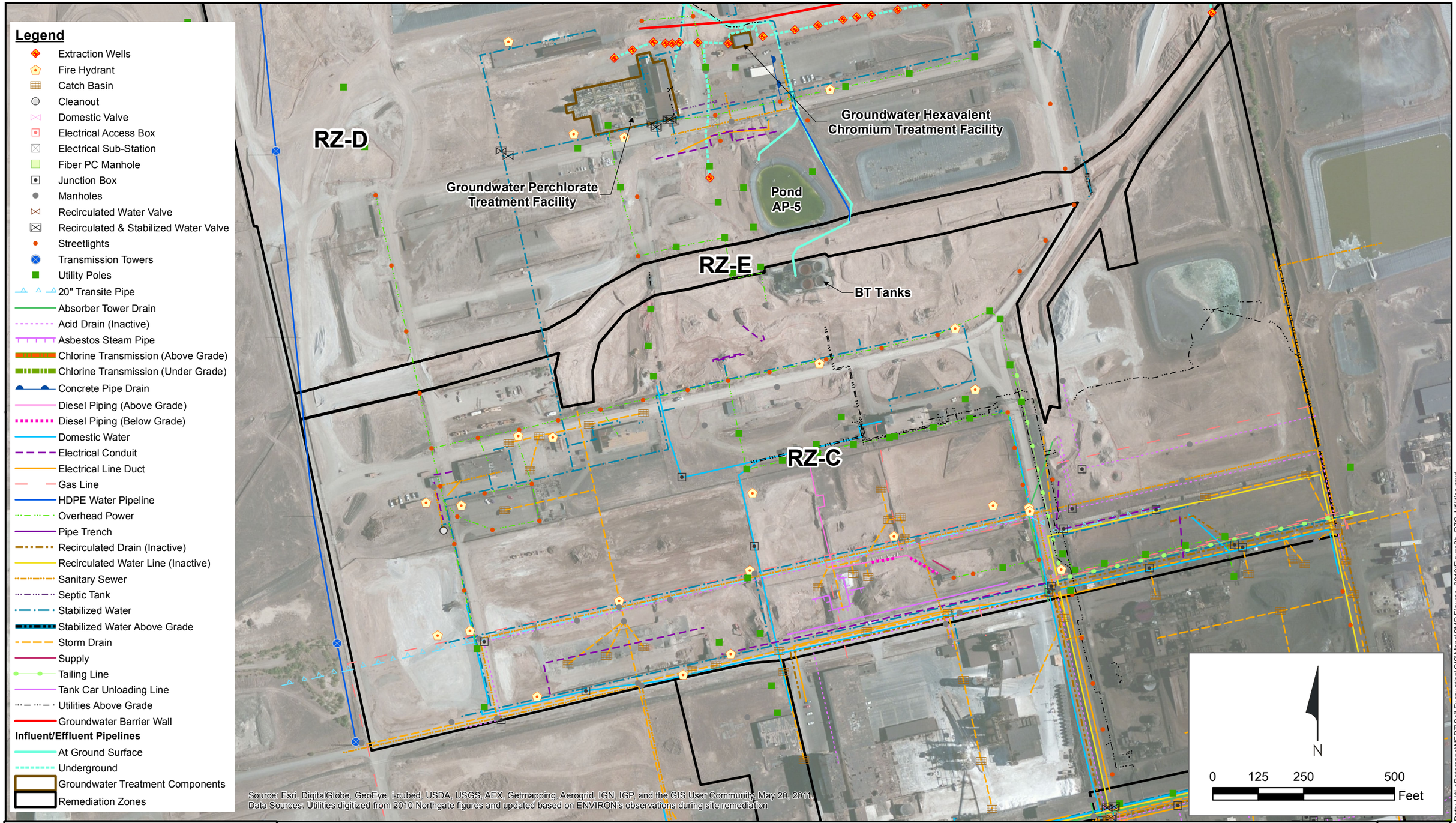
Remediation Zone B Utilities

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **3a**

Drafter: EMcC	Date: 10/30/2013	Contract Number: 21-32100FA	Approved by: DR	Revised:



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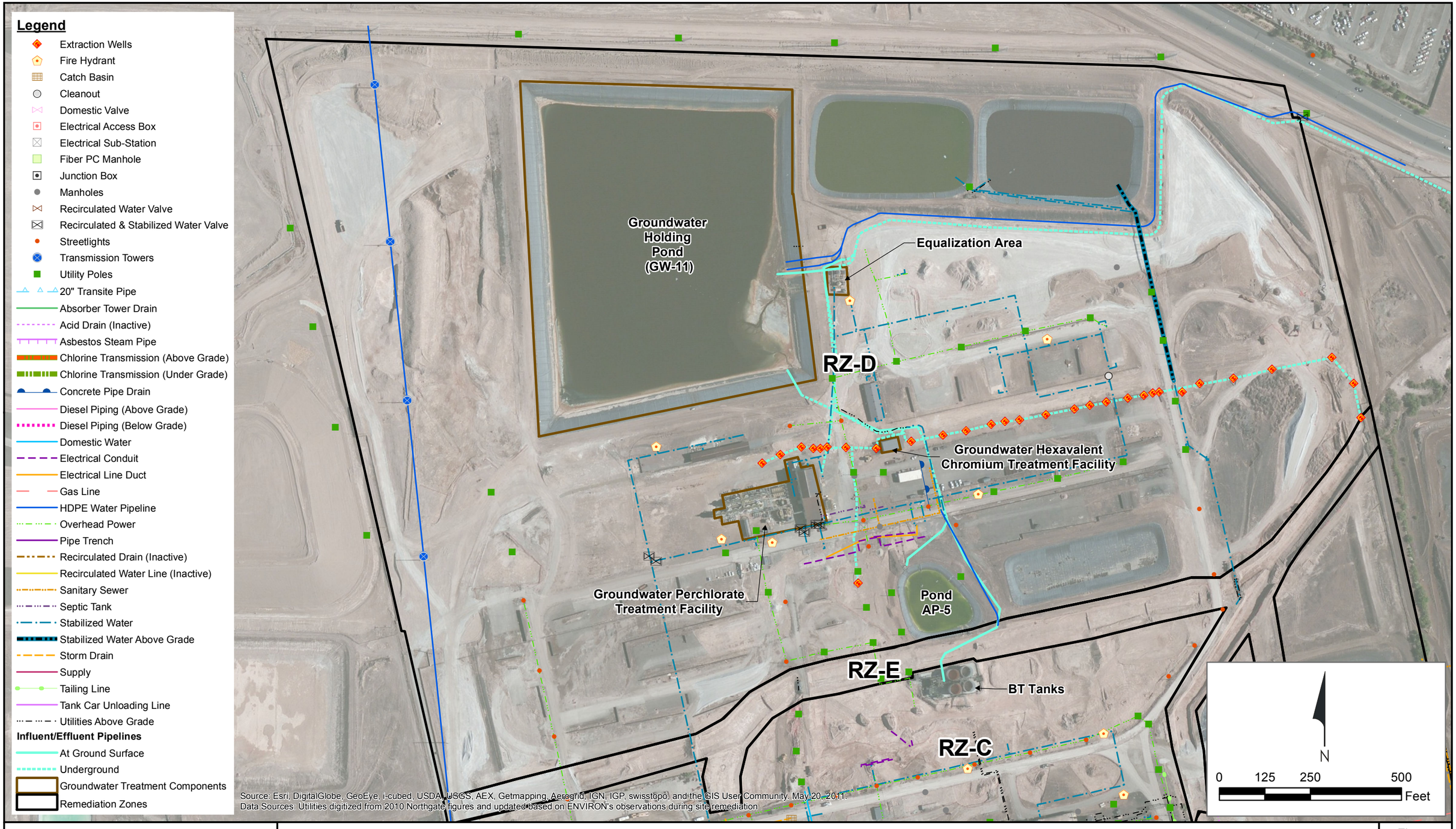
Remediation Zone C Utilities

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **3b**

Drafter: RS	Date: 10/30/13	Contract Number: 21-32100FA	Approved by: DR	Revised:



Path: H:\LePetomane\NERT\Soil Excavation\GIS\Maps\SMP Figures_2013\Figure3c_RZD_Utilities.mxd

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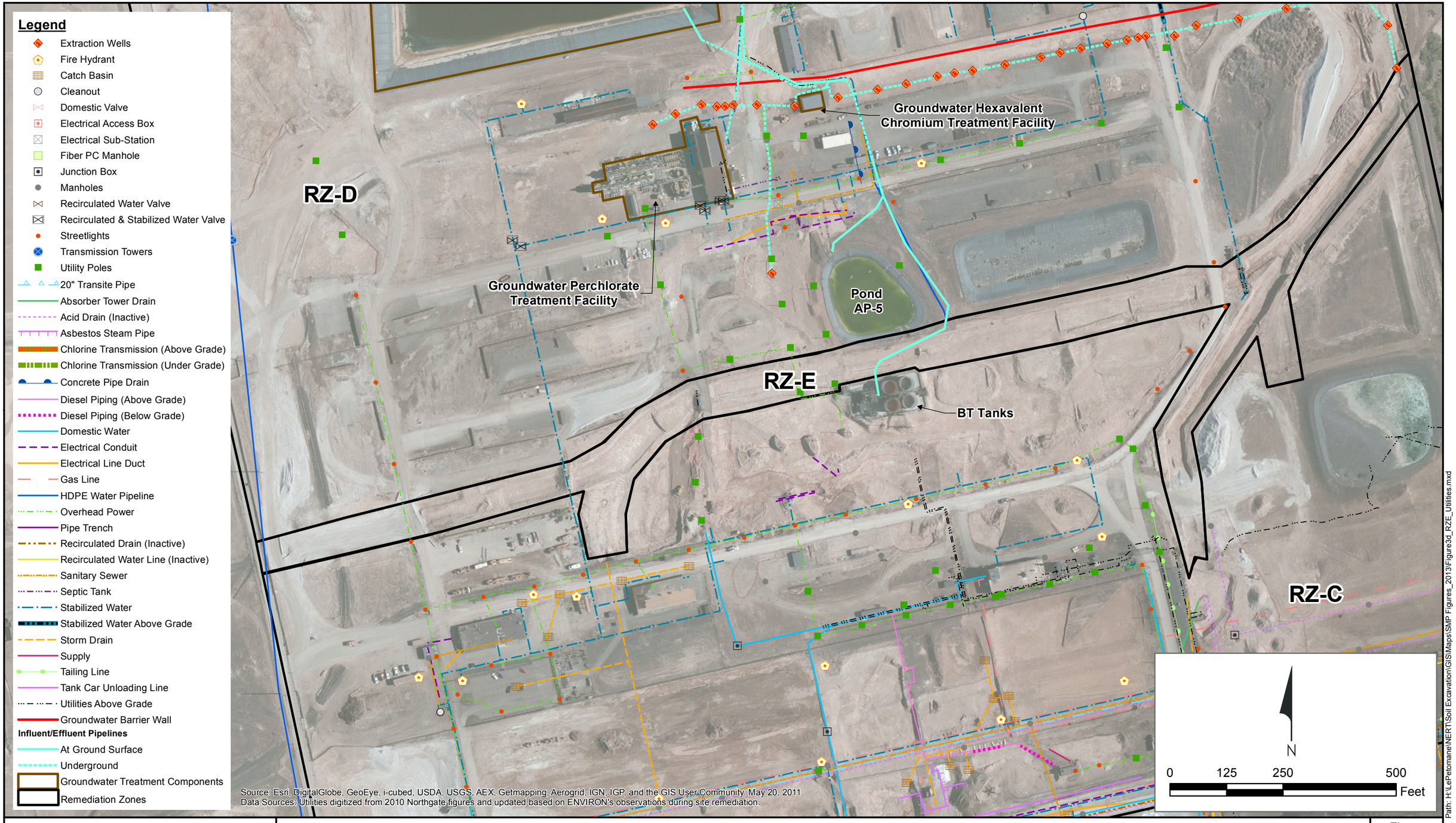
Remediation Zone D Utilities

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **3c**

Drafter: RS	Date: 10/30/13	Contract Number: 21-32100FA	Approved by: DR	Revised:



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Remediation Zone E Utilities

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **3d**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

Path: H:\LePetomane\NERT\Soil Excavation\GIS\Maps\SMP Figures_2013\Figure3d_RZE_Utilities.mxd

INSET A

SEEP WELL FIELD

INSET B

ATHENS ROAD WELL FIELD

INSET A

INSET C

INTERCEPTOR WELL FIELD

PITTMAN LATERAL

SUNSET ROAD

INTERSTATE 515

PABCO ROAD

BOULDER HIGHWAY

LAKE MEAD PARKWAY

Legend

- Abandoned
- Shallow Zone Well (Qal)
- Shallow Zone Well (Qal/UMCf)
- Shallow Zone Well (Qal/xMCf/UMCf)
- Deep Zone Well
- Middle Zone Well
- Shallow Zone Well
- Shallow Zone Extraction Well (Qal)
- Shallow Zone ExtractionWell (Qal/UMCf)
- Shallow Zone ExtractionWell (Qal/xMCf/UMCf)
- Extraction Shallow Zone Well
- Groundwater Recharge Trench
- Groundwater Barrier Wall
- Rail
- Road
- Tronox Property Boundary
- Las Vegas Wash
- Parcel

Adapted from Northgate figure from Environmental Risk Management Plan (ERMP), Tronox LLC dated December 20, 2010.

N

1:8,400
1 inch = 700 feet

0 175 350 700
Feet

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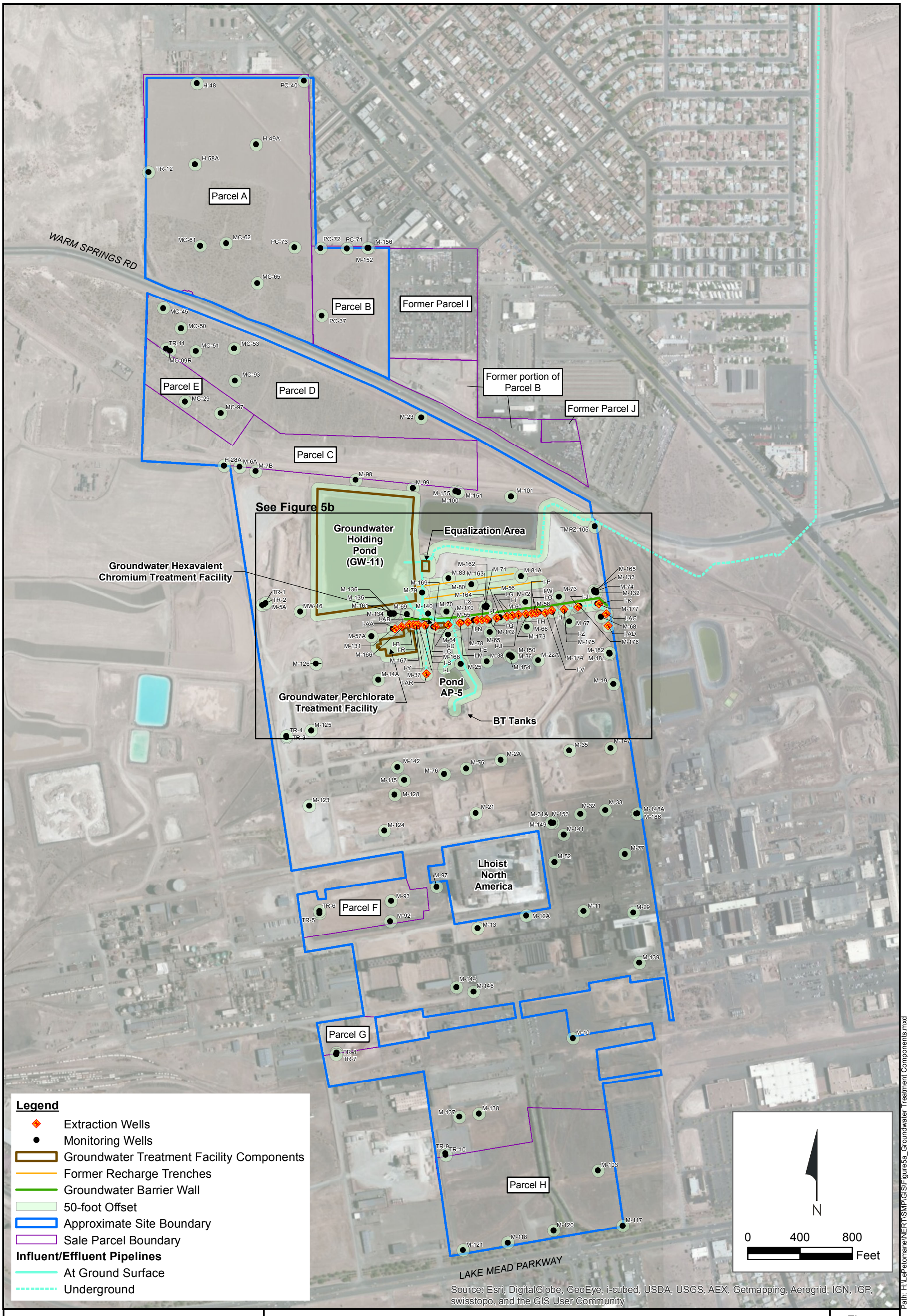
Well Locations
Nevada Environmental Response Trust Site, Henderson, Nevada

Figure
4

Drafter: RS | Date: 10/30/13 | Contract Number: 29-29100I | Approved by: | Revised:

Path: H:\LePetomane\NERT\Soil Excavation\GIS\Maps\SMP Figures\2929100I-WELLOC.AI



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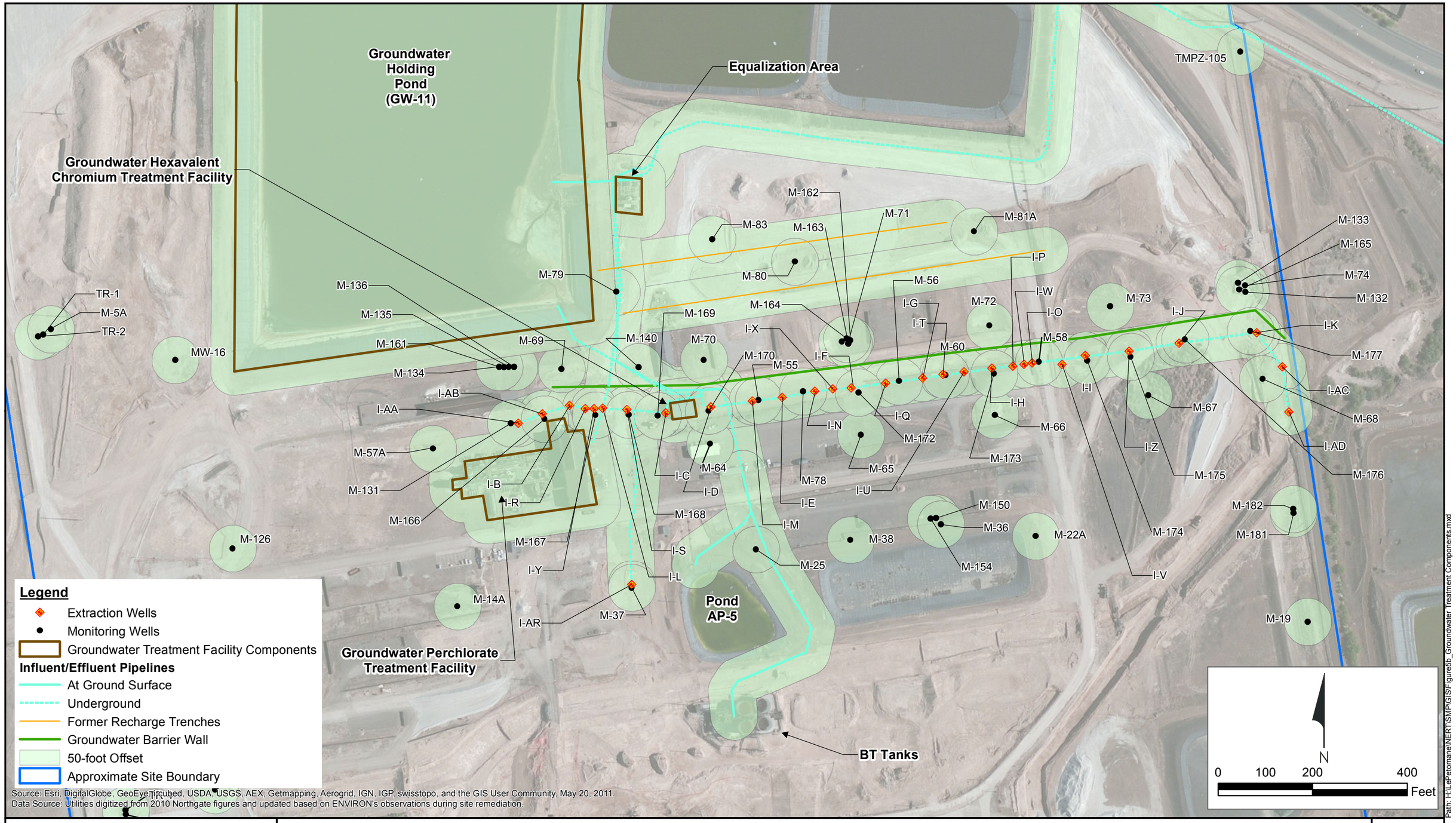
On-Site Groundwater Monitoring, Extraction, and Treatment Systems

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **5a**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: | Revised:

Path: H:\LePetomane\NERT\SMP\GIS\Figure5a_Groundwater Treatment Components.mxd



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, May 20, 2011.
Data Source: Utilities digitized from 2010 Northgate figures and updated based on ENVIRON's observations during site remediation.

