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July 22, 2013

Mr. Kenneth Bardo
USEPA, Region V
Waste Pesticide and Toxics Division
Enforcement Compliance and Assurance Branch
77 West Jackson Boulevard, LU-9J
Chicago, Illinois 60604-3590

Subject: Natural Area Report
DuPont East Chicago Site
East Chicago, Indiana

Dear Mr. Bardo,

On behalf of our client, E. I. du Pont de Nemours and Company (DuPont), and as a part of the on-going Resource Conservation and Recovery Act (RCRA) Corrective Action Program, Parsons has performed a comprehensive evaluation of the DuPont East Chicago Natural Area, East Chicago, Indiana. The results of this evaluation are presented in the Natural Area Report and represent findings associated with extensive sampling in the natural area as well as the extended buffer zone, and incorporates results from the recent IRM action. This hardcopy report is included in the package and on the enclosed CD-ROM.

Please contact the DuPont project manager, Mr. Sathya Yalvigi (302-999-2764; Sathya.V.Yalvigi@USA.dupont.com) or myself (512-719-6006), if you have any questions or comments.

Sincerely,

Randy Palachek
Project Manager

Enclosure

cc: Sathya Yalvigi, DuPont Corporate Remediation Group

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NATURAL AREA EVALUATION, RISK ASSESSMENT AND MONITORING PLAN

DUPONT EAST CHICAGO SITE
EAST CHICAGO, INDIANA

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July 2013

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ACRONYMS

Acronym	Definition / Description
95% UCL	95% upper confidence limit of the mean
ADQM	Analytical Data Quality Management
ALM	Adult Lead Model
bgs	Below Ground Surface
CCA	Canonical Correspondence Analysis
CMS	Corrective Measures Study
COPEC	Constituents of potential ecological concern
CSF	Cancer Slope Factor
DuPont	E. I. du Pont de Nemours and Company
EF	Exceedance Factor
EPC	Exposure Point Concentration
FQI	Floristic Quality Index
FQA	Floristic Quality Assessment
GCR-SRP	Grand Calumet River – Sediment Remediation Program
GCR AOC	Grand Calumet River Area of Concern
FIR	Food ingestion rate
HEAST	Health Effects Assessment Summary Tables
HHRA	Human Health Risk Assessment
HI	Hazard index
IDEM	Indiana Department of Environmental Management
IDNR	Indiana Department of Natural Resources
IRIS	Integrated Risk Information System
IRM	Interim remedial measure
Mean C	Coefficient of conservatism
µg/dl	Micrograms per deciliter
mg/kg-day	Milligrams per kilogram of body weight per day
mg/L	Milligrams per liter
MNA	Monitored natural attenuation
NOAEL	No-observable adverse effect level
PPTRV	Provisional Peer Reviewed Toxicity Value
QAPP	Quality Assurance Project Plan
RBRC	Risk-Based Reference Concentrations
RCRA	Resource Conservation and Recovery Act
RfD	Reference Dose
RSL	Regional Screening Level
TNC	The Nature Conservancy
TRV	Toxicity reference values

Acronym	Definition / Description
USEPA	U.S. Environmental Protection Agency
USFWS	U. S. Fish and Wildlife Service

1.0 INTRODUCTION

E. I. the du Pont de Nemours and Company (DuPont) owns a former manufacturing facility located along the north side of the Grand Calumet River, near the I-90 Tollway at 5215 Kennedy Avenue, East Chicago, in Lake County, Indiana (Figure 1). The 438-acre DuPont property is bounded on the north by the Riley Park residential neighborhood and various commercial properties, on the south by the East Branch of the Grand Calumet River, on the east by commercial properties, and on the west by Kennedy Avenue and the former USS Lead Refinery. DuPont operations were discontinued at the East Chicago Facility in 1986.

The eastern portion of the East Chicago Site was not developed and retained its original lakeplain/dunes geomorphology and associated plant communities. Commonly referred to as the Natural Area, this section of the East Chicago Site is currently managed by The Nature Conservancy (TNC) for habitat preservation. The Natural Area is one of the few undisturbed tracts of the dune and swale system that has survived development along the southern shore of Lake Michigan. This area is home to many rare, threatened, or endangered plant or wildlife species and serves as core habitat for the federally endangered Karner blue butterfly.

The Indiana Department of Natural Resources (IDNR) Division of Nature Preserves holds a conservation easement on 172 acres of the Natural Area. The Natural Area was conveyed to IDNR as part of the settlement of all natural resource damage claims with the State and Federal Natural Resource Trustees for the East Branch of the Grand Calumet River. TNC has managed this tract since 1999, focusing on restoring the structural, compositional, and functional components of the dune and swale complex through the natural plant communities, and will continue to do so under a management agreement with the IDNR (TNC 2006). In addition, DuPont and TNC established a new, 5-year program in 2012 that provides the funding necessary for TNC to continue its conservation and management work in this area.

1.1 Report Scope

The scope of this report is limited to the 172 acres of the Natural Area and approximately 20+ acres of additional areas along the western edge of the Natural Area. These 20 acres serve as a Buffer Zone between the former manufacturing areas and the Natural Area.

Several habitat improvement actions have been implemented by IDEM and DuPont, in cooperation with TNC, as part of the ongoing effort to protect and restore the Natural Area and adjacent areas. The implementation of those actions is described in this report and include the following:

- A vegetation restoration program that included the control of invasive plant species by removal and/or herbicide application;
- An extensive field investigation completed in September 2011 to assess the condition of plant communities and related soil concentrations;
- Interim Remedial Measures (IRMs) in the fall 2012 as part of an on-going Resource Conservation and Recovery Act (RCRA) Corrective Action Program at the DuPont East Chicago Site to remove contaminated surface soil from several areas within the Natural Area and an area of over 20 acres located within, or adjacent to, the Natural Area referred to as the Buffer Zone separating the Natural Area from former manufacturing and waste disposal areas; and