Path: H:\LePetomane\NERT\SMP\GIS\Figure5b_Groundwater Treatment Components.mxd

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On-Site Groundwater Monitoring, Extraction, and Treatment Systems - Inset from Figure 5a

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **5b**

Drafter: EBL	Date: 10/30/2013	Contract Number: 21-32100FA	Approved by:	Revised:

Appendix A

Response to NDEP Comments on *Site Management Plan Nevada Environmental Response Trust Site, Henderson, Nevada* Dated September 30, 2013

NDEP Comment	Response
1. Executive Summary, page ES-2, NERT notes that there are no BCLs for asbestos and presents asbestos concentrations that are to be used for screening. Please provide a reference for the derivation of these values and the NDEP approval of this derivation. In addition, instead of referencing "fibers" NERT should reference "protocol structures" and the appropriate NDEP guidance.	ENVIRON International Corporation (ENVIRON) is not aware of the reference for the derivation of the asbestos protocol structure values or of specific Nevada Division of Environmental Protection (NDEP) approval of these values. However, these values were presented in the *Removal Action Work Plan for Phase B Soil Remediation of Remedial Zones RZ-B through RZ-E* (Northgate, 2010b) and the *Interim Soil Removal Action Completion Report* (ENVIRON, 2012a), which were approved by NDEP on August 20, 2010 and on December 17, 2012, respectively, and were used as the basis for remediation at the Site. In addition, the SMP text has been modified to reference “protocol structures” instead of “fibers”.
2. Section 4.1, Soil Management Protocols, page 13, please include a cross-reference to the figures that show the locations of the ECAs.	The SMP text has been revised to include a reference to the figures showing the locations of the Excavation Control Areas (ECAs) in Appendix B.
3. Section 4.2.1, Stockpile Management for ECA Soils, page 14, please note that the stockpiles managed on plastic sheeting have been problematic throughout the BMI Complex. Whenever practicable the NDEP would prefer the use of plastic lined roll-off containers instead of stockpiles. This is a global comment that applies to a number of sections and will not be repeated.	Sections 4.2.1, 4.3.2, 4.4.1, 4.6.1.1, and 4.6.2.1 were revised to acknowledge that plastic-lined roll-of containers should be used instead of stockpiles whenever feasible.
4. Section 4.4.1, Dust Control Measures, page 20, please provide a cross-reference to Clark County Department of Air Quality regulations as well as site-specific permit issues.	The Nevada Environmental Response Trust (NERT or the Trust) maintains Clark County Department of Air Quality (DAQ) Minor Source Permit 17249. The NERT Site (the Site) is a minor source of volatile organic compounds (VOCs) and hydrogen sulfide (H_2S). The Site’s Minor Source Permit does not specifically regulate particulate matter (PM) emissions. As required by Section 94 of the DAQ regulations (Permitting and Dust Control for Construction Activities), a Dust Control Permit is required to be obtained by the Site Occupant prior to engaging in any construction activity except in certain situations, as described in Section 4.4.1 of the revised report.

NDEP Comment	Response
5. Section 4.6.1.2, Sampling and Analysis of Stockpiles, page 23, Second Sentence, please remove "for excavations resulting in stockpiled soil less than 1,000 cubic yards" and replace with "or sampling plan as approved in the Work Plan." It is the NDEP's position that the total volume is not relevant to the amount of soil excavated and the amount of samples taken as long as the NDEP approves the work plan ahead of time. (One example would be if the entity wanted to characterize the soil in advance and get a pre-approved profile into a disposal facility and excavate directly into trucks for disposal off-site.) Please note that this is a global comment that applies to a number of sections and will not be repeated.	This comment has been addressed in the revised report in Sections 4.2.2.1, 4.2.2.2, 4.3.3, 4.6.1.2, and 4.6.2.2 and in Tables 2 and 3.
6. Section 4.6.2, Utility Projects in Non-ECA, page 23, please correct the 48 hour reference to comply with NDEP's 24-hour reporting requirements.	Sections 4.6.2 and 4.7.1 in the revised report were updated as requested.
7. Section 4.6.3, Documentation of Actions Taken, page 24, please modify the time frame that the report is submitted to the NERT and the NDEP from 30 days to 45 days. Some specific analytical results would make the 30 day requirement unreasonable and may result in numerous extension requests.	The requested change was made in Sections 4.5 and 4.6.3 in the revised report.
8. Section 4.6.3, Documentation of Actions Taken, page 24, third bullet, please replace Surveyed with GPS to allow flexibility in how the limits of the excavation are confirmed.	The requested change was made in Sections 4.5 and 4.6.3 in the revised report.
9. Section 4.6.3, Documentation of Actions Taken, page 24, fourth bullet, please replace "data validation reports" with laboratory quality control reports. Data validation reports suggest DVSR and this is not the intent here.	The requested change was made in Sections 4.5 and 4.6.3 in the revised report.
10. Section 4.6.3, Documentation of Actions Taken, page 24, fifth bullet, please add "if applicable". If soils are to be taken off site soil screening levels may not be sampled for and this may not be necessary.	The requested change was made in Sections 4.5 and 4.6.3 in the revised report.

NDEP Comment	Response
11. Section 5.1, Reducing the Potential for Creating Conduits to Groundwater During Deep Construction Activities, page 27, please clarify the protectiveness of a cast in place foundation of concrete (which is permeable) versus sub-slab depressurization or vapor barriers. It is suggested that NERT consider the use of sub-slab depressurization or vapor barriers in areas of the site with elevated soil gas concentrations.	This comment has been addressed in Section 5.1 of the revised report.
12. Section 5.3.5, Accidental Releases of Untreated Groundwater, page 29, NERT proposes a 50-foot offset from all remediation components. It is suggested that a map be developed which shows the location of these components and the offset.	Figure 5 was added to the revised deliverable, which shows the 50-foot offset from all on-site components of the groundwater monitoring, extraction, and treatment systems including all on-site monitoring and extraction wells.
13. Figures 3a - 3d, the location of the remediation system components is not evident on these figures, see also comment above.	All components of the groundwater extraction and treatment systems were added to Figures 3b, 3c, and 3d. For clarification, none of the components of the groundwater extraction and treatment system are located within the extent of Figure 3a.

Appendix B

Summary of Excavation Control Areas (ECAs)

Summary of Excavation Control Areas (ECAs): Areas of Known Soil Contamination Left In-Place and Uncharacterized Potentially Contaminated Soils

Nevada Environmental Response Trust Site
Henderson, Nevada

Prepared for:
Nevada Environmental Response Trust

Prepared by:
ENVIRON International Corporation
Emeryville, California

Date:
October 2013

Project Number:
21-32100FA

ENVIRON

Contents

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1.0 Introduction

This report provides a summary of areas where known impacted soil has been left in-place and areas where uncharacterized potentially contaminated soils might be located at a 410-acre site in unincorporated Clark County, surrounded by the City of Henderson, Nevada (the Site). These areas have been designated as Excavation Control Areas (ECAs).

The Site was previously owned and operated by Tronox LLC (Tronox). Prior to Tronox, the Site was owned and operated by Kerr McGee Chemical LLC. The Site is currently owned by the Nevada Environmental Response Trust (the Trust), which was created in conjunction with the settlement of Tronox's bankruptcy proceeding on February 14, 2011.

2.0 Excavation Control Areas (ECAs) With Known Contamination Left In-Place

2.1 Soil Screening Levels

Chemicals of potential concern (COPCs) in Site soils include perchlorate, asbestos, metals (including arsenic), hexavalent chromium, dioxin/furans, volatile and semi-volatile organic compounds (VOCs and SVOCs), polycylic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), organochlorine pesticides (OCPs), and others. Site-specific soil screening levels (including Nevada Division of Environmental Protection [NDEP] worker Basic Comparison Levels [BCLs][1] for most COPCs, as well as screening levels based on other criteria for arsenic, asbestos, and dioxins/furans, as described below) have been developed for the Site (see Table 1 of SMP).

As explained in the *Removal Action Work Plan for Phase B Soil Remediation of Remedial Zones RZ-B through RZ-E (RAW), Tronox LLC, Henderson, Nevada,* revised May 28, 2010 (Northgate, 2010b), for purposes of designating potential remediation areas, "contaminated" soil is generally defined as concentrations exceeding NDEP worker BCLs, or modified risk-based goals as approved by NDEP. For metals where background concentrations exceed NDEP BCLs (e.g., arsenic), "contaminated" soil is defined as concentrations greater than background. A target remediation goal of 7.2 milligrams per kilogram (mg/kg) for arsenic was approved by NDEP on August 20, 2010 (NDEP, 2010d) in response to Tronox's August 13, 2010 errata to the RAW (Northgate, 2010b). There are no NDEP BCLs for asbestos; therefore, "contaminated" soil is defined as one, or more, long amphibole protocol structures and greater than five long chrysotile protocol structures counted per sample, which were the criteria used in the NDEP-approved RAW (Northgate, 2010b) and in the *Interim Soil Removal Action Completion Report* (ENVIRON 2012a). Based on the bioavailability study, NDEP has approved a Site-specific soil screening level for dioxins/furans (as 2,3,7,8-tetrachlorodibenzo-p-dioxin toxicity equivalents [2,3,7,8-TCDD TEQ]) of 2,700 parts per trillion (ppt) (NDEP, 2010b,c).

2.2 Discolored Soil

During soil remediation activities performed in 2010-2011, areas with discolored soil were encountered and investigated. Based on discolored soil characteristics and analytical testing results, most encountered discolored soils were excavated and disposed off-site. Some discolored soils with known or suspected concentrations of COPCs above soil screening levels remain in place at the Site due to their location beneath or in close proximity to operational structures, features, or utilities; therefore, ECAs have been established in these areas. In areas with discolored soil with reported concentrations of COPCs below soil screening levels, ECAs have not been established.

[1] The soil screening levels in Table 1 are the current August 2013 BCLs, the NDEP-approved Site-specific comparison level for dioxins/furans, NDEP-approved background levels, and the criteria used as the basis for asbestos remediation of the Site. If, in the future, any of these comparison levels change, the soil screening levels in Table 1 will be updated to reflect the most current comparison levels. At all times, the most recent version of the BCLs, which can be found on the NDEP website (http://ndep.nv.gov/bmi/technical.htm) should be used.

2.3 Reasons for Establishing ECAs

The ECAs summarized in this report have been established in areas of the Site where existing infrastructure or facility operations preclude the removal (excavation) of contaminated soil.

The reasons for establishing ECAs at the Site are generally as follows:

- Contaminated and/or discolored soil areas are located beneath existing operational structures, and it is technically infeasible or cost prohibitive to access these areas for excavation.
- Contaminated and/or discolored soil areas are located in close proximity to utilities or other Site features (e.g., the active pond berms), and excavating soil in these areas poses a potential safety hazard and/or could result in damage to the utilities/features.
- Soil with unknown conditions and/or limited analytical test results is located beneath existing operational structures or facilities, and it is technically infeasible or cost prohibitive to access these areas for investigation and/or excavation.

In addition, the excavation program conducted at the Site generally has not addressed vadose zone soils at depths greater than ten feet below ground surface (ft bgs). Therefore, vadose zone soils across the Site at depths greater than 10 ft below original grade are identified as an ECA.

2.4 Decision Rules for Establishing the Extent of ECAs

The following set of general decision rules was developed to determine the lateral and vertical extent of the ECAs during and post-excavation. The decision rules were used as a guideline and were modified as necessary based on field conditions.

1. Excavations will be limited such that all active utility lines will be protected (unless known to be out of service, all utility lines are assumed to be active);
2. Excavations will not be within 5 ft of water lines;
3. Excavations will not be within 2 ft of all other active utility lines;
4. Excavation will not be within 12 ft of the center line of active railroad lines. Excavations beyond this point shall be sloped 3:1 (horizontal to vertical) to the bottom of the excavation;
5. Excavations that are 3 ft deep or less will have vertical sides except where they are supporting utilities, in such case the ground will be sloped 1:1;
6. Excavations that are deeper than 3 ft will have a 1:1 slope, unless otherwise noted; and
7. Excavations next to concrete foundations or footings will be sloped 2:1, starting below the top of the foundations.

The above decision rules are based on the following:

- Temporary construction sloping of 1:1 is based on field observations of native material stability;
- The setback from water lines was established through discussions with Basic Management Incorporated (BMI) staff;
- The setback from the railroad tracks was developed from standard setback requirements for shoring established by Union Pacific Railroad.
- Setbacks from all other utility lines is based on engineering judgment; and
- Slopes in the area of footings are based on common geotechnical engineering principals.

2.5 Overview of ECAs

The ECAs for the Site are identified in Table B-1 and Figures 1 through 6. It would be technically infeasible or cost-prohibitive to remediate most of these areas because they are generally located beneath existing operational facilities/roadways or within critical utility corridors where excavation would be unsafe and/or would likely damage utilities. Note that there are no ECAs north of the GW-11 and WC ponds.

Table B-1 lists the Remediation Zones (RZs) that are associated with the proposed ECAs and provides a summary of: 1) the rationale for proposing each ECA; 2) the engineering controls currently in place; 3) sampling locations relevant to each ECA; 4) Letter of Understanding (LOU) areas relevant to each ECA; 5) expected depths of contamination; 6) a brief summary of discolored soil characterization results; 7) chemicals of potential concern (COPCs)[2]; and 8) minimum required analyses. Text describing each of the ECAs is provided below. Figures 1 through 5d show the locations of each of the ECAs on the Site, as well as soil sample locations where pertinent data has been collected for characterization of impacted soils within ECAs. Figures 6a/6b show which LOU areas are relevant to each ECA. Attachment A contains correspondence and a diagram regarding NV Energy utility requirements. Packets of documentation relating to LOU Areas I through IV are provided in Attachments B through E, respectively. Tables summarizing analytical results for all soil samples collected from the Site are included in Attachment F. An executable table of results for soil samples remaining on the Site is included in Attachment G.

2.6 Description of ECAs in RZ-B

2.6.1 ECA #B1: Unit Buildings 1 through 6, Including Soil within 50 ft of Unit Buildings 1 through 6

ECA #B1 includes soil beneath the entire building footprint of Unit Buildings 1 through 6, as well as soil within 50 ft of Unit Buildings 1 through 6 (Figure 2). The unit buildings themselves and adjacent pavement, where present, provide an engineering control, capping the soil and preventing or greatly limiting the potential for contact with contaminated soil in the majority of the ECA. In addition, access to portions of this ECA near Unit Buildings 1 and 2 is restricted with fencing and locked gates.

[2] The COPC list in Table B-1 was compiled using the packets of documentation relating to LOU Areas I through IV (provided in Attachments B through E) existing soil data within each ECA.

Unit Building 1

Unit Building 1 currently supports the high-pressure chlorine line used by the Titanium Metals Corporation (TIMET) facility. Because of the building obstruction, characterization of soils beneath the building footprint has not been performed, and soils beneath the building footprint, including portions of excavation polygons RZ-B-01, -04A, -04B, -04C, and -14, which extend under the footprint of Unit Building 1, cannot be excavated.

Unit Building 2

Unit Building 2 currently supports the high-pressure chlorine line used by the TIMET facility. Because of the building obstruction, characterization of soils beneath the building footprint has not been performed, and soils beneath the building footprint, including portions of excavation polygons RZ-B-06, -06A, and -07B, which extend under the footprint of Unit Building 2, cannot be excavated. A portion of ECA #B4 (Former Hazardous Waste Storage Area) overlaps with ECA #B1 near the northeastern corner of Unit Building 2.

Unit Building 3

Unit Building 3 is currently used for chlorine line support, Tronox Facility engineering offices, and includes an electrical substation. Because of the building obstruction, characterization of soils beneath the building footprint has not been performed, and soils beneath the building footprint, including a portion of excavation polygon RZ-B-12, which extends under the footprint of Unit Building 3, cannot be excavated. A portion of ECA #B5 (Sodium Chlorate Filter Cake Process Area) overlaps with ECA #B1 in the northeastern corner of Unit Building 3.

Unit Building 4

Unit Building 4 is currently used for chlorine line support, storage of materials associated with the Tronox Facility Boron Plant, the Tronox Advanced Battery Manufacturing Process, and includes an electrical substation. Because of the building obstruction, characterization of soils beneath the building footprint has not been performed and soils beneath the building footprint cannot be excavated. A portion of ECA #B6 (Soils Beneath Approximately 6 Ft Deep in Polygons RZ-B-20 and -21) overlaps with ECA #B1 near the eastern portion of Unit Building 4.

Unit Building 5

Unit Building 5 is currently used for chlorine line support and Tronox Facility operations. Because of the building obstruction, characterization of soils beneath the building footprint has not been performed and soils beneath the building footprint cannot be excavated.

Unit Building 6

Unit Building 5 is currently used for chlorine line support and Tronox Facility operations. Because of the building obstruction, characterization of soils beneath the building footprint has not been performed and soils beneath the building footprint cannot be excavated.

Soils Within Approximately 50 Ft of Unit Buildings

Soils within approximately 50 ft of all six Unit Buildings are included within ECA B1 since characterization of these soils is limited and since remedial excavation could not be performed immediately adjacent to Unit Building structures due to concerns about building structural support.

2.6.2 ECA #B2: Portion of Polygons RZ-B-04C/05/09A/11/12/13 Extending into Avenue G

There are various active and inactive utility lines that run beneath Avenue G, north of the Unit Buildings, including sanitary sewer, storm drain, domestic water, and various other lines. Many of these utilities are active. The portions of polygons RZ-B-04C, -05, -09A, -11, -12, and -13 in the vicinity of these utilities beneath Avenue G are included in ECA #B2, as shown on Figure 2. Because of the fragility of some of the older utility lines in this area, soil has not been excavated within a minimum of 5 ft of the lines as described in Section 2.4 of this report. The asphalt pavement (Avenue G) provides an engineering control for ECA #B2, preventing or greatly limiting the potential for contact with contaminated soil.

2.6.3 ECA #B3: Fire Hydrant

A fire hydrant is located along 7th Street, just south of Avenue G. Since the hydrant is active, the hydrant itself, and soils in the immediate vicinity have not been removed, including portions of polygon RZ-B-11. This portion of RZ-B-11 is included in ECA #B3, as shown on Figure 2. The asphalt pavement (7th Street) provides a partial engineering control for ECA #B3, limiting the potential for contact with contaminated soil.

2.6.4 ECA #B4: Former Hazardous Waste Storage Area

The former hazardous waste storage area is beneath two tanks and a membrane-lined containment area currently used by Tronox. Soils beneath the former hazardous waste storage area include portions of RZ-B-07A, -08, -09, and -10 all of which have been excavated to the extent possible without risking damage to the membrane. This area has been designated as ECA #B4, as shown in Figure 2. The former hazardous waste storage area is overlain by high density polyethylene sheeting for containment of tank contents. This sheeting provides an engineering control, preventing or greatly limiting the potential for contact with contaminated soil.

2.6.5 ECA #B5: Sodium Chlorate Filter Cake Process Area

The sodium chlorate filter cake process area is part of the Manganese Dioxide process operations. The concrete slab for the process area is approximately 52’ x 46’ x 12” thick. The slab is underlain by 2” of sand and a 20 mil membrane. The entire slab, including a portion of excavation polygon RZ-B-13 within the slab area, is designated as ECA #B5, as shown on Figure 2. RZ-B-13 has been excavated to the edge of the slab, with minimal setback and a near vertical slope. One confirmation sample (SSAQ6-02) was collected from the bottom of the excavation area where a discolored soil layer extended beneath the slab. The sample was analyzed for dioxins/furans, SVOCs, arsenic, manganese, and magnesium. The results indicated that concentrations of arsenic and benzo(a)pyrene (B(a)P) were above soil screening levels. The concrete slab and underlying membrane provide an engineering control, preventing or greatly limiting the potential for contact with contaminated soil.

2.6.6 ECA #B6: Soils Beneath Approximately 6 Ft Deep in Polygons RZ-B-20 and RZ-B-21

Access for excavation of soils beneath 6 ft (and to the surface east of an active Tronox water line) within excavation polygons RZ-B-20 and -21 was limited by the presence of several active

subgrade utilities, including water, storm drain, and electrical lines. These utilities are located at depths of less than 6 ft. Remedial excavation was performed to 6 ft deep, with temporary supports for some of the utility lines; however, deeper excavation could not be performed without compromising the utility lines. The portions of RZ-B-20 and -21 in the vicinity of these utilities are included in ECA #B6, as shown on Figure 2. The asphalt pavement for 9th Street and a minimum of 6 ft of clean backfill material provides an engineering control for ECA #B6, preventing or greatly limiting the potential for contact with contaminated soil.

2.6.7 ECA #B7: Soils within Polygon RZ-B-22

Access for excavation of soils within excavation polygon RZ-B-22 is limited by the presence of subgrade utilities, building foundation, and other surface features. Excavation polygon RZ-B-22 is included in ECA #B7, as shown on Figure 2. Asphalt pavement for Avenue H covers most of the area and provides an engineering control for ECA #B7, preventing or greatly limiting the potential for contact with contaminated soil.

2.7 Description of ECAs in RZ-C

2.7.1 ECA #C1: Portions of RZ-C-01/01A Beneath 4th Street

Access to excavation of soils within portions of excavation polygons RZ-C-01 and -01A is limited by the presence of an existing roadway (4th Street), which is in use and cannot be removed. Therefore, the portions of RZ-C-01 and -01A beneath 4th Street are included in ECA #C1, as shown on Figure 3. Asphalt pavement for 4th Street provides a partial engineering control for ECA #C1, preventing or greatly limiting the potential for contact with contaminated soil.

2.7.2 ECA #C2: Portions of RZ-C-03/04/05A Beneath 5th Street

Access to excavation of soils within portions of excavation polygons RZ-C-03, -04, and -05A is limited by the presence of an existing roadway (5th Street), which is in use and cannot be removed. Therefore, the portions of RZ-C-03, -04, and -05A beneath 5th Street are included in ECA #C2, as shown on Figure 3. Asphalt pavement for 5th Street provides a partial engineering control for ECA #C2, preventing or greatly limiting the potential for contact with contaminated soil.

2.7.3 ECA #C3: Portion of RZ-C-06 Beneath Fire Hydrant and Utilities Along Avenue F

There are four active utility lines and a fire hydrant that run beneath Avenue F in the vicinity of RZ-C-06, including domestic and stabilized water lines, a sanitary sewer line, and a storm drain line. Excavation in RZ-C-06 extended to a depth of 9 ft bgs with a slope of 1:1 along the southern side of the polygon excavation. The portion of RZ-C-06 in the vicinity of these utilities beneath Avenue F is included in ECA #C3, as shown on Figure 3. The asphalt pavement for Avenue F provides a partial engineering control for ECA #C3. Clean imported backfill material was placed to create a 3:1 slope and orange snow fencing was used as a visual demarcation between the clean backfill material and impacted soil below. The clean backfill material provides a further engineering control, preventing or greatly limiting the potential for contact with contaminated soils.

2.7.4 ECA #C4: Concrete Foundation

Access to excavation of soils within portions of excavation polygons RZ-C-06 and -09B is limited by the presence of a concrete foundation. Therefore, the portions of RZ-C-06 and -09B beneath the foundation are included in ECA #C4. The soils beneath the concrete foundation have not been characterized, so in addition to the portions of RZ-C06 and -09B beneath the foundation, the remainder of the concrete foundation area is also included in ECA #C4, as shown on Figure 3. The concrete foundation provides an engineering control for ECA #C4, preventing or greatly limiting the potential for contact with contaminated soil.

2.7.5 ECA #C5: Water, Fiber Optic, and Electric Utility Lines Through and Near RZ-C-11/13

Access to excavation of soils within and adjacent to portions of excavation polygons RZ-C-11 and -13 is limited by the presence of active subsurface utilities, including water and fiber-optic utility lines. A portion of polygon RZ-C-11 was excavated to approximately 6 ft deep around the utilities and the area was backfilled with clean imported soil; however, portions of RZ-C-11 and -13, as well as discolored soils deeper than the original excavation depth of polygon RZ-C-13, were not excavated. One excavation extent (EE-C13-1) sample was collected within the black layer remaining in the southeastern sidewall of RZ-C-13 on June 20, 2011. This sample was analyzed for hexachlorobenzene (HCB), SVOCs/PAHs, arsenic, and manganese. Results indicated that the concentrations of these constituents were below the soil screening levels, with the exception of HCB. Therefore, the portions of RZ-C-11 and -13 in the vicinity of these utilities, including where discolored soils are known or suspected to be present, are included in ECA #C5, as shown on Figure 3. Clean imported backfill material in the northern portion of the ECA provides a partial engineering control.

2.7.6 ECA #C6: Discolored Soil at Former Pump House Yard

During excavation activities, discolored soil from the ground surface to a depth of at least 10 ft was discovered in the area of the former pump house yard. An excavation extent sample was collected from the soil that remained within the eastern sidewall of RZ-C-15 under the former pump house yard (EE-C15-1). The sample was analyzed for HCB, SVOCs/PAHs, arsenic, and manganese. The results for this sample indicated concentrations of these constituents were below soil screening levels. However, an additional excavation extent sample was collected from the sidewall of RZ-C-24, also within the former pump house yard. The sample was analyzed for HCB, SVOCs/PAHs, arsenic, and manganese. The results for this sample indicated that arsenic was present at a concentration above the soil screening level. Because of the extent and depth of the discolored soil and the limited access in this area due to facility perimeter fencing and former pump house yard utilities, this area is designated as ECA #C6, as shown on Figure 3. Perimeter fencing surrounding this area provides a partial engineering control for ECA #C6, preventing or greatly limiting the potential for contact with contaminated soil.

2.7.7 ECA #C7: Avenue F Utilities, Railroad Line, and Roadway

The road into the Lhoist (formerly Chemstar) plant (Avenue F) is active and used by trucks entering and exiting the plant, and excavation in the road would limit use of the road by Lhoist. Lhoist hauls 24 hours a day, five days a week. In addition, there are several utility lines that run

beneath Avenue F, including domestic and stabilized water lines, a sanitary sewer line, electrical conduits, a storm drain line, and others. Many of these utilities are active and will not be removed. The water line is extremely fragile with a high potential to break due to construction activities. Additionally, two railroad lines run through a portion of RZ-C-13A. The southern-most railroad line is active.

The extent of ECA #C7 is shown on Figure 3. Access to excavation of soils within portions of excavation polygons RZ-C-09B, -12, -13, -13A, -14, -15, -24, -26, and -27 is limited by the presence of Avenue F and nearby utilities and rail lines. Accessible discolored soils were removed from the excavation area north of Avenue F; however, discolored soil remains in place in the southern excavation sidewall and likely extends beneath Avenue F. Two excavation extent samples (EE-C24-1 and EE-C24-2) were collected from the sidewall along Avenue F and the sidewall of the former pump house yard on June 23 and 30, respectively. These samples were analyzed for HCB, SVOCs/PAHs, arsenic, and manganese. Arsenic was detected at a concentration above the soil screening level.

Four excavation extent samples (EE-C27-1, EE-C27-2 and duplicate EE-C27-4, and EE-C27-3) were collected from the sidewalls and bottom of the excavation area underneath the diesel fuel line, gas line, and Avenue F on June 16, 2011. These samples were analyzed for arsenic, lead, manganese, and perchlorate. Arsenic and lead were detected at concentrations above soil screening levels in EE-C27-1. Arsenic was detected at a concentration above the soil screening level in EE-C27-2 and duplicate EE-C27-4.

Two discolored soil samples (DS-C24-1 and duplicate DS-C24-2) were collected from a gray/white layer found near the top of the southern sidewall of RZ-C-24 adjacent to ACM pipes and under Avenue F on May 4, 2011. These samples were analyzed for HCB, SVOCs/PAHs, arsenic and manganese. Results from these samples indicated that the concentrations of these constituents were below soil screening levels, with the exception of B(a)P.

Clean imported backfill material was placed in this area and orange snow fencing was used as a visual demarcation between the clean backfill material and impacted soils below. The clean backfill material; Avenue F, which is paved with asphaltic concrete; the pavement adjacent to the road; and the railroad tracks provide engineering controls for the majority of the ECA #C7, preventing or greatly limiting the potential for contact with contaminated soil.

2.7.8 ECA #C8: 9th Street Utilities and Roadway

There are a variety of utility lines that run beneath and above 9th Street in the vicinity of RZ-C-22A and -22B including a gas line, a sanitary sewer line, a water line, a tailing line, and an overhead power line, all of which are active. Excavation in these areas would encounter these utility lines. Therefore, soils beneath the 9th Street roadway and in the vicinity of these utilities, including portions of RZ-C-22A and -22B and areas outside these polygons where discolored soil was observed, are included in ECA #C8, as shown on Figure 3. 9th Street and the pavement adjacent to the road provide an engineering control for ECA #C8, preventing or greatly limiting the potential for contact with contaminated soil.

2.7.9 ECA #C9: Diesel Tank and Pipelines

An aboveground diesel tank and associated pipelines provide the emergency fuel source for the Tronox Facility steam plant. The diesel tank is serviced by two pipelines (an inlet and an outlet). A portion of one of these lines is below ground. Portions of excavation polygons RZ-C-19, -22, -23 and -27 extend in the vicinity of the pipelines or underneath the diesel tank containment structure. Therefore, portions of these excavation polygons cannot be excavated and are included in ECA #C9, as shown on Figure 3. In addition, discolored soil was observed beneath the tank and pipelines. Initially, Northgate collected a discolored soil sample (SSAO5-09) of gray/black shaly, peat-like material on February 11, 2011. The sample was analyzed for dioxins, SVOCs, arsenic, manganese, magnesium, and asbestos. Results from SSAO5-09 indicated concentrations of HCB, arsenic, and magnesium were above soil screening levels for these constituents. During the excavation of the area, ENVIRON collected a characterization sample from a black layer under the diesel tank and analyzed the sample for dioxins, SVOCs/PAHs, arsenic, lead, cobalt, manganese, magnesium, and perchlorate. Results indicated that concentrations of arsenic, lead, and manganese were above soil screening levels. Additional samples DS-C19-1, EE-C23-1, and EE-C20-1 were also collected from this area and indicated concentrations of arsenic, lead, and perchlorate were above soil screening levels, and sample DS-C23-1 also collected from this area indicated concentrations of arsenic, lead, and manganese were above soil screening levels. In addition, on April 20, 2011, ENVIRON collected a discolored soil sample (DS-C10-1) from the gray/black shaly layers within the east sidewall of RZ-C-10. The sample was analyzed for dioxins/furans, HCB, arsenic, lead, cobalt, manganese, magnesium, and perchlorate. Results indicated that concentrations of HCB, magnesium, and perchlorate were above soil screening levels for these constituents. Discolored soil within the accessible areas on both sides of the diesel fuel pipelines was removed. About a twelve-foot wide and 75-foot long section of discolored soil was inaccessible under the diesel fuel pipelines and remained in place. ECA #C9 includes the full length of the diesel pipelines from the tank to the steam plant, in addition to the portions within polygons. The diesel tank containment structure provides a partial engineering control, preventing or greatly limiting the potential for contact with contaminated soil in that area.

2.7.10 ECA #C10: Areas with Discolored Soil

Following excavation of polygon RZ-C-17, discolored soil was identified in two areas within RZ-C-17, deeper than the original excavation depth for this area. A trench was dug to investigate the extent of the discolored soil and one characterization sample (DS-C17-1) was collected from the trench on May 6, 2011. The sample was analyzed for dioxins/furans, HCB, arsenic, magnesium, and perchlorate. Results from DS-C17-1 indicated concentrations of dioxins/furans and HCB were above soil screening levels. Because of the extent and depth of the discolored soil, and because the area was within areas where remedial excavation had been completed, it was decided, in consultation with NDEP, to leave these soils in place. In addition, following excavation of polygon RZ-C-18, one confirmation soil sample (SSA06-06) was collected from the floor of the excavated area on February 9, 2011. This sample was analyzed for dioxins/furans, SVOCs, arsenic, manganese, and magnesium. Results from this sample indicated concentrations of HCB and arsenic were above soil screening levels. Therefore, additional soil excavation was performed in this area to remove the discolored soil. During the soil removal, ENVIRON observed a black discolored soil layer on the ground surface adjacent to polygon RZ-C-18. The layer was excavated to a depth of approximately six ft bgs and included

the removal of a subsurface concrete drop culvert and pipe. Due to the significant depth of the material, some of the discolored soil was left in place. One excavation extent sample (EE-C18-1) was collected within the discolored soil at the base of the excavation on May 17, 2011. This sample was analyzed for dioxins/furans, HCB, SVOCs/PAHs, arsenic, manganese, and magnesium. Results from EE-C18-1 indicated concentrations of dioxins/furans, HCB, and B(a)P were above soil screening levels. This area is designated as ECA #C10, as shown on Figure 3. Six inches to one foot of clean imported backfill material was placed in the northern portion and approximately three ft of clean imported backfill material was placed in the southern portion of ECA #C10. The clean backfill material provides an engineering control for ECA #C10, limiting the potential for contact with contaminated soil.

2.7.11 ECA #C11: Natural Gas Pipeline

Excavation of soils is limited by the presence of an active subsurface natural gas pipeline which runs to the Tronox Facility steam plant. Discolored soil was observed beneath and around portions of the pipeline. Three excavation extent samples (EE-C20-1, EE-C21-1 and duplicate EE-C21-2) were collected from the sidewalls of areas underneath the gas line on June 16, 2011. EE-C20-1 was analyzed for arsenic, lead, manganese and perchlorate, and EE-C21-1 and its duplicate were analyzed for SVOCs/PAHs, arsenic, manganese, and perchlorate. Results from EE-C20-1 indicated concentrations of arsenic, lead, and perchlorate were above soil screening levels. Results from EE-C21-1 and its duplicate indicated concentrations of B(a)P, arsenic, and perchlorate were above soil screening levels. The area where the pipeline runs, including portions of polygons RZ-C-16, -17, -19, -20, 22A, -22B and -23 in the vicinity of the natural gas pipeline are designated as ECA #C11, as shown on Figure 3.

2.7.12 ECA #C12: Steam Plant and Associated Features

The steam plant and associated utilities and infrastructure in the vicinity of the steam plant within the excavation areas include a portion of the plant building, above-ground piping, pipe racks, pipe rack pole footings, a 15 kV transmission line, and a transformer pad. Portions of excavation polygons RZ-C-16, -16A, and -42 extend under the footprint of the steam plant and associated facilities. Some of the pipe rack footings are failing and the pipe racks are leaning. Excavation in these areas would exacerbate the condition requiring temporary support of the racks and construction of new foundations. Therefore, the steam plant and associated features are designated as ECA #C12, as shown in Figure 3. The transformer concrete pad and the steam plant slab provide partial engineering controls, preventing or greatly reducing the potential for contact with contaminated soil.

2.7.13 ECA #C13: Steam Line

Excavation of soils is limited by the presence of an active aboveground steam line that is used for facility process support, including a black discolored soil seam along the southwestern edge of polygon RZ-E-14A. On May 18, 2011, excavation extent sample EE-14A-1 was collected and analyzed for dioxins/furans, HCB, arsenic, magnesium, and VOCs. Analytical results indicated that concentrations of constituents tested were below soil screening levels, with the exception of the dioxin TEQ value, which was reported above the soil screening level. Therefore, soil in the vicinity of the steam line, including a portion of excavation polygon RZ-C-44 is designated as ECA #C13, as shown on Figure 3.

2.7.14 ECA #C14: Process Road

Access to excavation of soils within portions of excavation polygons RZ-C-28B, -28C, -34, -36, -37, -38, -39, -39A, -39C, -40, -40A, -40B, -41, and -42 is limited by the presence of an existing active roadway (Process Road). Therefore, the portions of these polygons beneath the Process Road are included in ECA #C14, as shown on Figure 3. The Process Road is partially paved with asphalt and has also been covered with an approximately 3 inch layer of crushed limestone. The asphalt pavement and crushed limestone of the Process Road provide an engineering control for ECA #C14, preventing or greatly limiting the potential for contact with contaminated soil.

2.7.15 ECA #C15: Steam Plant Roadway

Excavation of soils within the southern portion of excavation polygon RZ-C-42 is limited by the presence of the existing steam plant roadway, which is in use. Therefore, the portion of RZ-C-42 beneath the steam plant roadway is included in ECA #C15, as shown on Figure 3. The steam plant roadway, which is paved with asphalt, provides an engineering control for ECA #C15, preventing or greatly limiting the potential for contact with contaminated soil.

2.7.16 ECA #C16: BT Tank Area

The BT tanks and containment structure are actively used by Veolia as part of the treatment system for remediating groundwater. Because of the BT Tank Area obstruction, soils beneath and adjacent to the BT Tank Area, including portions of excavation polygons RZ-C-28D, -28F, -29, -30 and RZ-E-08, -08A, and -08B, which extend under the footprint of the BT Tank Area, cannot be excavated. On May 4, 2011, excavation extent samples EE-E08A-1 and duplicate EE-E08A-2, and EE-D09-1 were collected from discolored soil areas within the north sidewall of RZ-E-09, the south sidewall of RZ-E-08A, near a concrete culvert at the east end of RZ-E-09, and along the east side of the BT Tanks. The analytical results for excavation extent samples EE-E08A-1 and EE-E08A-2 indicated that concentrations of dioxins/furans, HCB, arsenic, OCPs, and perchlorate were above soil screening levels. The results for excavation extent sample EE-E09-1 indicated that concentrations of OCPs were above soil screening levels. In addition, confirmation sample CS-C30-1 was collected following removal of discolored soils on the east side of the BT Tanks and was analyzed for dioxins/furans and perchlorate, both of which were found in concentrations above soil screening levels. Therefore, the BT Tank Area is designated as ECA #C16, as shown in Figure 3. This ECA also includes an approximately 5-foot border around the BT tank containment structure, which was not excavated due to stability concerns. The containment structure surrounding the BT tanks provides an engineering control, preventing or greatly limiting the potential for contact with contaminated soil.

2.7.17 ECA #C17: MN-1 Pond

ECA #C17 includes soil beneath the entire operating Tronox Facility MN-1 Pond area, including the pond, pond berms, and adjacent areas. The extent of ECA #C17 is shown on Figure 3. Because of the MN-1 Pond obstruction, the area remains generally uncharacterized and most soils within the ECA cannot be excavated. The MN-1 pond and its liner provide an engineering control, preventing or greatly limiting the potential for contact with contaminated soil.

2.7.18 ECA #C18: Leach Plant Equipment and Facilities

ECA #C18 includes soil beneath the entire operating Tronox Facility Leach Plant area, including the plant equipment and facilities. The extent of ECA #C18 is shown on Figure 3. Because of the Leach Plant obstruction, the area remains generally uncharacterized and soils beneath the Leach Plant footprint, including excavation polygon RZ-C-45, which extend under the footprint of the Leach Plant, cannot be excavated. The asphalt pavement within the Leach Plant provides an engineering control, preventing or greatly limiting the potential for contact with contaminated soil.

2.8 Description of ECAs in RZ-D

2.8.1 ECA #D1: NV Energy Transmission Line Towers

NV Energy prohibits excavating within 10 ft of the footings for the towers. Polygons RZ-D-01B, RZ-D-02, RZ-D-03, and RZ-D-12 and areas of discolored soil extend into these areas and therefore, portions of these areas cannot be excavated. An excavation extent sample (EE-D02-1) was collected from the discolored soil remaining in place under the utility pole and was analyzed for dioxins/furans, HCB, arsenic, and perchlorate. The results indicated that concentrations were above soil screening levels for dioxins/furans, HCB, and arsenic. This area is designated as ECA #D1, as shown on Figure 4. NV Energy will be notified of the presence of contaminated soil under and adjacent to their tower footings. The correspondence with NV Energy detailing the allowable excavation criteria is presented in Attachment A.

2.8.2 ECA #D2: Asphalt Pavement Area

Following excavation of polygon RZ-D-14, discolored soil was identified in the southern sidewall of the excavation, as well as to the west and southwest of the polygon excavation. Accessible discolored soil was removed; however, due to the obstruction of an asphalt paved area south of polygon RZ-D-14, discolored soil remains in place beneath the asphalt paved area. Discolored soil sample DS-D14-1 was collected within the southern sidewall of RZ-D-14 and was analyzed for dioxins/furans, HCB, and OCPs. Results indicated that concentrations of dioxins/furans, HCB, and OCPs were above soil screening levels. This area is designated as ECA #D2, as shown on Figure 4. The asphalt pavement provides an engineering control, preventing or greatly limiting the potential for contact with contaminated soil.

2.8.3 ECA #D3: GW-11 and WC Ponds and Berms

The GW-11 and WC ponds are actively used by Veolia and Tronox. The berms around the ponds contain impacted soil, but this soil cannot be excavated because of the potential to compromise the integrity of the pond berms. Discolored soil samples DS-DB-1 and duplicate DS-DB-2 were collected from black discolored soil along the slope of and adjacent to the GW-11 Pond berm, and were analyzed for dioxins/furans, HCB, SVOCs/PAHs, arsenic, lead, cobalt, manganese, magnesium, and perchlorate. Results indicated concentrations of dioxins/furans, HCB, and magnesium were above soil screening levels. Following removal of soil to the south, three excavation extent samples (EE-D10-1, EE-DB-1, and EE-DB-2) were collect from the black discolored soil on the berm and analyzed for dioxins/furans, HCB, and magnesium. Concentrations of magnesium were above soil screening levels in the three samples. In addition, soils beneath the ponds remain uncharacterized. Therefore, this area has

been designated as ECA #D3, as shown in Figure 4. The ponds are double-lined and impacted soil may have been removed from within the pond footprints during construction.

Northgate' s *Revised Engineering Evaluation of Slope Stability, WC and GW-11 Pond Embankments,* dated October 18, 2010, was approved by NDEP in their letter of November 24, 2010. The revised slope stability evaluation proposed to extend excavation slopes below the ground surface at an inclination of 3:1 to design depths. The embankments and the area from the toe of the embankment to the toe of the adjacent excavation has been capped at the surface with concrete-treated aggregate and this engineering control prevents dust generation, acts as a surface marker, and greatly reduces the potential for contact with the contaminated soil.

2.8.4 ECA #D4: Groundwater Treatment System Equalization Tanks and Associated Piping

Equalization tanks for the groundwater treatment system and associated influent and effluent pipelines, electrical and control lines for the equalization tanks, and water supply lines for the Veolia equalization tanks, Quonset hut, and chromium treatment plant are actively used by Veolia and cannot be removed. Excavation polygons RZ-D-16, -16A, -17C, and -18 extend beneath the equalization tanks and associated utilities, and therefore portions of these excavation polygons cannot be excavated. Excavations have been partially performed in polygons RZ-D-16 and -16A; however, some contaminated soil remains below the pipelines. The depths to the utility lines range from 3 inches to 3 ft in these areas. The utilities include, among others, two buried 8-inch effluent lines and two on-grade effluent lines. Approximately 1 foot of clean crushed limestone backfill material has been placed over the utilities in this area. These areas are designated as ECA # D4, and are shown on Figure 4.

The equalization tanks are on concrete pads and the pads provide an engineering control for this portion of ECA #D4. Additionally, portions of this ECA have been covered at the ground surface with concrete-treated aggregate or clean crushed limestone, which provide an engineering control for much of this ECA. These engineering controls prevent or mitigate the potential for contact with contaminated soil.

2.8.5 ECA #D5: Treatment Plant Chemical Storage Area

ECA #D5 includes soil beneath the entire Treatment Plant Chemical Storage Area. The extent of ECA #D5 is shown on Figure 4. Because of the Treatment Plant Chemical Storage Area obstruction, soils beneath the footprint of this area, including a portion of excavation polygon RZ-D-26, which extend under the footprint of the Treatment Plant Chemical Storage Area, cannot be excavated. The asphalt pavement within the Treatment Plant Chemical Storage Area provides an engineering control, preventing or greatly limiting the potential for contact with contaminated soil.

2.8.6 ECA #D6: Facility Roadway

Excavation of soils within a portion of excavation polygon RZ-D-26 is limited by the presence of an existing active facility roadway. Therefore, the portion of RZ-D-26 beneath the facility roadway is included in ECA #D6, as shown on Figure 4. Asphalt pavement for the facility roadway provides an engineering control for ECA #D6, preventing or greatly limiting the potential for contact with contaminated soil.

2.8.7 ECA #D7: Asphalt Pavement, Office Trailers, Cr Treatment Plant, Quonset Hut, and Utilities

Excavation of soils within excavation polygons RZ-D-17 and -28A is limited by the presence of asphalt pavement, office trailers, the chromium treatment plan, a Quonset hut, and various utilities. All of these facilities are in use and cannot be removed. Therefore, polygon RZ-D-28A and a portion of polygon RZ-D-17 are included in ECA #D7, as shown on Figure 4. Asphalt pavement and building foundations covers most of this area, providing an engineering control for ECA #D7, preventing or greatly limiting the potential for contact with contaminated soil.

2.8.8 ECA #D8: AP-5 Pond and Associated Utilities

The AP-5 Pond and associated subgrade and overhead utilities are actively used by Veolia. Utilities in this area include groundwater treatment process water pipelines and electrical conduits and lines. Because of the pond and associated utilities obstruction, soils beneath the pond footprint and in the vicinity of the associated utilities, including within excavation polygons RZ-D-28 and -29, cannot be excavated. In addition, soils beneath the pond are uncharacterized. Therefore, this area has been designated as ECA #D8, as shown in Figure 4.

Excavation has been completed to 1.5 ft bgs in RZ-D-28 and to 0.5 ft bgs in RZ-D-29, below which several utilities were encountered. The original excavation depths of RZ-D-28 of 10 ft bgs and 1.5 ft bgs could not be reached due to the presence of the utilities. Clean crushed limestone backfill material was placed to the approximate original ground surface within each of these polygons to cover impacted soils. The white colored crushed limestone provides a visual demarcation between the clean backfill material and impacted soils below. The clean crushed limestone material provides an engineering control in this portion of ECA #D8. The AP-5 Pond itself also provides an engineering control.

2.8.9 ECA #D9: Dioxin TEQ above Site-Specific BCL Approximately 9-10 Ft Deep

During excavation activities, discolored soils at a depth of approximately 9 to 10 ft bgs were encountered within portions of excavation polygons RZ-D-24, -25, and -25A. Discolored soils were removed, along with some additional deeper non-discolored soils. Following removal, confirmation soil samples were collected. Although the majority of chemical results for confirmation soil samples were below BCLs, the dioxin TEQ value in one confirmation sample (CS-D25A-2) was above the dioxin TEQ BCL. In addition, excavation extent samples EE-D25A-2 and duplicate EE-D25A-3 (located at the property boundary) were collected on August 3, 2011 and analyzed for dioxins/furans and arsenic. Results indicated that dioxins/furans and arsenic were above soil screening levels. The general area including these sample locations has been designated as ECA #D9, as shown on Figure 4. Approximately 10 ft of clean imported backfill material was placed in this area and orange snow fencing was used as a visual demarcation between the clean backfill material and impacted soils below. The clean backfill material provides an engineering control for ECA #D9, preventing or greatly limiting the potential for contact with contaminated soil.

2.8.10 ECA #D10: Groundwater Extraction Well and Related Piping

During excavation activities, discolored soils at an approximate depth of 1 to 3 ft bgs were discovered in the southwestern sidewall, near the southern end of excavation polygon RZ-D-25A. On May 18, 2011, excavation extent sample EE-D25A-1 was collected from the

sidewall of the RZ-D-25A polygon excavation and analyzed for dioxins/furans and arsenic. Results indicated that the concentration of arsenic was above the soil screening level. Due to the presence of an existing active groundwater extraction well and related piping, the discolored soils cannot be excavated. Therefore, this area is designated as ECA #D10, as shown on Figure 4. Approximately 1 foot of native soils which are not discolored overlie the discolored soils. The native soils provide an engineering control for ECA #D10, limiting the potential for contact with contaminated soil.

2.9 Description of ECAs in RZ-E

2.9.1 ECA #E1: Portions of RZ-E-01 and RZ-E-03 Beneath 4th Street

Excavation of soils within the westernmost portions of excavation polygons RZ-E-01 and -03 is limited by the presence of an existing roadway (4th Street), which is in use and cannot be removed. Therefore, the western portions of RZ-E-01 and -03 beneath and adjacent to 4th Street are included in ECA #E1, as shown on Figure 5. Asphalt pavement for 4th Street provides a partial engineering control for ECA #E1, preventing or greatly limiting the potential for contact with contaminated soil.

2.9.2 ECA #E2: Tronox Process Water Lines

Excavation of soils is limited by the presence of Tronox's subsurface process water lines, which are generally less than 3 ft deep. The process water lines are in use and cannot be removed. Discolored soil was observed in the western sidewalls of RZ-E-13, -14, -14B, and at the bottom of the remediation polygon RZ-E-13. In addition, soil with white precipitate was observed in the bottom of RZ-E-14B. Excavation within polygons was performed to within five ft of the Tronox process water pipelines in the area; further excavation toward the west in these polygons was limited by the presence of the pipelines. On June 2, 2011, excavation extent samples EE-E14B-1 and duplicate EE-E14B-2, EE-E14-1 were collected and analyzed for dioxins/furans, HCB, arsenic, and perchlorate. Results indicated concentrations of dioxins/furans, HCB, and arsenic were above soil screening levels. Therefore, soil in the vicinity of the process water lines, including portions of RZ-D-31A and RZ-E-12, -13, -14, -14B, -14C, -15, and -16, is designated as ECA #E2, as shown on Figure 5.

2.9.3 ECA #E3: Facilities at East End of Beta Ditch

Excavation of soils within polygon RZ-E-16B on the east end of the Beta Ditch is limited by the presence of an existing sandbag diversion structure, drainage culverts, the facility perimeter fenceline, and an elevated walkway structure. In addition, a layer of beige fibrous soil and debris was observed in an adjacent excavation sidewall and samples BD-1 through BD-5 were collected for bulk asbestos analysis. Samples BD-3 through BD-5 indicated asbestos concentrations above soil screening levels. Therefore, polygon RZ-E-16B is designated as ECA #E3, as shown on Figure 5. A portion of the polygon has been covered with clean imported soil.

2.10 Definition of ECA Boundaries

The ECAs described herein were established based on survey data collected by Las Vegas Paving Corp., the remediation contractor who performed soil excavation activities at the Site during 2010 and 2011. Survey data collected prior to backfilling has been used to establish the key locations of the remaining contaminated soil so that these areas can be accurately identified

in the future. ECA boundaries have been established to be inclusive of known remaining contaminated soils. Where possible, ECA boundaries have been established by defining rectangular areas defined by a minimum number of boundary coordinates (corners of the ECAs). Boundary coordinates of the ECAs are defined by horizontal and vertical coordinates (x,y), which are included on Table B-1 for each ECA.

2.11 Demarcation Fencing

In areas where an excavation has left contaminated soil in place, orange plastic fencing (or other demarcation) has been placed on the surface of the impacted soil and secured using pins or spikes prior to covering with clean soil. The fencing serves as a visible indicator during future excavation activities that contaminated soil is being encountered. A memorandum discussing the demarcation fencing was submitted by Tronox on December 15, 2010 and was approved by NDEP on December 16, 2010.

An area adjacent to the WC East and West Ponds was backfilled prior to placing the demarcation fencing. The fill placed in this area is white crushed limestone. The color difference between the white fill and the tan/brown on-site soil provides demarcation in lieu of fencing.

Demarcations are noted in the Comments column of Table B-1.

2.12 Additional Investigation for Unit Buildings, Leach Plant, and Ponds

This report presents the limits of ECAs with known contamination left in-place based on currently available data for the Unit Buildings, Tronox Leach Plant, and Tronox process ponds. Very limited data exists for these areas. When these operational structures and features are no longer active, further environmental investigation could be required to further delineate the extent of areas where chemicals exceed Site-specific soil screening levels. This further investigation may change the extent of ECAs pertaining to these structures and features.

2.13 Annual Review and Update

This ECA Summary report will be reviewed at least annually, and updated at least every other year by the Trust in accordance with the SMP for the Site. Modifications to this report will be conducted to address any changes to each ECA, including additional characterization data and/or new limits, based on work conducted during the previous year. In addition, new ECAs will be added to this report if previously unknown contamination is found and left in-place. Any existing ECAs will be removed from this report if the ECA is excavated in its entirety and all appropriate confirmation and documentation procedures have been performed in accordance with the SMP. The updated ECA Summary report will be submitted to NDEP for review and approval.

Table

Table B-1. Summary of Excavation Control Areas (ECAs)
Nevada Environmental Response Trust Site
Henderson, Nevada

Remediation Zone	ECA #	ECA Area Description	ECA Boundary Coordinates	Rationale for Proposing ECA	Engineering Controls In Place	Sampling Locations Relevant to ECA	LOU Areas Relevant to ECA (See Attachments B through E)	Expected Depth(s) of Contamination	Characterization of Known Discolored Soil Left In-Place (Bold indicates results above soil screening levels)	Chemicals of Potential Concern (COPCs)	Minimum Required Analyses for Soils (See SMP Table 4 for Analytical Methods)	Comments
RZ-B	B1	Soils underlying Unit Buildings 1 through 6 including soil within 50 feet of Unit Buildings 1 through 6	NW Corner (826872.852; 26717280.373) NE Corner (829183.785; 26717653.684) SE Corner (829247.810; 26717229.230) SW Corner (826942.071; 26716849.599)	Unit Building 1: Remediation zone extends beneath the former Chlorination Building footprint. Unit Building 2: Remediation zone extends beneath the former Chlorination Building footprint. Unit Building 3: Remediation zone extends beneath a small portion of the former Chlorination Building footprint. Unit Building 4: Remediation zone extends beneath the electrical substation and basement portions of the building. Unit Building 5: Soils uncharacterized Unit Building 6: Soils uncharacterized Approx. 50 ft around all Unit Buildings: Soils generally uncharacterized	Concrete foundations for Unit Buildings 1 through 6	SSAQ3-02, SA03, RSAQ3, SA169, SSAR3-01, SA192, RSAR3, SA110, SA190, SA193, SSAQ3-01, SSAQ4-06, SA120, SSAQ4-07, SSAQ4-03, SA84W, SA84, SA156, SSAQ4-08, SSAR4-04, SA191, SA29, SA111, RSAR4, SSAQ5-01, SA32, RSAR7, SSAR6-04, SSAR7-05, SA33, EE-B21-1	Attachment C, LOUs II: 11, 12, 36, 43 Attachment D, LOUs III: 33, 37, 40, 44, 61 Attachment E, LOUs IV: 4, 25, 26, 27, 28, 41, 42, 65	Unknown	Discolored soil status not known Discolored soil status not known Discolored soil status not known Discolored soil status not known Discolored soil status not known Discolored soil status not known Discolored soil status not known	Asbestos, Metals (incl. arsenic, chromium, platimum, magnesium, manganese, boron), Hexavalent Chromium, Manganese Dioxide, VOCs, SVOCs/PAHs (incl. B(a)P & HCB), Dioxins/Furans, PCBs, OCPs, Perchlorate, Chlorate, Ammonia, Sodium Hexametaphosphate, Sodium Chloride, Acids, Caustics, Surfactants, Wet Chemistry	Asbestos, Arsenic, Chromium, Platimum, Magnesium, Manganese, Boron, Hexavalent Chromium, Manganese Dioxide, VOCs, B(a)P, HCB, Dioxins/Furans, PCBs, OCPs, Perchlorate, pH	Remediation polygon soil remains in place. Soils under Unit Buildings are as yet uncharacterized.
RZ-B	B2	Portions of Polygon RZ-B-04C/05/09/09A/11/12/13 Extending into Avenue G	B2 East: NW Corner (827615.893; 26717499.664) NE Corner (827884.441; 26717539.847) SE Corner (827889.536; 26717531.047) SW Corner (827629.192; 26717489.818) B2 East Central: NW Corner (827469.227; 26717506.675) NE Corner (827616.027; 26717521.781) SE Corner (827596.631; 26717484.871) SW Corner (827468.967; 26717462.725) B2 West Central: NE Corner (827422.984; 26717484.069) NW Corner (827361.622; 26717474.392) SE Corner (827426.283; 26717460.976) SW Corner (827364.921; 26717452.619) B2 West: NW Corner (827190.644; 26717457.781) NE Corner (827295.705; 26717473.640) SE Corner (827301.101; 26717445.001) SW Corner (827193.412; 26717427.198)	Existing roadway and utilities	Asphalt roadway	SA213, SSAQ4-09, SSAQ4-10, RSAQ5, SA204, SSAQ5-01, SA203, SA04	None	Within RZ-B-04C: <0.33' Within RZ-B-05: <5' Within RZ-B-09: <10' Within RZ-B-09A: <4' Within RZ-B-11: <12' Within RZ-B-12: <6' Within RZ-B-13: <0.33'	Discolored soil status not known	Asbestos, Arsenic, Dioxins/Furans, SVOCs/PAHs (incl. HCB & B(a)P)	Asbestos, Arsenic, Dioxins/Furans, HCB, B(a)P	Remediation polygon soil remains in place.
RZ-B	B3	Fire Hydrant	NW Corner (827642.763; 26717480.804) NE Corner (827662.992; 26717482.694) SE Corner (827664.740; 26717471.729) SW Corner (827656.989; 26717470.358)	Fire hydrant and water line	Asphalt pavement partially covers the area	RSAQ5, SA156, SSAQ5-05	Attachment E, LOUs IV: 4, 28	<3'	Discolored soil status not known	Metals (incl. arsenic), Hexavalent Chromium, Perchlorate, VOCs, SVOCs/PAHs (incl. B(a)P), OCPs (incl. DDT), Acids (muriatic/hydrochloric and sulfuric), Surfactants, Wet Chemistry	Arsenic, Hexavalent Chromium, Perchlorate, VOCs, B(a)P, DDT, pH	Remediation polygon soil remains in place.
RZ-B	B4	Former Hazardous Waste Storage Area	NW Corner (827478.747; 26717466.618) NE Corner (827607.794; 26717488.297) SE Corner (827630.208; 26717339.256) SW Corner (827501.950; 26717318.220)	Current Tronox Bulk Storage Area	High density polyethylene sheeting caps most of the area	SA203, SA04, SA148, SA84, SSAQ4-08, SSAR4-04, SA156	Attachment E, LOUs IV: 4, 28	10'	Discolored soil status not known	Asbestos, Metals (incl. arsenic), Hexavalent Chromium, Perchlorate, VOCs, SVOCs/PAHs (incl. B(a)P & HCB), Dioxins/Furans, OCPs (incl. DDT), Acids (muriatic/hydrochloric and sulfuric), Surfactants, Wet Chemistry	Asbestos, Arsenic, Hexavalent Chromium, Perchlorate, VOCs, B(a)P, HCB, Dioxins/Furans, DDT, pH	Remediation polygon soil remains in place.
RZ-B	B5	Sodium Chlorate Filter Cake Process Area Discolored soil is present	NW Corner (827939.336; 26717477.228) NE Corner (827994.454; 26717485.654) SE Corner (828003.092; 26717435.368) SW Corner (827947.292; 26717426.103)	A thick concrete slab used in a process operation in the sodium chlorate filter cake process area cannot be removed at this time.	Approximately 12 inch thick concrete slab underlain by 2 inches of sand and 20 mil membrane	SA05, SA136, SSAQ6-02	Attachment C, LOUs II: 11	<0.33'	SSAQ6-02 analyzed for dioxins, **SVOCs, Arsenic,** Manganese, Magnesium.	Asbestos, Metals (incl. arsenic), Hexavalent Chromium, SVOCs/PAHs (incl. B(a)P), Wet Chemistry	Asbestos, Arsenic, Hexavalent Chromium, B(a)P, pH	Remediation polygon soil remains in place, discolored soil is present.
RZ-B	B6	Soils beneath approximately 6 feet deep in polygons RZ-B-20 and RZ-B-21	Going Clockwise NW Corner (828359.077; 26717338.191) NE Corner (828463.555; 26717348.452) SE Corner (828480.431; 26717199.596) SW Corner (828387.761; 26717189.869) Intermediate Point (828384.825; 26717214.058) Intermediate Point (828370.891; 26717211.701)	Access for excavation of soils beneath 6 feet (and to surface east of Tronox water line) is limited by the presence of several subgrade utilities.	Asphalt pavement for 9th Street and a minimum of 6 feet of clean backfill material	SA32, SSAR6-04, RSAR7, EE-B21-1	Attachment C, LOUs II: 43	Unknown	Discolored soil status not known	Metals (incl. arsenic, manganese, boron), Hexavalent Chromium, SVOCs/ PAHs (incl. HCB & B(a)P), Perchlorate, Chlorate, Ammonia, Wet Chemistry	Arsenic, Manganese, Boron, Hexavalent Chromium, HCB, B(a)P, Perchlorate, pH	Remediation polygon soil remains in place.

Table B-1. Summary of Excavation Control Areas (ECAs)
Nevada Environmental Response Trust Site
Henderson, Nevada

Remediation Zone	ECA #	ECA Area Description	ECA Boundary Coordinates	Rationale for Proposing ECA	Engineering Controls In Place	Sampling Locations Relevant to ECA	LOU Areas Relevant to ECA (See Attachments B through E)	Expected Depth(s) of Contamination	Characterization of Known Discolored Soil Left In-Place (Bold indicates results above soil screening levels)	Chemicals of Potential Concern (COPCs)	Minimum Required Analyses for Soils (See SMP Table 4 for Analytical Methods)	Comments
RZ-B	B7	Soils within polygon RZ-B-22	Going Clockwise NW Corner (828484.613; 26717219.587) Intermediate Point (828521.138; 26717225.519) Intermediate Point (828528.270; 26717182.443) Intermediate Point (828564.531; 26717188.065) Intermediate Point (828567.137; 26717170.406) NE Corner (828615.047; 26717178.512) SE Corner (828635.630; 26717043.726) SW Corner (828497.664; 26717103.533)	Access for excavation of soils within this area is limited by the presence of subgrade utilities, building foundation, asphalt roadway, and other surface features.	Asphalt pavement for Avenue H covers most of the area	SSAR7-05, SA33	Attachment D, LOUs III: 61	<2'	Discolored soil status not known	Metals (incl. arsenic, manganese, boron), Hexavalent chromium, Perchlorate, Chlorate, Ammonia, Wet Chemistry	Arsenic, Manganese, Boron, Hexavalent Chromium, Perchlorate, pH	Remediation polygon soil remains in place.
RZ-C	C1	Portion of RZ-C-01A beneath 4th Street	SW Corner (826329.027; 26718372.806) NW Corner (826322.564; 26718433.917) NE Corner (826357.898; 26718438.428) SE Corner (826362.701; 26718377.208)	Existing roadway	Asphalt pavement for 4th Street	SSAN2-03, SA56	Attachment B, LOUs I: 35	<4'	Discolored soil status not known	Metals (incl. arsenic, manganese), Hexavalent Chromium, SVOCs/PAHs, VOCs, OCPs, Perchlorate, Chlorate, Ammonia, Radionuclides, Wet Chemistry	Arsenic, Manganese, Hexavalent Chromium, SVOCs/PAHs, VOCs, OCPs, Perchlorate, pH	Remediation polygon soil remains in place.
RZ-C	C2	Portion of RZ-C-03/04/05A beneath 5th Street	SW Corner (826696.826; 26718022.888) NW Corner (826665.943; 26718261.256) NE Corner (826747.334; 26718275.799) E Corner (826766.587; 26718165.735) Inside Corner (826716.017; 26718157.534) SE Corner (826735.167; 26718027.515)	Existing roadway	Asphalt pavement for 5th Street	SA48, SSAO3-02, SSAO3-01	Attachment B, LOUs I: 35, 64	<5'	Discolored soil status not known	Metals (incl. arsenic), Hexavalent Chromium, SVOCs/PAHs (incl. HCB), VOCs, OCPs, Perchlorate, Chlorate, Ammonia, Radionuclides, Wet Chemistry	Arsenic, Hexavalent Chromium, HCB, VOCs, OCPs, Perchlorate, pH	Remediation polygon soil remains in place.
RZ-C	C3	Portion of RZ-C-06 beneath fire hydrant, water line, and Avenue F	SW Corner (826833.930; 26718020.812) NW Corner (826829.015; 26718055.815) NE Corner (826896.595; 26718067.560) SE Corner (826901.830; 26718033.768)	Existing roadway, hydrant, and utilities	Asphalt pavement for Avenue F covers part of the area and clean backfill material	SSAO3-03	None	<9'	Discolored soil status not known	Metals (incl. magnesium), Dioxins/Furans, HCB	Magnesium, Dioxins/Furans, HCB	Remediation polygon soil remains in place. Orange snow fencing was used to demarcate ECA boundaries prior to backfilling.
RZ-C	C4	Concrete foundation	NW Corner (826875.233; 26718179.671) NE Corner (827273.281; 26718243.329) SE Corner (827301.825; 26718120.235) SW Corner (826896.452; 26718061.866)	Concrete foundation	Concrete foundation	SSAO3-03, SSAO4-03	Attachment B, LOUs I: 64	<9'	Discolored soil status not known	Metals, Hexavalent Chromium, SVOCs, VOCs, OCPs, Perchlorate, Wet Chemistry	Metals, Hexavalent Chromium, SVOCs, VOCs, OCPs, Perchlorate, pH	Remediation polygon soil remains in place. Additional uncharacterized soil remains in place beneath remainder of foundation. Polygon and non-polygon soils are included in the ECA.
RZ-C	C5	Water, fiber optic, and electric utility lines through and near RZ-C-11/13 Discolored soil is present	NW Corner (827469.580; 26718306.970) NE Corner (827492.378; 26718310.645) Inside E (827507.518; 26718209.457) E Corner (827546.307; 26718216.120) SE Corner (827552.577; 26718178.526) SW Corner (827449.507; 26718161.005) W Corner (827444.791; 26718198.889) Inside W Corner (827484.784; 26718205.830)	Existing below and above ground utilities	Clean backfill material covers the northern portion	SA50, SSAO5-05, SSAO5-03, EE-C13-1	Attachment C, LOUs II: 45	<10'	EE-C13-1 analyzed for **HCB**, SVOCs/PAHs, Arsenic, Manganese.	Asbestos, Metals, SVOCs (incl. HCB), VOCs	Asbestos, Metals, HCB, VOCs	Remediation polygon soil remains in place, discolored soil is present.
RZ-C	C6	Discolored soil at former pump house yard Discolored soil is present	NW Corner (827658.421; 26718335.303) NE Corner (827753.703; 26718349.262) SE Corner (827777.141; 26718203.193) SW Corner (827680.717; 26718188.018)	Discolored soil from ground surface down to at least 10 feet; limited access due to facility security fencing and former pump house equipment and utilities.	Facility perimeter fencing	EE-C15-1, EE-C24-2	Attachment C, LOUs II: 45	Unknown	EE-C15-1 analyzed for HCB, SVOCs/PAHs, Arsenic, Manganese. EE-C15-2 analyzed for HCB, SVOCs/PAHs, **Arsenic**, Manganese.	Asbestos, Metals (incl. arsenic), SVOCs (incl. HCB), VOCs	Asbestos, Arsenic, HCB, VOCs	Discolored soil layer extends under facility security fencing and former pump house equipment and utilities.
RZ-C	C7	Avenue F Utilities, Railroad line, and Roadway Discolored soil is present	NW Corner (827259.596; 26718129.560) North Edge (827972.111; 26718248.926) North Edge (827970.624; 26718259.709) NE Corner (828331.450; 26718323.872) SE Corner (828344.614; 26718244.392) Inside Corner (827546.209; 26718110.813) S Corner (827553.118; 26718061.680) SW Corner (827275.033; 26718015.647)	Existing fragile utilities (water and gas), railroad line, and Avenue F roadway	Asphalt pavement for Avenue F covers most of the area and clean backfill material	SSAO4-03, SSAO4-04, SSAO5-03, SSAP5-03, SA187, SA188, SA41, SA40, SSAO6-05, SA130, RSAP6, EE-C24-1, EE-C27-1, EE-C27-2, EE-C27-3, EE-C27-4, DS-C24-1, DS-C24-2	Attachment B, LOUs I: 64 Attachment C, LOUs II: 45 Attachment D, LOUs III: 34 (west)	Unknown	EE-C24-1 and EE-C24-2 analyzed for HCB, SVOCs/PAHs, **Arsenic**, Manganese. EE-C27-1 analyzed for **Arsenic**, **Lead**, Manganese, Perchlorate. EE-C27-2 analyzed for **Arsenic**, Lead, Manganese, Perchlorate. EE-C27-3 analyzed for Arsenic, Lead, Manganese, Perchlorate. EE-C27-4 analyzed for **Arsenic**, Lead, Manganese, Perchlorate. DS-C24-1 and DS-C24-2 analyzed for HCB, SVOCs/**PAHs**, arsenic, manganese.	Asbestos, Metals (incl. arsenic, manganese, lead, chromium), Heavy Metal Sulfides, Hexavalent Chromium, Dioxins/Furans, SVOCs/PAHs (incl. HCB & B(a)P), VOCs, OCPs, Perchlorate, Wet Chemistry	Asbestos, Arsenic, Manganese, Lead, Chromium, Sulfide, Sulfate, Hexavalent Chromium, Dioxins/Furans, HCB, B(a)P, VOCs, OCPs, Perchlorate, pH	Remediation polygon soil remains in place and uncharacterized discolored soil extending under Avenue F. Orange snow fencing was placed as a demarcation between clean backfill material and impacted soils below.
RZ-C	C8	9th Street Utilities and Roadway Discolored soil is present	NW Corner (828211.375; 26718503.458) NE Corner (828319.022; 26718523.165) SE Corner (828354.059; 26718328.030) SW Corner (828214.257; 26718303.875) W Corner (828207.564; 26718341.245) Inside Corner (828235.173; 26718346.171)	Existing utilities and roadway	Asphalt pavement for 9th Street covers most of the area	SA51, SSAO6-03, SSAO7-09, SSAO7-08	Attachment C, LOUs II: 14 Attachment D, LOUs III: 24, 34 (west)	<8'	Discolored soil is present but uncharacterized	Asbestos, Metals (incl. arsenic, chromium, boron, manganese), Heavy Metal Sulfides, Hexavalent Chromium, Perchlorate, Chlorate, Ammonia, Sodium hexametaphosphates, Sulfuric Acid, Wet Chemistry,	Asbestos, Arsenic, Chromium, Boron, Manganese, Sulfide, Sulfate, Hexavalent Chromium, Perchlorate, pH	Remediation polygon soil remains in place and uncharacterized discolored soil extending under Avenue F.

Table B-1. Summary of Excavation Control Areas (ECAs)
Nevada Environmental Response Trust Site
Henderson, Nevada

Remediation Zone	ECA #	ECA Area Description	ECA Boundary Coordinates	Rationale for Proposing ECA	Engineering Controls In Place	Sampling Locations Relevant to ECA	LOU Areas Relevant to ECA (See Attachments B through E)	Expected Depth(s) of Contamination	Characterization of Known Discolored Soil Left In-Place (Bold indicates results above soil screening levels)	Chemicals of Potential Concern (COPCs)	Minimum Required Analyses for Soils (See SMP Table 4 for Analytical Methods)	Comments
RZ-C	C9	Diesel Tank and Pipelines Discolored soil is present	NE Corner (827624.863; 26718665.892) NW Corner (827648.964; 26718669.389) Intermediate Point (827667.309; 26718549.556) Intermediate Point (827680.695; 26718551.787) Intermediate Point (827686.272; 26718514.604) Intermediate Point (827675.654; 26718512.765) Intermediate Point (827701.305; 26718349.394) E Corner (827910.196; 26718379.775) Intermediate Point (828026.840; 26718325.402) SE Corner (828034.139; 26718290.482) SW Corner (827965.535; 26718278.026) Intermediate Point (827959.586; 26718315.023) Intermediate Point (827893.672; 26718367.748) W Corner (827674.173; 26718338.738)	Existing diesel tank and pipelines to Steam Plant	Concrete tank containment structure covers most of the area beneath the tank	SSAO6-05, SA130, SA39, SSAO6-02, SSAO6-03, SA43, DS-C19-1, DS-C23-1, EE-C23-1, EE-C20-1	Attachment C, LOUs II: 7, 8, 9, 13, 45 Attachment D, LOUs III: 34	<7'	DS-C19-1 analyzed for Dioxins/Furans, HCB, SVOCs/PAHs, **Arsenic**, **Lead**, Cobalt, Manganese, Magnesium, **Perchlorate**. DS-C23-1 analyzed for Dioxins/Furans, SVOCs/PAHs, **Arsenic**, **Lead**, Cobalt, **Manganese**, Magnesium, Perchlorate. EE-C23-1 analyzed for **Arsenic**, **Lead**, Manganese, **Perchlorate**. EE-C20-1 analyzed for **Arsenic**, **Lead**, Manganese, **Perchlorate**. DS-C10-1 analyzed for Dioxins/Furans, HCB, Arsenic, Lead, Cobalt, Manganese, Magnesium, Perchlorate.	Asbestos, Metals (incl. arsenic, boron, manganese, lead, chromium), Heavy Metal Sulfides, Manganese Sulfate, Manganese Dioxide, Hexavalent Chromium, Perchlorate, Chlorate, VOCs, SVOCs/PAHs (incl. B(a)P), Chloride, Ammonia, Sulfuric acid, Sodium Hexametaphosphates, Wet Chemistry	Asbestos, Arsenic, Boron, Manganese, Lead, Chromium, Sulfide, Sulfate, Hexavalent Chromium, Perchlorate, VOCs, B(a)P, Chloride, pH	Remediation polygon soil remains in place and discolored soil (about 4' thick) extends under the Diesel tank and pipelines.
RZ-C	C10	Areas with Discolored Soil	NW Corner (827708.254; 26718549.044) NE Corner (827838.504; 26718569.050) SE Corner (827854.408; 26718471.807) SW Corner (827836.374; 26718468.832) Inside Corner (827831.912; 26718499.509) W Corner (827717.096; 26718484.154)	Several areas with discolored soil	Six inches to one foot of clean backfill was placed in the northern portion and approximately three feet of clean backfill was placed in the southern portion	SA114, SA102, SSAO6-01, SSAO6-06, SSAO5-09, EE-C18-1, DS-C10-1, DS-C17-01	Attachment C, LOUs II: 7, 9	Unknown	EE-C18-1 analyzed for **Dioxins/Furans**, **HCB**, SVOCs/**PAHs**, Arsenic, Manganese, Magnesium. DS-C17-1 analyzed for **Dioxins/Furans, HCB,** Arsenic, Magnesium, Perchlorate.	Asbestos, Metals (incl. arsenic, magnesium), Hexavalent Chromium, Dioxins/Furans, HCB, Perchlorate, Chlorate, Chloride, Ammonia, Wet Chemistry	Asbestos, Arsenic, Magnesium, Hexavalent Chromium, Dioxins/Furans, HCB, Perchlorate, Chloride, pH	Discolored soil remains in place.
RZ-C	C11	Natural Gas Pipeline Discolored soil is present	E Corner (828219.836; 26718447.034) SE Corner (828223.141; 26718425.219) SW Corner (827867.950; 26718362.776) NW Corner (827819.703; 26718678.488) NE Corner (827848.890; 26718683.466) Inside Corner (827895.840; 26718390.576)	Existing natural gas pipeline to Steam Plant	None currently	SSAN6-06, SSAO6-01, SSAO6-02, SSAO6-03, SA51, SA43, EE-C20-1, EE-C21-1, EE-C21-2	Attachment C, LOUs II: 13, 14 Attachment D, LOUs III: 34	>5'	EE-C20-1 analyzed for **Arsenic**, **Lead**, Manganese, **Perchlorate**. EE-C21-1 and duplicate EE-C21-2 analyzed for SVOCs/**PAHs**, **Arsenic**, Manganese, **Perchlorate**.	Asbestos, Metals (incl. arsenic, boron, chromium, lead, manganese), Heavy Metal Sulfates, Manganese Sulfate, Manganese Dioxide, Hexavalent Chromium, Dioxins/Furans, Perchlorate, Chlorate, SVOCs/PAHs (incl. B(a)P), Sulfuric Acid, Ammonia, Sodium Hexametaphosphates, Wet Chemistry	Asbestos, Arsenic, Boron, Chromium, Lead, Manganese, Sulfate, Sulfide, Hexavalent Chromium, Dioxins/Furans, Perchlorate, B(a)P, pH	Remediation polygon soil remains in place and discolored soil (about 4' thick) extends under the natural gas pipelines.
RZ-C	C12	Steam Plant and Associated Features	NW Corner (827705.254; 26718752.860) NE Corner (828091.530; 26718815.721) SE Corner (828108.717; 26718714.581) SW Corner (827720.272; 26718650.047)	Existing Steam Plant, pipe-racks, piping south of Plant, power pole & vault, and transformer pad	Existing Steam Plant building foundation and associated features cover most of the area	SSAN6-06, SSAN6-08	None	<2'	Discolored soil status not known	Dioxins/Furans	Dioxins/Furans	Remediation polygon soil remains in place.
RZ-C	C13	Steam Line Discolored soil is present	Going Clockwise NW Corner (828255.541; 26718761.080) NE Corner (828280.131; 26718765.670) Intermediate Point (828303.738; 26718638.785) Intermediate Point (828322.523; 26718641.041) Intermediate Point (828326.215; 26718617.325) Intermediate Point (828304.553; 26718613.586) SE Corner (828307.900; 26718592.764) SW Corner (828287.198; 26718589.169)	Active Steam Line for facility process support	None currently	SA137, EE-14A-1	Attachment D, LOUs III: 24	<10'	EE-14A-1 analyzed for **Dioxins/Furans**, HCB, Arsenic, Magnesium, VOCs	Metals (incl. arsenic, cobalt, manganese), trace Heavy Metal Sulfides, HCB, Wet Chemistry	Arsenic, Cobalt, Manganese, Sufide, Sulfate, HCB, pH	Remediation polygon soil remains in place, discolored soil is present.
RZ-C	C14	Process Road	Going Clockwise NW Corner (827265.616; 26718875.892) Intermediate Point (827679.456; 26718941.163) Intermediate Point (827683.232; 26718911.882) Intermediate Point (828064.216; 26718971.523) Intermediate Point (828164.271; 26719032.921) Intermediate Point (828227.448; 26719107.865) NE Corner (828309.091; 26719211.824) SE Corner (828329.527; 26719194.662) Intermediate Point (828224.920; 26719043.285) Intermediate Point (828239.240; 26718932.476) Intermediate Point (828114.219; 26718972.406) Intermediate Point (828090.793; 26718953.318) Intermediate Point (828096.234; 26718882.947) Intermediate Point (828047.965; 26718920.837) Intermediate Point (827812.093; 26718877.064) Intermediate Point (827820.727; 26718823.723) Intermediate Point (827762.221; 26718813.824) Intermediate Point (827752.018; 26718880.149) SW Corner (827274.357; 26718804.939)	Existing process roadway	Process road is partially paved with asphalt and covered with approximately 3 inches of clean crushed limestone backfill material	SSAN5-02, SA60, SSAN6-02, SSAN6-01, SA49, SSAM7-03, SA58, SSAN5-05, SA196, SA105, SA150, RSAN6, SA63, SSAN5-03, SA94, SA15	Attachment C, LOUs II: 53, 57	<4'	Discolored soil status not known	Asbestos, Metals (incl. arsenic, chromium, iron), Hexavalent Chromium, Dioxins/Furans, HCB, Perchlorate, Ammonium Perchlorate, Chlorate, Ammonia, Caustics (Sodium hydroxide), Sodium chloride, Sodium hypochlorite, Wet Chemistry	Asbestos, Arsenic, Chromium, Iron, Hexavalent Chromium, Dioxins/Furans, HCB, Perchlorate, pH	Remediation polygon soil remains in place.
RZ-C	C15	Steam Plant Roadway	NW Corner (828012.014; 26718821.250) NE Corner (828076.378; 26718839.675) SE Corner (828088.906; 26718796.193) SW Corner (828024.297; 26718778.259)	Existing Steam Plant roadway	Steam Plant asphalt roadway covers most of the area	RSAN6	None	<1'	Discolored soil status not known	Arsenic	Arsenic	Remediation polygon soil remains in place.

Table B-1. Summary of Excavation Control Areas (ECAs)
Nevada Environmental Response Trust Site
Henderson, Nevada

Remediation Zone	ECA #	ECA Area Description	ECA Boundary Coordinates	Rationale for Proposing ECA	Engineering Controls In Place	Sampling Locations Relevant to ECA	LOU Areas Relevant to ECA (See Attachments B through E)	Expected Depth(s) of Contamination	Characterization of Known Discolored Soil Left In-Place (Bold indicates results above soil screening levels)	Chemicals of Potential Concern (COPCs)	Minimum Required Analyses for Soils (See SMP Table 4 for Analytical Methods)	Comments
RZ-C	C16	BT Tanks Discolored soil is present	SW Corner (827548.239; 26719084.231) NW Corner (827534.857; 26719181.336) NE Corner (827736.079; 26719213.007) SE Corner (827751.183; 26719109.622)	BT Tanks and containment structure in use by Veolia	Tanks and concrete containment structure cover most of the area	RSAM5, SSAM5-05, SA104, SSAM6-06, SSAM6-02, SSAM6-05, SSAM5-04, EE-E08A-1, EE-E08A-2, EE-E09-1, CS-C30-1	Attachment C, LOUs II: 5, 57	Unknown	EE-E08A-1 and EE-E08A-2 analyzed for **Dioxins/Furans**, **HCB**, **Arsenic**, Lead, **OCPs**, **Perchlorate**. EE-E09-1 analyzed for Dioxins/Furans, HCB, Arsenic, Lead, **OCPs**, Perchlorate. CS-C30-1 analyzed for **Dioxins/Furans** and **Perchlorate**.	Asbestos, Metals (incl. chromium, iron), Hexavalent Chromium, Cyanide, Dioxins/Furans, OCPs, Perchlorate, Ammonium Perchlorate, Ammonia, Sodium Chloride, Sodium Hypochlorite, Sulfates, Carbonates, Phosphates, Chloride, Sulfide, Wet Chemistry,	Asbestos, Chromium, Iron, Hexavalent Chromium, Cyanide, Dioxins/Furans, OCPs, Perchlorate, Chloride, pH	Remediation polygon soil remains in place, discolored soil is present.
RZ-C	C17	MN-1 Pond	NW Corner (828530.933; 26719146.567) NE Corner (828867.348; 26719208.835) SE Corner (828917.174; 26718920.290) SW Corner (828576.297; 26718849.284)	Existing MN-1 Pond currently in use	Pond and pond liner cover most of the area	None	Attachment C, LOUs II: 20 Attachment D, LOUs III: 21	Unknown	Discolored soil status not known	Metals (incl. manganese, magnesium, boron), Hexavalent Chromium, Perchlorate, Chlorate, Borates, Boron Trichloride, Sodium, Calcium, Phosphates, Sulfates, Carbonates, Potassium, Potassium Phosphate, Potassium Oxide, Sodium Hexametaphosphate, Wet Chemistry	Manganese, Magnesium, Boron, Hexavalent Chromium, Perchlorate, Phosphates, Sulfates, pH	Uncharacterized soil under existing MN-1 Pond.
RZ-C	C18	Leach Plant Equipment and Facilities	SW Corner (828420.523; 26717708.494) NW Corner (828337.943; 26718284.217) NE Corner (829051.753; 26718431.828) SE Corner (829154.957; 26717819.112)	Existing Leach Plant Equipment and Facilities	Asphalt pavement covers portions of the area	SSAO8-02	Attachment D, LOUs III: 24, 34 (east), 47, 48, 49, 50, 51	Unknown	Discolored soil status not known	Asbestos, Metals (incl. manganese), trace Heavy Metal Sulfides, Manganese Sulfate, Manganese Dioxide, Sulfuric Acid, Acid Solutions, Wet Chemistry	Asbestos, Manganese, Sulfide, Sulfate, pH	Remediation polygon soil remains in place.
RZ-D	D1	NV Energy Transmission Line Towers Discolored soil is present	<u>Northern D1</u> NE Corner (826220.879; 26720878.355) SE Corner (826220.879; 26720837.832) SW Corner (826166.565; 26720837.832) NW Corner (826166.777; 26720878.991) <u>North Central D1</u> NE Corner (826225.830; 26720445.908) SE Corner (826232.021; 26720410.338) SW Corner (826196.445; 26720403.956) NW Corner (826190.742; 26720439.532) <u>South Central D1</u> NE Corner (826244.702; 26720022.402) SE Corner (826251.203; 26719978.146) SW Corner (826215.763; 26719972.036) NW Corner (826209.670; 26720016.563) <u>Southern D1</u> NE Corner (826265.047; 26719595.557) SE Corner (826275.367; 26719546.810) SW Corner (826225.669; 26719535.947) NW Corner (826217.251; 26719585.508)	Existing NV Energy Transmission Line Towers. Excavation can not be performed within 10 ft of towers. Must slope excavation away from towers.	None currently	RSAI3, SSAI3-06, SSAJ2-02, SSAI3-02-SW-E, RSAL2, SSAJ2-07, EE-D02-1	Attachment B, LOUs I: 1, 2	<16'	EE-D02-1 analyzed for **Dioxins/Furans**, **HCB**, **Arsenic**, Perchlorate.	Asbestos, Metals (incl. Arsenic), Hexavalent Chromium, Dioxins/Furans, VOCs, SVOCs/PAHs (incl. HCB), OCPs (incl. DDT), Perchlorate, Chlorate, Ammonia, Acids (muriatic/hydrochloric), Surfactants, Sodium Hydroxide, Wet Chemistry	Asbestos, Arsenic, Hexavalent Chromium, Dioxins/Furans, VOCs, HCB, DDT, Perchlorate, pH	Remediation polygon soil remains in place, discolored soil is present.
RZ-D	D2	Asphalt Pavement Area Discolored soil is present	NE Corner (826504.378; 26719487.850) SE Corner (826523.593; 26719369.813) SW Corner (826411.732; 26719351.627) NW Corner (826395.262; 26719473.782)	Discolored soil beneath asphalt pavement	Asphalt pavement partially covers the area	SSAL3-05, DS-D14-1	Attachment B, LOUs I: 2	<3'	DS-D14-1 analyzed for **Dioxins/Furans**, **HCB**, **OCPs**.	Metals, Hexavalent Chromium, Dioxins/Furans, VOCs, SVOCs (incl. HCB), OCPs (incl. 4,4'-DDE), Hydrochloric acid, Sodium Hydroxide, Wet Chemistry	Metals, Hexavalent Chromium, Dioxins/Furans, VOCs, HCB, 4,4'-DDE, pH	Discolored gray layer (6" to 3' thick) remains about 6" below ground surface.
RZ-D	D3	GW-11 and WC Ponds and Berms Discolored soil is present	NW Corner (826460.328; 26720911.644) NE Corner (828373.313; 26720739.060) Upper SE Corner (828338.090; 26720280.662) (827526.595; 26720370.766) (827383.781; 26720208.125) Lower SE Corner (827406.547; 26719940.183) SW Corner (826474.538; 26719790.150)	Existing GW-11 and WC ponds and berms; soils uncharacterized; discolored soil in berm on west side of GW-11	Cement treated aggregate covers the portions of the berms where discolored soil was observed and within and adjacent to previously defined remediation polygons; ponds and pond liners cover most of the area	BERM-K3-01, RSAK3, SSAK3-01, SSAK3-04, SSAK3-08, SSAJ3-04, BERM-I4-01, RSAI7, RSAJ8, BERM-J8-01, SSAK8-01, SSAK8-04, RSAK7, SSAK7-02, BERM-J7-01, BERM-J7-02, RSAJ7, SA127, BERM-J6-01, RSAJ6, SSAJ6-01, SSAJ6-02, RSAJ5, BERM-K5-01, RSAK5, SSAK5-04, BERM-K4-01, RSAK4, SSAK4-01, SSAK4-02, SSAK4-03, RSA14, RSA15, SA23, SA134, SA88, SA202, DS-DB-1, DS-DB-2, EE-DB-1, EE-DB-2, EE-D10-1	Attachment B, LOUs I: 1, 22, 23, 32	Unknown	DS-DB-1 and DS-DB-2 analyzed for **Dioxins/Furans**, **HCB**, SVOCs/PAHs, Arsenic, Lead, Cobalt, Manganese, **Magnesium**, Perchlorate. EE-DB-1, EE-DB-2, and EE-D10-1 analyzed for Dioxins/Furans, HCB, **Magnesium**	Asbestos, Metals (incl. arsenic, boron, chromium, iron, magnesium, manganese), Manganese Dioxide, Iron Oxide, Hexavalent Chromium, Dioxins/Furans, VOCs, SVOCs (incl. HCB), OCPs (incl. DDT and Beta-BHC), Perchlorate, Chlorate, Ammonia, Acids (muriatic/hydrochloric), Surfactants, Sodium Hexametaphosphate, Sodium Hydroxide, Hypochlorite, Wet Chemistry	Asbestos, Arsenic, Boron, Chromium, Magnesium, Manganese, Iron, Iron Oxide, Hexavalent Chromium, Dioxins/Furans, VOCs, HCB, DDT, Beta-BHC, Perchlorate, pH	GW-11 and WC ponds and berms; discolored soil in berm on west side of GW-11.

Table B-1. Summary of Excavation Control Areas (ECAs)
Nevada Environmental Response Trust Site
Henderson, Nevada

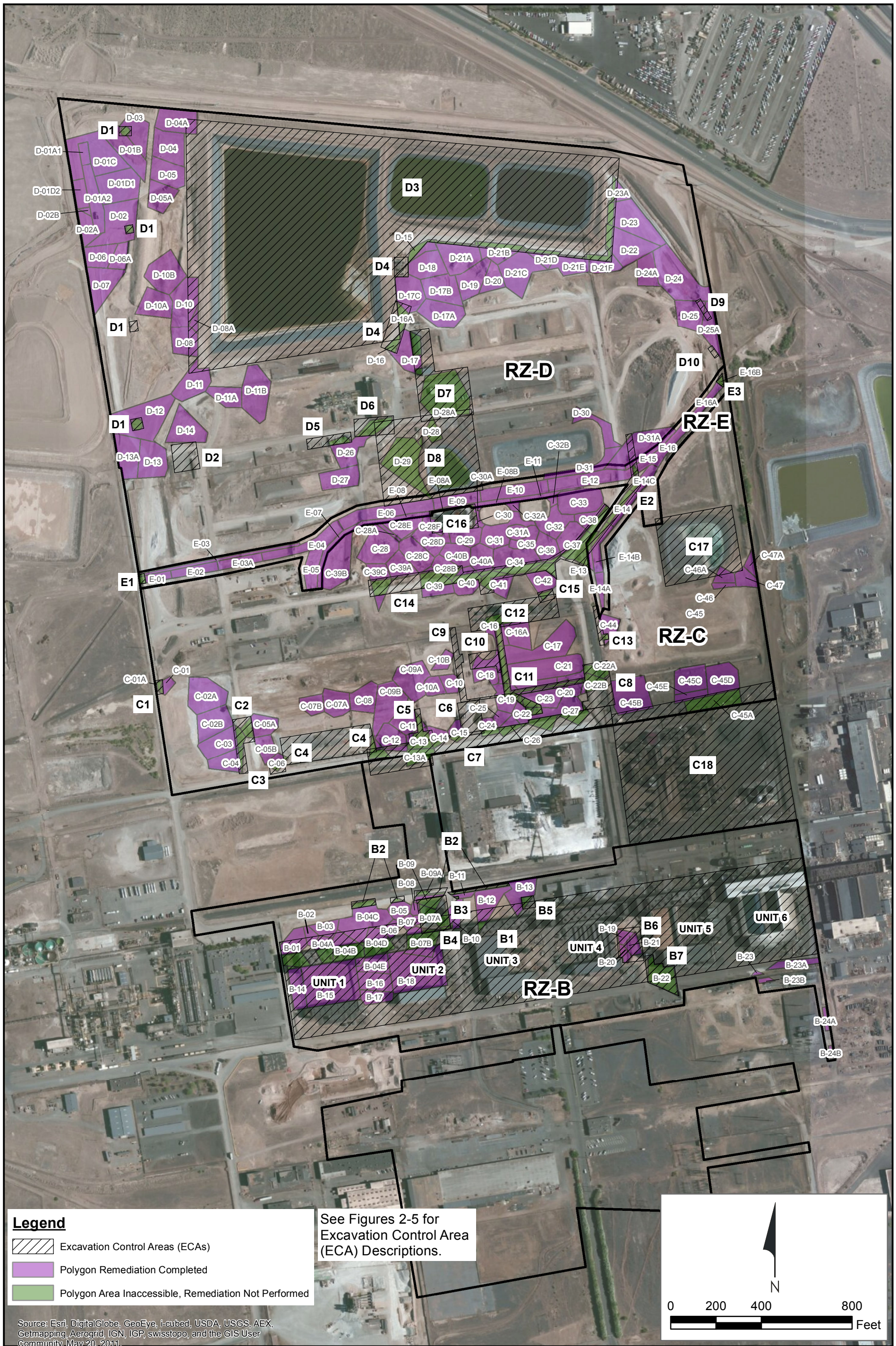
Remediation Zone	ECA #	ECA Area Description	ECA Boundary Coordinates	Rationale for Proposing ECA	Engineering Controls In Place	Sampling Locations Relevant to ECA	LOU Areas Relevant to ECA (See Attachments B through E)	Expected Depth(s) of Contamination	Characterization of Known Discolored Soil Left In-Place (Bold indicates results above soil screening levels)	Chemicals of Potential Concern (COPCs)	Minimum Required Analyses for Soils (See SMP Table 4 for Analytical Methods)	Comments
RZ-D	D4	Groundwater Treatment System Equilization Tanks & Associated Piping	Northern D4 NE Corner (827440.425; 26720302.615) SE Corner (827442.031; 26720215.212) SW Corner (827381.495; 26720215.575) NW Corner (827380.140; 26720301.599) Southern D4 NE Corner (827456.181; 26720083.735) SE Corner (827391.283; 26719877.025) SW Corner (827320.703; 26719877.025) NW Corner (827386.745; 26720109.654)	Existing treatment system equilization tanks and associated piping	Concrete containment structure covers soils beneath the tanks; approximately 1 foot of clean crushed limestone backfill material covers the area with utilities.	RSAK5, SSAK5-04, SSAK5-05, SSAK6-02	Attachment B, LOUs I: 1, 32	<9'	Discolored soil status not known	Asbestos, Metals (incl. chromium, iron), Iron Oxide, Hexavalent Chromium, Dioxins/Furans, VOCs, SVOCs (incl. HCB), OCPs (incl. DDT), Perchlorate, Chlorate, Ammonia, Surfactants, Acids (muriatic/hydrochloric), Sodium Hydroxide, Wet Chemistry	Asbestos, Chromium, Iron, Iron Oxide, Hexavalent Chromium, Dioxins/Furans, VOCs, HCB, DDT, Perchlorate, pH	Remediation polygon soil remains in place. Orange snow fencing was used to demarcate ECA boundaries prior to backfilling.
RZ-D	D5	Treatment Plant Chemical Storage Area	NE Corner (827187.632; 26719531.503) SE Corner (827193.389; 26719486.797) SW Corner (826998.312; 26719453.946) NW Corner (826992.893; 26719498.312)	Asphalt paved chemical storage area	Asphalt pavement covers the area	SA189, SA19, SA173, SA179	None	Unknown	Discolored soil status not known	Asbestos, Perchlorate	Asbestos, Perchlorate	Remediation polygon soil remains in place.
RZ-D	D6	Facility Roadway	NE Corner (827377.528; 26719603.239) SE Corner (827381.482; 26719523.163) SW Corner (827206.084; 26719509.769) NW Corner (827202.359; 26719587.326)	Existing roadway	Asphalt pavement covers the area	SA189, SA19, SA173, SA179	Attachment B, LOUs I: 58 Attachment C, LOUs II: 30, 56	Unknown	Discolored soil status not known	Asbestos, Metals, Hexavalent Chromium, Perchlorate, Ammonium Perchlorate, Chlorate, Ammonia, Wet Chemistry	Asbestos, Metals, Hexavalent Chromium, Perchlorate, pH	Remediation polygon soil remains in place.
RZ-D	D7	Asphalt Pavement, Office Trailers, Cr Treatment Plant, Quonset Hut, and Utilities	SW Corner (827500.140; 26719576.911) NW Corner (827449.416; 26719975.180) NE Corner (827532.569; 26719987.895) Inner corner (827558.985; 26719796.882) E Corner (827703.092; 26719817.287) SE Corner (827730.440; 26719608.070)	Existing paved area, office trailers, and treatment plant facilities	Asphalt pavement and facility structures cover most of the area	SSAK5-04, SSAL6-01	Attachment B, LOUs I: 32 Attachment C, LOUs II: 31, 55	<0.33'	Discolored soil status not known	Asbestos, Metals (incl. chromium, iron), Iron Oxide, Hexavalent Chromium, Dioxins/Furans, VOCs, SVOCs, Perchlorate, Ammonium Perchlorate, Crystalline Perchlorate, Crystalline Chlorate, Chlorate, Hydrogen Chloride, Wet Chemistry	Asbestos, Chromium, Iron, Iron Oxide, Hexavalent Chromium, Dioxins/Furans, VOCs, SVOCs, Perchlorate, Chloride, pH	Remediation polygon soil remains in place.
RZ-D	D8	AP-5 Pond and Associated Utilities Discolored soil is present	SE Corner (827771.063; 26719275.097) SW Corner (827336.478; 26719203.149) NW Corner (827291.450; 26719572.921) NE Corner (827720.111; 26719632.200)	Existing pond and existing subgrade and overhead utilities related to AP-5 pond; soils beneath pond uncharacterized	Pond and pond liner, and clean crushed limestone backfill material cover most of the area	SSAL5-05, SA72, SSAM5-01, SA179	Attachment B, LOUs I: 58 Attachment C, LOUs II: 19, 30, 31, 55, 56, 57	Unknown	Discolored soil is present but was not sampled	Asbestos, Metals, Hexavalent Chromium, Dioxins/Furans, SVOCs, Perchlorate, Ammonium Perchlorate, Crystalline Perchlorate, Crystalline Chlorate, Chlorate, Ammonia, Hydrogen Chloride, Sodium Chloride, Sodium Hypochlorite, Wet Chemistry	Asbestos, Metals, Hexavalent Chromium, Dioxins/Furans, SVOCs, Perchlorate, Chloride, pH	Remediation polygon soil remains in place; AP-5 Pond and berm soils. Crushed limestone used to demarcate ECA boundaries prior to backfilling.
RZ-D	D9	Dioxin TEQ above Site-Specific BCL approximately 9-10 feet deep Discolored soil is present at property boundary	NW Corner (828709.587; 26720108.132) NE Corner (828730.167; 26720119.572) SE Corner (828781.298; 26720032.585) SW Corner (828761.143; 26720022.189)	Dioxin TEQ above Site-Specific BCL approximately 9-10 feet deep	Approximately 9-10 feet of clean backfill material covers the area	CS-D25A-2, EE-D25A-2, EE-D25A-3	None	9'-10'	EE-D25A-2 and EE-D25A-3 (located at property boundary) analyzed for **Dioxins/Furans** and **Arsenic**.	Arsenic, Dioxins/Furans	Arsenic, Dioxins/Furans	Soil with Dioxin TEQ > BCL remains at depth of 9-10 ft, discolored soil is present. Orange snow fencing was used to demarcate ECA boundaries prior to backfilling.
RZ-D	D10	Groundwater Extraction Well and Related Piping Discolored soil is present	SW Corner (828793.960; 26719855.820) NW Corner (828762.991; 26719899.313) NE Corner (828782.182; 26719912.918) SE Corner (828813.277; 26719870.146)	Existing groundwater extraction well and related piping, with discolored soil observed in southwest sidewall of polygon RZ-D-25A	Approximately 1 foot of native soils overlie the discolored soils	SSAL8-03, EE-D25A-1	None	<3'	EE-D25A-1 analyzed for Dioxins/Furans and **Arsenic**.	Arsenic	Arsenic	Discolored soil layer with debris near groundwater extraction well.
RZ-E	E1	Portions of RZ-E-01 and RZ-E-03 beneath 4th Street and Facility Roadway	NE corner (826277.519; 26718907.439) SE corner (826285.239; 26718864.891) SW corner (826257.274; 26718860.087) NW corner (826251.012; 26718901.434)	Existing roadways	Asphalt pavement for 4th Street and clean crushed limestone for facility roadway	SSAM2-01, BDT-1-N-15, BDT-1-N-10	Attachment C, LOUs II: 5	<8'	Discolored soil status not known	Metals, Hexavalent Chromium, Cyanide, Dioxins/Furans, HCB, OCPs (incl. 4,4-DDE, 4,4-DDT, aldrin, alpha-BHC, dieldrin), Perchlorate, Chlorate, Ammonia, Sulfates, Carbonates, Phosphates, Chloride, Sulfide, Wet Chemistry	Metals, Hexavalent Chromium, Cyanide, Dioxins/Furans, HCB, 4,4-DDE, 4,4-DDT, Aldrin, alpha-BHC, Dieldrin, Perchlorate, Sulfate, Phosphate, Chloride, Sulfide, pH	Remediation polygon soil remains in place.

Table B-1. Summary of Excavation Control Areas (ECAs)
Nevada Environmental Response Trust Site
Henderson, Nevada

Remediation Zone	ECA #	ECA Area Description	ECA Boundary Coordinates	Rationale for Proposing ECA	Engineering Controls In Place	Sampling Locations Relevant to ECA	LOU Areas Relevant to ECA (See Attachments B through E)	Expected Depth(s) of Contamination	Characterization of Known Discolored Soil Left In-Place (Bold indicates results above soil screening levels)	Chemicals of Potential Concern (COPCs)	Minimum Required Analyses for Soils (See SMP Table 4 for Analytical Methods)	Comments
RZ-E	E2	Tronox Process Water Lines Discolored soil is present	Going Clockwise NW Point (828401.614; 26719519.207) NE Point (828427.851; 26719523.773) E Point (828465.906; 26719292.072) S Point (828232.379; 26718985.521) SW Point (828225.192; 26719038.434) Inside corner (828428.217; 26719333.712)	Existing process water lines	None currently	SA107, SSAN7-04, SSAM7-07, SSAM7-06, SA155, SA86, EE-E14B-1, EE-E14B-2, EE-E14-1, EE-E14C-1	Attachment C, LOUs II: 5	<9'	EE-E14B-1, EE-E14B-2, EE-E14-1 analyzed for **Dioxins/Furans**, **HCB**, **Arsenic**, Perchlorate. EE-E14C-1 analyzed for Dioxins/Furans, HCB, SVOCs, Arsenic, OCPs, Perchlorate.	Asbestos, Metals (incl. arsenic), Hexavalent Chromium, Cyanide, Dioxins/Furans, HCB, B(a)P, OCPs (4,4-DDE, 4,4-DDT, aldrin, alpha-BHC), PCBs, Perchlorate, Chlorate, Ammonia, Sulfates, Carbonates, Phosphates, Chloride, Sulfide, Wet Chemistry	Asbestos, Arsenic, Hexavalent Chromium, Cyanide, Dioxins/Furans, HCB, B(a)P, 4,4-DDE, 4,4-DDT, Aldrin, alpha-BHC, PCBs, Perchlorate, Sulfate, Phosphate, Chloride, Sulfide, pH	Remediation polygon soil remains in place; Discolored soil along the western sidewall of the excavation performed within RZ-E-14B.
RZ-E	E3	Facilities at East End of Beta Ditch Asbestos-impacted soil is present	N Corner (828826.349; 26719790.558) SE Corner (828833.420; 26719732.324) SW Corner (828828.310; 26719729.185) W Corner (828799.830; 26719753.547)	Existing sandbag diversion structure, drainage culverts, perimeter fenceline, and elevated walkway structure	A portion has been covered with clean soil	SSAL8-02, BD-1, BD-2, BD-3, BD-4, BD-5	Attachment C, LOUs II: 5	<5'	BD-1, BD-2 analyzed for bulk asbestos. BD-3, BD-4, BD-5 analyzed for **bulk asbestos**.	Asbestos, Metals (incl. arsenic, manganese), Hexavalent Chromium, Cyanide, OCPs, Perchlorate, Chlorate, Ammonia, Sulfates, Carbonates, Phosphates, Chloride, Sulfide, Wet Chemistry	Asbestos, Arsenic, Manganese, Hexavalent Chromium, Cyanide, OCPs, Perchlorate, Sulfate, Phosphate, Chloride, Sulfide, pH	Remediation polygon soil remains in place, discolored soil/debris is present. Plastic sheeting used to demarcate area.

a - COPCs compiled from LOU packets and existing soil data within the ECA.

Figures



ENVIRON

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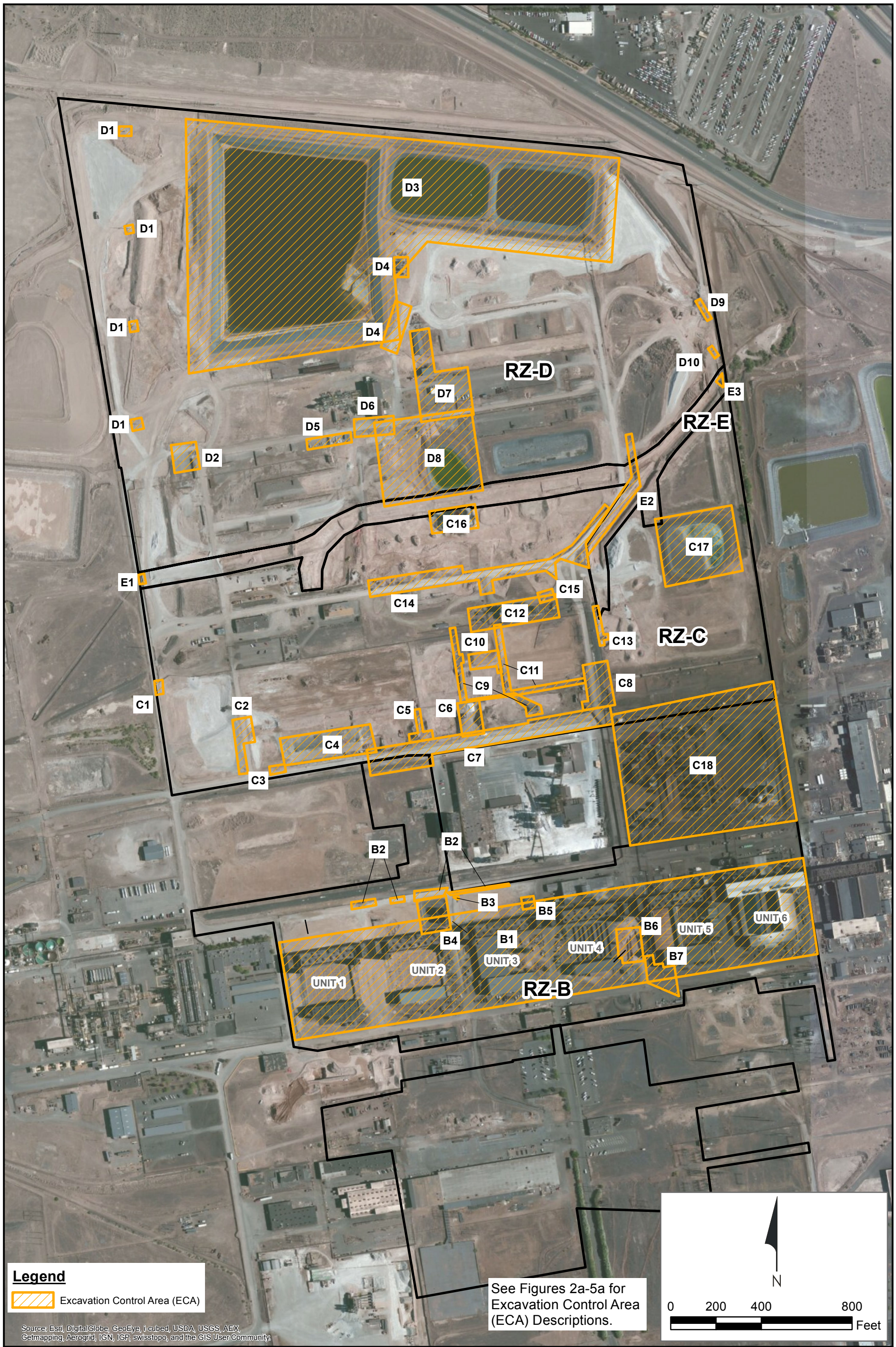
Excavation Control Areas - All Remediation Zones

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure 1

Drafter: EA/RS Date: 10/30/13 Contract Number: 21-32100FA Approved by: Revised:

Path: \\env-evl-file3\public\Eng\LePetomane\NERT\Soil Excavation\GIS\Maps\ExcavationControlAreas_2013\ExcavationControlAreas_RZ.mxd



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Excavation Control Areas - All Remediation Zones (without Remediation Polygons)

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **1a**

Drafter: RS Date: 10/30/13 Contract Number: 21-32100FA Approved by: Revised:

Path: \\env-evl-file3\public\Eng\LePetomane\NERT\Soil Excavation\GIS\Maps\ExcavationControlAreas_2013\Fig1a_ExcavationControlAreas_RZ.mxd

ECA #	ECA Description
B1	Unit Buildings 1-6 Including Soil Within 50 feet of Unit Buildings 1-6
B2	Portions of Polygons RZ-B-04C/05/09A/11/12/13 Extending into Avenue G
B3	Fire Hydrant
B4	Former Hazardous Waste Storage Area
B5	Sodium Chlorate Filter Cake Process Area
B6	Soils Beneath Approximately 6 Feet Deep in Polygons RZ-B-20 and RZ-B-21
B7	Soils Within Polygon RZ-B-22

Legend

- Sample Locations
- Excavation Control Areas (ECAs)
- Polygon Remediation Completed
- Polygon Area Inaccessible, Remediation Not Performed

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, May 20, 2011.

N

0 100 200 400 Feet

Path: H:\LePetomane\NER\TSoil Excavation\GIS\Maps\ExcavationControlAreas_2013\Fig2_ExcavationControlAreas_RZB_a.mxd

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Excavation Control Areas in RZ-B

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **2**

Drafter: EMcC | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

ECA #	ECA Description
B1	Unit Buildings 1-6 Including Soil Within 50 feet of Unit Buildings 1-6
B2	Portions of Polygons RZ-B-04C/05/09A/11/12/13 Extending into Avenue G
B3	Fire Hydrant
B4	Former Hazardous Waste Storage Area
B5	Sodium Chlorate Filter Cake Process Area
B6	Soils Beneath Approximately 6 Feet Deep in Polygons RZ-B-20 and RZ-B-21
B7	Soils Within Polygon RZ-B-22

RZ-B

UNIT 1 UNIT 2 UNIT 3 UNIT 4 UNIT 5 UNIT 6

B1 B2 B3 B4 B5 B6 B7

SA03 SA04 SA05 SA29 SA32 SA33 SA84 SA84W SA110 SA111 SA120 SA136 SA148 SA156 SA169 SA190 SA191 SA192 SA193 SA203 SA204 SA213

SSAQ3-01 SSAQ3-02 SSAQ4-03 SSAQ4-06 SSAQ4-07 SSAQ4-08 SSAQ4-09 SSAQ4-10 SSAQ5-01 SSAQ5-05 SSAQ6-02

SSAR3-01 SSAR4-04 SSAR6-04 SSAR7-05

RSAQ3 RSAQ5 RSAR3 RSAR4 RSAR7

B-04B 0.67'

B-15 8'

EE-B21-1

Legend

- Sample Locations
- Excavation Control Area (ECA)

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User

N

0 100 200 400 Feet

Path: H:\LePetomane\NER\TSoil Excavation\GIS\Maps\ExcavationControlAreas_2013\Fig2a_ExcavationControlAreas_RZB_a.mxd

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Excavation Control Areas in RZ-B (without Remediation Polygons)

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **2a**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

ECA #	ECA Description
B1	Unit Buildings 1-6 Including Soil Within 50 feet of Unit Buildings 1-6
B2	Portions of Polygons RZ-B-04C/05/09A/11/12/13 Extending into Avenue G
B3	Fire Hydrant
B4	Former Hazardous Waste Storage Area
B5	Sodium Chlorate Filter Cake Process Area

B1 B2 B3 B4 B5

SSAQ4-09 SA213 SSAQ4-10 SA04 RSAQ5 SSAQ5-05 SA203 SA136 SA05 SSAQ6-02 SSAQ5-01 SA156 SA148 SA204 SA84W SA84 SSAQ3-01 SA120 SSAQ4-03 SSAQ4-08 SA03 SA169 SSAQ4-07 RSAQ3 SA193 SSAQ4-06 SSAR4-04 SSAQ3-02 SSAR3-01 SA192 SA29 SA191 SA110 SA111 RSAR3 SA190 RSAR4

UNIT 1 UNIT 2 UNIT 3 UNIT 4 RZ-B

Legend

- Sample Locations
- Excavation Control Area (ECA)

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, May

N

0 50 100 200 Feet

Path: \\env-evf-file3\public\Eng\LePetomane\NERT\Soil Excavation\GIS\Maps\ExcavationControlAreas_20131\Fig2b_ExcavationControlAreas_B2_B3_B4_B5.mxd

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Excavation Control Areas B2, B3, B4, and B5

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **2b**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

ECA #	ECA Description
B1	Unit Buildings 1-6 Including Soil Within 50 feet of Unit
B6	Soils Beneath Approximately 6 Feet Deep in Polygons RZ-B-20 and RZ-B-21
B7	Soils Within Polygon RZ-B-22

B2
B5
B1
B6
B7
RZ-B
UNIT 3
UNIT 4
UNIT 5
UNIT 6
SA136
SA05
SSAQ6-02
SSAQ5-01
SA32
RSAR7
EE-B21-1
SSAR6-04
SSAR7-05
SA33

Legend

- Sample Locations
- Excavation Control Area (ECA)

N

0 50 100 200 Feet

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, May 20,

Path: \\env-evf-file3\public\Eng\LePetomane\NERT\Soil Excavation\GIS\Maps\ExcavationControlAreas_2013\Fig2c_ExcavationControlAreas_B6_B7.mxd

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Excavation Control Areas B6 and B7

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **2c**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

ECA #	ECA Description
C1	Portions of RZ-C-01/01A Beneath 4th Street
C2	Portions of RZ-C-03/04/05A Beneath 5th Street
C3	Portions of RZ-C-06 Beneath Fire Hydrant, and Utilities along Avenue F
C4	Concrete Foundation
C5	Water, Fiber Optic, and Electric Utility Lines Through and Near RZ-C-11/13
C6	Discolored Soil at Former Pump House Yard
C7	Avenue F Utilities, Railroad line, and Roadway
C8	9th Street Utilities and Roadway
C9	Diesel Tank and Pipelines
C10	Areas with Discolored Soil
C11	Natural Gas Pipeline
C12	Steam Plant and Associated Features
C13	Steam Line
C14	Process Road
C15	Steam Plant Roadway
C16	BT Tank Area
C17	MN-1 Pond
C18	Leach Plant Equipment and Facilities

Legend

- Sample Locations
- Excavation Control Areas (ECAs)
- Polygon Remediation Completed
- Polygon Area Inaccessible, Remediation Not Performed

N

0 100 200 400 Feet

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Path: H:\LePetomane\NERT\Soil Excavation\GIS\Maps\Excavation Control Areas_2013\Fig3a_Excavation Control Areas_RZC_a.mxd

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Excavation Control Areas in RZ-C

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **3**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

ECA #	ECA Description
C1	Portions of RZ-C-01/01A Beneath 4th Street
C2	Portions of RZ-C-03/04/05A Beneath 5th Street
C3	Portions of RZ-C-06 Beneath Fire Hydrant, and Utilities along Avenue F
C4	Concrete Foundation
C5	Water, Fiber Optic, and Electric Utility Lines Through and Near RZ-C-11/13
C6	Discolored Soil at Former Pump House Yard
C7	Avenue F Utilities, Railroad line, and Roadway
C8	9th Street Utilities and Roadway
C9	Diesel Tank and Pipelines
C10	Areas with Discolored Soil
C11	Natural Gas Pipeline
C12	Steam Plant and Associated Features
C13	Steam Line
C14	Process Road
C15	Steam Plant Roadway
C16	BT Tank Area
C17	MN-1 Pond
C18	Leach Plant Equipment and Facilities

RZ-C

N

0 100 200 400 Feet

Legend

Sample Locations

Excavation Control Area (ECA)

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community. May 20, 2011.

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Excavation Control Areas in RZ-C (without Remediation Polygons)

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **3a**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

ECA #	ECA Description
C1	Portions of RZ-C-01/01A Beneath 4th Street
C2	Portions of RZ-C-03/04/05A Beneath 5th Street
C3	Portions of RZ-C-06 Beneath Fire Hydrant, and Utilities along Avenue F
C4	Concrete Foundation

SSAN2-03
SA56
C1
SSAO4-03
SSAO3-02
SSAO5-05
RSAO4
SA183
SA48
C2
C4
SA10
SA46
SSAO4-04
SSAO3-01
SSAO3-03
C3

Legend

- Sample Locations
- Excavation Control Area (ECA)

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, May

N

0 40 80 160 Feet

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Excavation Control Areas C1, C2, C3, and C4

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **3b**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

ECA #	ECA Description
C5	Water, Fiber Optic, and Electric Utility Lines Through and Near RZ-C-11/13
C6	Discolored Soil at Former Pump House Yard
C7	Avenue F Utilities, Railroad line, and Roadway
C8	9th Street Utilities and Roadway
C9	Diesel Tank and Pipelines
C10	Areas with Discolored Soil
C11	Natural Gas Pipeline
C12	Steam Plant and Associated Features
C13	Steam Line

RZ-C
C12
C13
C10
C11
C8
C9
C6
C5
C4
C7
EE-E14A-1
SA137
SSAN6-08
SSAN6-06
SSAO6-01
DS-C17-1
EE-C18-1
EE-C21-1
EE-C21-2
SSAO6-06
DS-C10-1
SA114
SA102
SA50
SA51
SSAO6-03
SSAO6-02
EE-C20-1
SSAO7-09
SSAO5-09
DS-C19-1
SA39
EE-C23-1
DS-C23-1
SA43
SSAO4-03
SSAO7-08
SSAO6-05
RSAP6
EE-C27-1
EE-C27-3
SA130
EE-C27-2
EE-C27-4
SA40
SSAO5-05
EE-C24-2
EE-C15-1
SA41
EE-C24-1
SA188
RSAO4
SA183
EE-C13-1
SA187
DS-C24-1
DS-C24-2
SA46
SSAO4-04
SSAO5-03
SSAP5-03

Legend

- Sample Locations
- Excavation Control Area (ECA)

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community. May 20, 2011.

N

0 50 100 200 Feet

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Excavation Control Areas C5, C6, C7, C8, C9, C10, C11, C12, and C13

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **3c**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-3100FA | Approved by: DR | Revised:

ECA #	ECA Description
C12	Steam Plant and Associated Features
C13	Steam Line
C14	Process Road
C15	Steam Plant Roadway
C16	BT Tank Area

D8
C16
E2
C17
C14
C15
C12
C13
C10
RZ-C

SSAM5-04
SSAM6-02
SSAM6-06
SSAM5-05
SSAM6-05
SA104
RSAM5
SA15
SA94
SA105
SA60
SSAN5-03
SSAN5-02
SSAN5-05
SA58
SA196
SA150
SSAN6-02
SSAN6-01
SA49
SA63
SSAM7-03
SA107
SA155
SA86
EE-E14C-1
SSAM7-06
SSAM7-07
EE-E14-1
EE-E14B-1
EE-E14B-2
SSAN7-04
RSAN6
EE-E14A-1
SA137
SSAN6-08
SSAN6-06
SSAO6-01

Legend

- Sample Locations
- Excavation Control Area (ECA)

N

0 50 100 200 Feet

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Co

Path: \\env-evl-file3\public\Eng\LePetomane\NERT\Soil Excavation\GIS\Maps\ExcavationControlAreas_2013\Fig30_ExcavationControlAreas_C12_C14_C15_C16.mxd

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Excavation Control Areas C12, C13, C14, C15, and C16

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **3d**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

ECA #	ECA Description
C17	MN-1 Pond

SA155
EE-E14C-1
SA86
SSAM7-06
SSAM7-07
SA63
EE-E14-1
SSAM7-03
E2
SA49
EE-E14B-1
EE-E14B-2
SSAN6-01
SA107
SSAN7-04
SSAN6-02
SA60
C17
RSAN6
SA150
C15
C12
SSAN6-08
SSAN6-06
SA137
C13

Legend

- Sample Locations
- Excavation Control Area (ECA)

N

0 50 100 200 Feet

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community. May 20, 2011.

Path: \\env-evf-file3\public\Engl\LePetomane\NERT\Soil Excavation\GIS\Maps\ExcavationControlAreas_2013\Fig3e_ExcavationControlAreas_C17.mxd

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Excavation Control Area C17

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **3e**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

ECA #	ECA Description
C18	Leach Plant Equipment and Facilities

SSAO6-02
SSAO6-03
SSAO7-09
EE-C20-1
C8
SA39
DS-C23-1
SSAO7-08
SSAO8-02
EE-C27-1
RSAP6
SA130
EE-C27-2
EE-C27-4
C18

Legend

- Sample Locations
- Excavation Control Area (ECA)

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, May 20, 2011.

N

0 50 100 200 Feet

Path: \\env-evf-file3\public\Eng\LePetomane\NERT\Soil Excavation\GIS\Maps\ExcavationControlAreas_2013\Fig3f_ExcavationControlAreas_C18.mxd

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Excavation Control Area C18

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **3f**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

ECA #	ECA Description
D1	NV Energy Transmission Line Towers
D2	Asphalt Pavement Area
D3	GW-11 and WC Ponds and Berms
D4	Groundwater Treatment System Equalization Tanks & Associated Piping
D5	Treatment Plant Chemical Storage Area
D6	Facility Roadway
D7	Asphalt Pavement, Office Trailers, Cr Treatment Plant, Quonset Hut, and Utilities
D8	AP-5 Pond and Associated Utilities
D9	Dioxin TEQ above Site-Specific BCL Approximately 9-10 feet deep
D10	Groundwater Extraction Well and Related Piping

RZ-D

RZ-E

Legend

- Sample Locations
- Excavation Control Areas (ECAs)
- Polygon Remediation Completed
- Polygon Area Inaccessible, Remediation Not Performed

N

0 125 250 500 Feet

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community. May 20, 2011.

Path: \\env-evf-file3\public\Eng\LePetomane\NERT\Soil Excavation\GIS\Maps\ExcavationControlAreas_RZD_a.mxd

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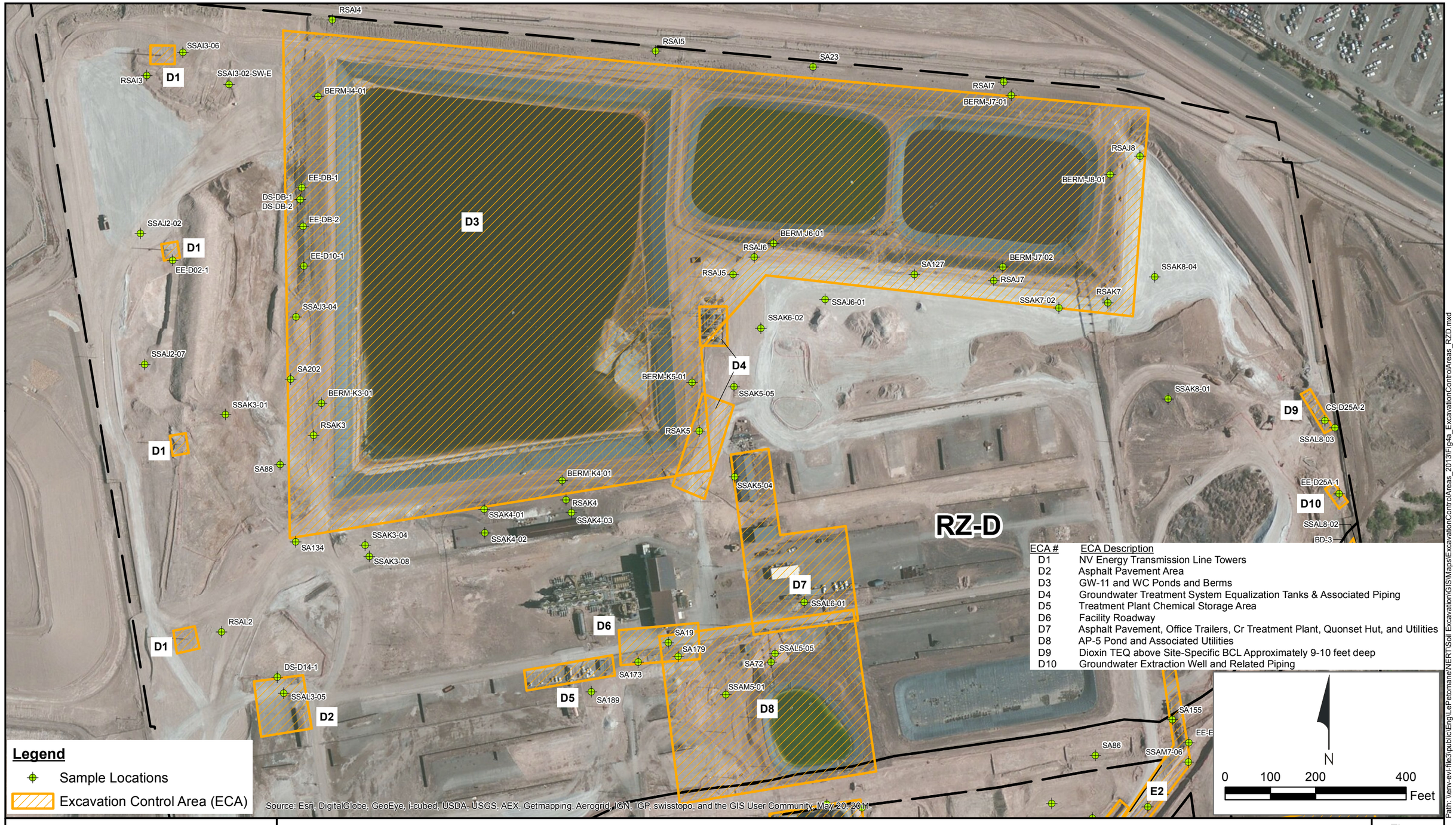
Excavation Control Areas in RZ-D

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure 4

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:



ECA #	ECA Description
D1	NV Energy Transmission Line Towers
D2	Asphalt Pavement Area
D3	GW-11 and WC Ponds and Berms
D4	Groundwater Treatment System Equalization Tanks & Associated Piping
D5	Treatment Plant Chemical Storage Area
D6	Facility Roadway
D7	Asphalt Pavement, Office Trailers, Cr Treatment Plant, Quonset Hut, and Utilities
D8	AP-5 Pond and Associated Utilities
D9	Dioxin TEQ above Site-Specific BCL Approximately 9-10 feet deep
D10	Groundwater Extraction Well and Related Piping

Legend

- Sample Locations
- Excavation Control Area (ECA)

Path: \\env-evf-file3\public\Eng\LePetomane\NERT\Soil Excavation\GIS\Maps\ExcavationControlAreas_2013\Fig4a_ExcavationControlAreas_RZD.mxd

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Excavation Control Areas in RZ-D (without Remediation Polygons)

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **4a**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

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Excavation Control Areas D1 and D2

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **4b**

Drafter: RS Date: 10/30/13 Contract Number: 21-32100FA Approved by: Revised:

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ECA #	ECA Description
D3	GW-11 and WC Ponds and Berms
D4	Groundwater Treatment System Equalization Tanks & Associated Piping

RSAI4
SSAI3-06
RSAI5
SA23
SSAI3-02-SW-E
D1
BERM-I4-01
RSAI7
BERM-J7-01
RSAJ8
BERM-J8-01
EE-DB-1
DS-DB-1
DS-DB-2
EE-DB-2
D3
-02
D1
RSAJ6
BERM-J6-01
EE-D02-1
EE-D10-1
SA127
BERM-J7-02
SSAK8-04
RSAJ5
RSAJ7
RSAK7
SSAJ6-01
SSAK7-02
SSAJ3-04
SSAK6-02
2-07
D4
SA202
BERM-K5-01
SSAK5-05
SSAK8-01
BERM-K3-01
SSAK3-01
RSAK3
RSAK5
SA88
BERM-K4-01
SSAK5-04
RSAK4
SSAK4-01
SSAK4-03
RZ-D
SSAK4-02
SSAK3-04
SA134
SSAK3-08
D7
SSAL6-01

Legend

- Sample Locations
- Excavation Control Area (ECA)

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.

N

0 75 150 300 Feet

Path: \\env-evf-file3\public\Eng\LePetomane\NERT\Soil Excavation\GIS\Maps\ExcavationControlAreas_2013\Fig4c_ExcavationControlAreas_D3_D4.mxd

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Excavation Control Areas D3 and D4

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **4c**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

ECA #	ECA Description
D5	Treatment Plant Chemical Storage Area
D6	Facility Roadway
D7	Asphalt Pavement, Office Trailers, Cr Treatment Plant, Quonset Hut, and Utilities
D8	AP-5 Pond and Associated Utilities

BERM-K4-01
RSAK4
SSAK4-01
SSAK4-03
SSAK4-02
SSAK5-04
D7
RZ-D
SSAL6-01
D6
SA19
SA179
SSAL5-05
SA173
SA72
SSAM5-01
SA189
D5
D8
C16

Legend

- Sample Locations
- Excavation Control Area (ECA)

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community. May 20,

N

0 50 100 200 Feet

Path: \\env-evf-file3\public\Eng\LePetomane\NERT\Soil Excavation\GIS\Maps\ExcavationControlAreas_2013\Fig4d_ExcavationControlAreas_D5_D6_D7_D8.mxd

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Excavation Control Areas D5, D6, D7, and D8

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **4d**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

ECA #	ECA Description
D9	Dioxin TEQ above Site-Specific BCL Approximately 9-10 feet deep
D10	Groundwater Extraction Well and Related Piping

D9

CS-D25A-2

SSAL8-03

EE-D25A-1

D10

SSAL8-02

BD-3
BD-4
BD-5

E3

Legend

- Sample Locations
- Excavation Control Area (ECA)

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, May 20, 2011.

N

0 25 50 100 Feet

Path: \\env-evf-file3\public\Eng\LePetomane\NEERT\Soil Excavation\GIS\Maps\ExcavationControlAreas_2013\Fig4e_ExcavationControlAreas_D9_D10.mxd

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Excavation Control Areas D9 and D10

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **4e**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

ECA #	ECA Description
E1	Portions of RZ-E-01 and RZ-E-03 Beneath 4th St
E2	Tronox Process Water Lines
E3	Facilities at East End of Beta Ditch

RZ-D

RZ-E

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community. May 20, 2011.

Legend

- Sample Locations
- Excavation Control Areas (ECAs)
- Polygon Remediation Completed
- Polygon Area Inaccessible, Remediation Not Performed

N

0 100 200 400 Feet

Path: \\env-evf-file3\public\Eng\LePetomane\NERT\Soil Excavation\GIS\Maps\ExcavationControlAreas_2013\ExcavationControlAreas_RZE_a.mxd

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Excavation Control Areas in RZ-E

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure 5

Drafter: EMcC | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

ECA #	ECA Description
E1	Portions of RZ-E-01 and RZ-E-03 Beneath 4th St
E2	Tronox Process Water Lines
E3	Facilities at East End of Beta Ditch

RZ-D

RZ-E

RZ-C

D1 D1 D2 D4 D5 D6 D7 D8 D10 E3 E2 C16 C17 C14 C15 C12 C13 C11 C10 C9 C8 E1

SSAK3-01 BERM-K3-01 RSAK3 SA88 RSAK5 SSAK8-01 BERM-K4-01 RSAK4 SSAK4-01 SSAK4-03 SSAK4-02 SA134 SSAK3-04 SSAK3-08 SSAK5-04 EE-D25A-1 BD-3 BD-4 BD-5 SSAL8-02 RSAL2 SSAL6-01 SA19 SA173 SA179 SSAL5-05 SA72 DS-D14-1 SSAL3-05 SA189 SSAM5-01 SA155 EE-E14C-1 SA86 SSAM7-06 SSAM7-07 SSAM5-04 SSAM6-02 SA63 SSAM5-05 SSAM6-06 SSAM7-03 EE-E14-1 SSAM6-05 SA104 SA49 EE-E14B-1 EE-E14B-2 RSAM5 SSAN6-01 SA107 SSAN7-04 SA15 SA94 SA105 SA60 SSAN6-02 SSAN5-03 SSAN5-02 BDT-1-N-15 BDT-1-N-10 SSAM2-01 SSAN5-05 SA58 SA196 SA150 RSAN6 SA137 SSAN6-06 SSAN6-08 SA51 DS-C17-1 SSAO6-01 EE-C18-1 SSAO6-06 EE-C21-1 EE-C21-2 SSAO6-02 SSAO6-03 SA50 DS-C10-1 SA114 SA102 EE-C20-1 SSAO7-09 SSAO5-09 DS-C19-1 EE-C23-1 SA39 SSAO8-02 SSAO4-03 SA43 DS-C23-1 SSAO7-08

Legend

- Sample Locations
- Excavation Control Area (ECA)

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community. May 20, 2011.

N

0 100 200 400 Feet

Path: \\env-evf-file3\public\Engl\LePetomane\NERT\Soil Excavation\GIS\Maps\ExcavationControlAreas_2013\Fig5a_ExcavationControlAreas_RZE.mxd

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Excavation Control Areas in RZ-E (without Remediation Polygons)

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **5a**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-29100FA | Approved by: DR | Revised:

ECA #	ECA Description
E1	Portions of RZ-E-01 and RZ-E-03 Beneath 4th St

E1

SSAM2-01

Legend

- Sample Locations
- Excavation Control Area (ECA)

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS

N

0 10 20 40 Feet

Path: \\env-evf-file3\public\Eng\LePetomane\NERT\Soil Excavation\GIS\Maps\ExcavationControlAreas_E1.mxd

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Excavation Control Area E1

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **5b**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

Path: \\env-evf-file3\public\Eng\LePetomane\NEERT\Soil Excavation\GIS\Maps\ExcavationControlAreas_2013\Fig5c_ExcavationControlAreas_E2.mxd

ENVIRON

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Excavation Control Area E2

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **5c**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:

ECA #	ECA Description
E3	Facilities at East End of Beta Ditch

SSAL8-02

BD-3
BD-4
BD-5

E3

Legend

- Sample Locations
- Excavation Control Area (ECA)

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community. May 20, 2011.

N

0 10 20 40 Feet

Path: \\env-evf-file3\public\Engl\LePetomane\NERT\Soil Excavation\GIS\Maps\ExcavationControlAreas_2013\Fig5d_ExcavationControlAreas_E3.mxd

ENVIRON

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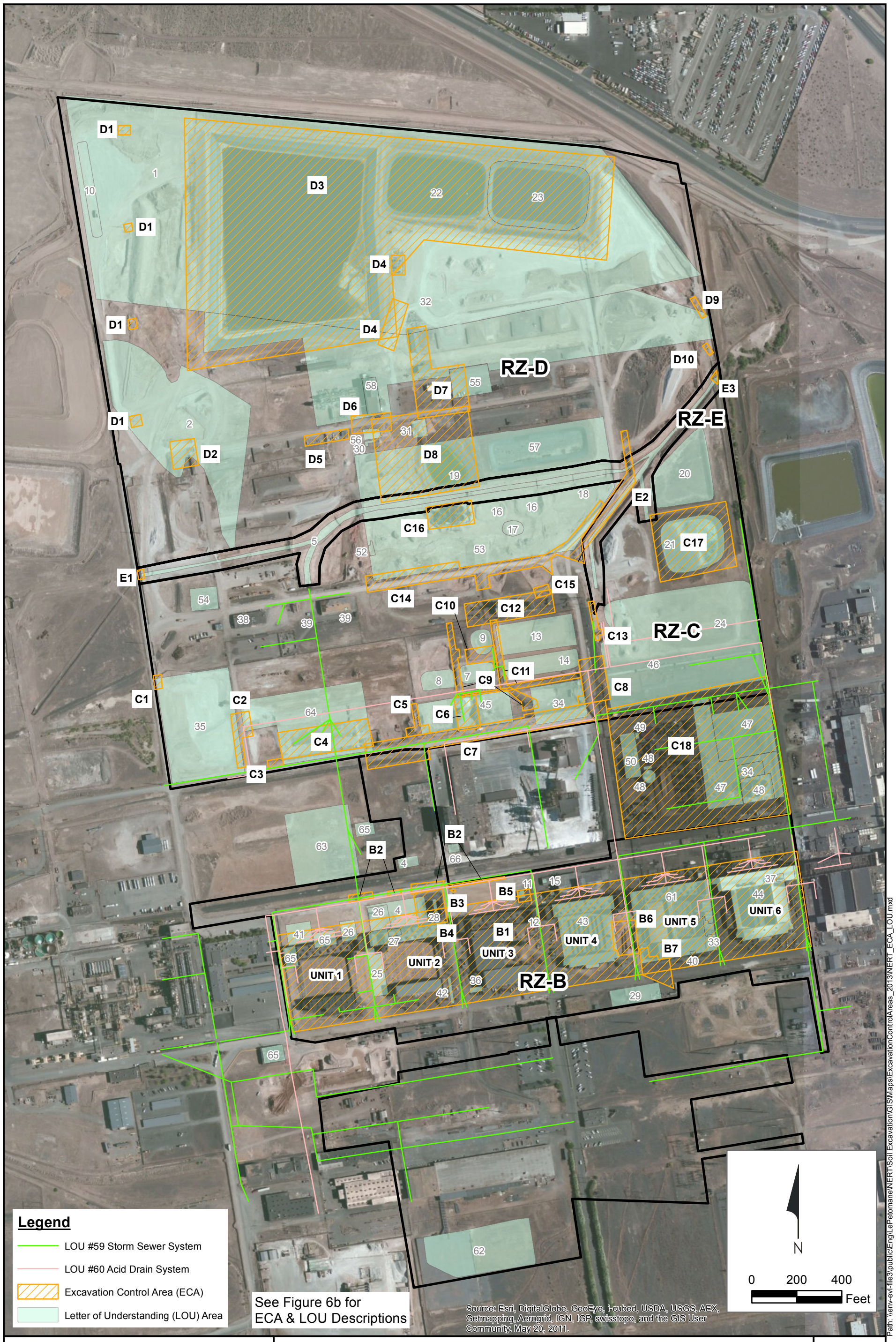
Excavation Control Area E3

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **5d**

Drafter: RS | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: DR | Revised:



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ECA & LOU Locations

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **6a**

Drafter: EA | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: | Revised:

ECA #	ECA Description
RZ-B	
B1	Unit Buildings 1-6 Including Soil Within 50 feet of Unit Buildings 1-6
B2	Portions of Polygons RZ-B-04C/05/09A/11/12/13 Extending into Avenue G
B3	Fire Hydrant
B4	Former Hazardous Waste Storage Area
B5	Sodium Chlorate Filter Cake Process Area
B6	Soils Beneath Approximately 6 Feet Deep in Polygons RZ-B-20 and RZ-B-21
B7	Soils Within Polygon RZ-B-22
RZ-C	
C1	Portions of RZ-C-01/01A Beneath 4th Street
C2	Portions of RZ-C-03/04/05A Beneath 5th Street
C3	Portions of RZ-C-06 Beneath Fire Hydrant, and Utilities along Avenue F
C4	Concrete Foundation
C5	Water, Fiber Optic, and Electric Utility Line Through and Near RZ-C-11/13
C6	Discolored Soil at Former Pump House Yard
C7	Avenue F Utilities, Railroad Line, and Roadway
C8	9th Street Utilities and Roadway
C9	Diesel Tank and Pipelines
C10	Areas with Discolored Soil
C11	Natural Gas Pipeline
C12	Steam Plant and Associated Features
C13	Steam Line
C14	Process Road
C15	Stream Plant Roadway
C16	BT Tank Area
C17	MN-1 Pond
C18	Leach Plant Equipment and Facilities
RZ-D	
D1	NV Energy Transmission Line Towers
D2	Asphalt Pavement Area
D3	GW-11 and WC Ponds and Berms
D4	Groundwater Treatment System Equalization Tanks & Associated Piping
D5	Treatment Plant Chemical Storage Area
D6	Facility Roadway
D7	Asphalt Pavement, Office Trailers, Cr Treatment Plant, Quonset Hut, and Utilities
D8	AP-5 Pond and Associated Utilities
D9	Dioxin TEQ above Site-Specific BCL Approximately 9-10 feet deep
D10	Groundwater Extraction Well and Related Piping
RZ-E	
E1	Portions of RZ-E-01 and RZ-E-03 Beneath 4th Street
E2	Tronox Process Water Lines
E3	Facilities at East End of Beta Ditch

LOU #	LOU Description
1	Trade Effluent Settling Ponds
2	Open Area Due South of Trade Effluent Settling Ponds
3	Air Pollution Emissions Associated with Industrial Processes
4	Former Hardesty Chemical Company Site
5	On-Site Portion of Beta Ditch Including the Small Diversion Ditch
6	Unnamed Drainage Ditch Segment
7	Old P-2 Surface Impoundment
8	Old P-3 Surface Impoundment
9	New P-2 Pond and Associated Piping
10	On-Site Hazardous Landfill
11	Sodium Chlorate Filter Cake Area North of Unit 3
12	Hazardous Waste Storage Area Between Units 3 and 4
13	Closed Surface Impoundment S-1
14	Closed Surface Impoundment P-1
15	Platinum Drying Unit North of Unit 4
16	Ponds AP-1, AP-2 and AP-3 and Associated Transfer Lines
17	Ponds AP-1, AP-2 and AP-3 and Associated Transfer Lines
18	Pond AP-4
19	Pond AP-5
20	Pond C-1 and Associated Piping
21	Pond MN-1 and Associated Piping
22	Ponds WC-West and Associated Piping
23	Ponds WC-East and Associated Piping
24	Leach Beds, Associated Conveyance Facilities and Former Manganese Tailings Area
25	Process Hardware Storage Area Between Units 1 and 2
26	Trash Storage Area North of Units 1 and 2
27	PCB Storage Area - Unit 2
28	Hazardous Waste Storage Area North of Unit 2
29	Solid Waste Dumpsters
30	Ammonium Perchlorate Area- Pad 35
31	Drum Crushing and Recycling Area
32	Groundwater Remediation Unit
33	Sodium Perchlorate Platinum By-Product Filter
34	Manganese Tailings Area
35	Truck Unloading Area
36	Former Satellite Accumulation Point - Unit 3, Maintenance Shop
37	Former Satellite Accumulation Point - Unit 6, Maintenance Shop
38	Former Satellite Accumulation Point - AP Laboratory
39	Former Satellite Accumulation Point - AP Maintenance Shop
40	PCB Transformer Spill
41	Unit 1 Tenants - Stains
42	Unit 2 Salt Redler
43	Unit 4 and 5 Basements
44	Unit 6 Basements
45	Diesel Storage Tank Area - Stains
46	Former Old Main Cooling Tower and Recirculation Lines
47	Leach Plant Area Manganese Ore Piles
48	Leach Plant Area Anolyte Tanks
49	Leach Plant Area Sulfuric Acid Storage Tank
50	Leach Plant Area Leach Tanks
51	Leach Plant Area Transfer Lines To/From Unit 6
52	AP Plant Area Screening Building, Dryer Building, and Associated Sump
53	AP Plant Area Tank Farm
54	AP Plant Area Change House/Laboratory and Septic Tank
55	AP Plant Area Storage Pads - Fire
56	AP Plant Area Old Building D-1 Washdown
57	AP Plant Area New Building D-1 Washdown
58	AP Plant SI and Transfer Lines To/From AP SI
59	Storm Sewer System
60	Acid Drain System
61	Old Sodium Chlorate Plant Decommissioning
62	State Industries Inc. Site, Including Impoundments and Catch Basin
63	J.B. Kellet, Inc. Trucking Site
64	Koch Materials Company
65	Assorted KMCC Tenants
66	Flintkote Company
67	Delbert Madsen and Estate of Delbery Madsen

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2200 Powell St., Suite 700, Emeryville, CA 94608

ECA & LOU Descriptions

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **6b**

Drafter: EA | Date: 10/30/13 | Contract Number: 21-32100FA | Approved by: | Revised:

Attachment A

NV Energy Trench Detail Email and Drawing

Jim Hampton

From: Harvey, Lisa [LHarvey@nvenergy.com]
Sent: Thursday, July 08, 2010 9:31 AM
To: 'jim.hampton@ngem.com'
Subject: Information
Attachments: DOC070810.pdf

Here is the trenching detail and application.

You will notice the application at the bottom asked for an owner signature, I do not need the owner. Just whoever will be the contact for this. If you have any questions please let me know

Thanks!

Lisa Harvey
NV Energy- Land Services
Right-of-Way Administrator
Transmission conflicts
Office-702-402-5327
Cell- 702-277-3249

-----Original Message-----
From: PER005 [mailto:PER005]
Sent: Thursday, July 08, 2010 10:23 AM
To: Harvey, Lisa
Subject: Scanned from PER005 07/08/2010 09:22

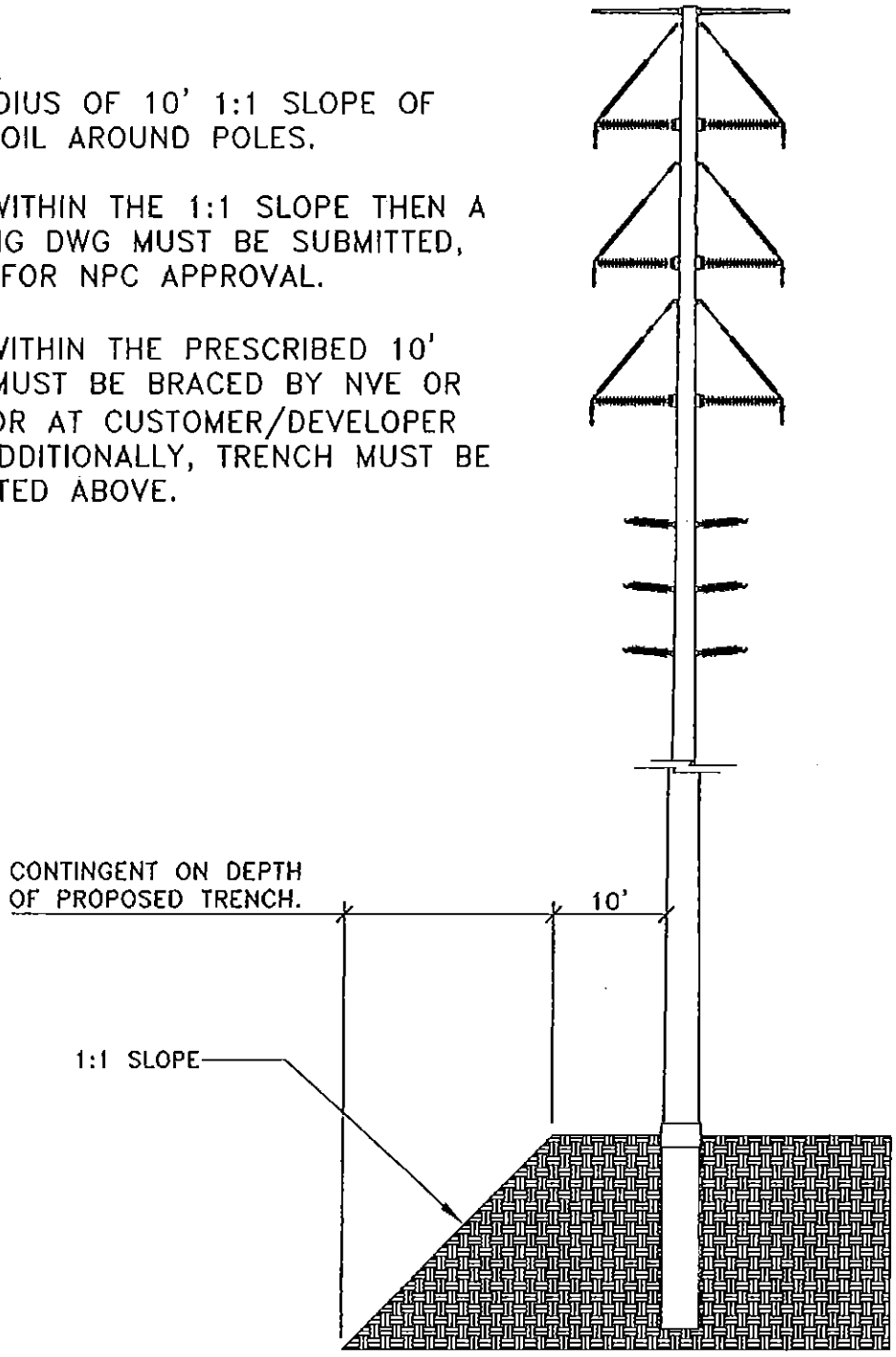
Scanned from PER005.
Date: 07/08/2010 09:22
Pages:3
Resolution:200x200 DPI

REQUIREMENTS:

MAINTAIN A RADIUS OF 10' 1:1 SLOPE OF UNDISTURBED SOIL AROUND POLES.

IF TRENCH IS WITHIN THE 1:1 SLOPE THEN A TRENCH SHORING DWG MUST BE SUBMITTED, P.E. STAMPED, FOR NPC APPROVAL.

IF TRENCH IS WITHIN THE PRESCRIBED 10' RADIUS, POLE MUST BE BRACED BY NVE OR NVE CONTRACTOR AT CUSTOMER/DEVELOPER SOLE COST. ADDITIONALLY, TRENCH MUST BE SHORED AS NOTED ABOVE.



DRAWING INFO.		
DRAWN	6/12/01	JLH
DESIGNED	6/12/01	JLH
CHECKED	6/12/01	SA
APPROVED	6/12/01	SA
	DATE	BY
REV. 1	11/12/08	DP

NVEnergy

TRANSMISSION ENGINEERING STANDARDS

TRENCH DETAIL

POLE STABILITY

SHEET: 1 OF 1

DWG. NO.: STD-D2

U:\NPC\TD\VOL1\TRANSCOM\CONFLICT\CONFLICT STANDARDS\CONTROLLED MASTER FILES\02 TRENCH DETAIL POLE STABILITY.DWG

Attachment B

Letter of Understanding (LOU) Packets – Area I

(provided electronically or on CD separately)

Attachment C

Letter of Understanding (LOU) Packets – Area II

(provided electronically or on CD separately)

Attachment D

Letter of Understanding (LOU) Packets – Area III

(provided electronically or on CD separately)

Attachment E

Letter of Understanding (LOU) Packets – Area IV

(provided electronically or on CD separately)

Attachment F

Analytical Results Summary Tables

(provided electronically or on CD separately)

Attachment G

Executable Table of Remaining Soil Results

(provided electronically or on CD separately)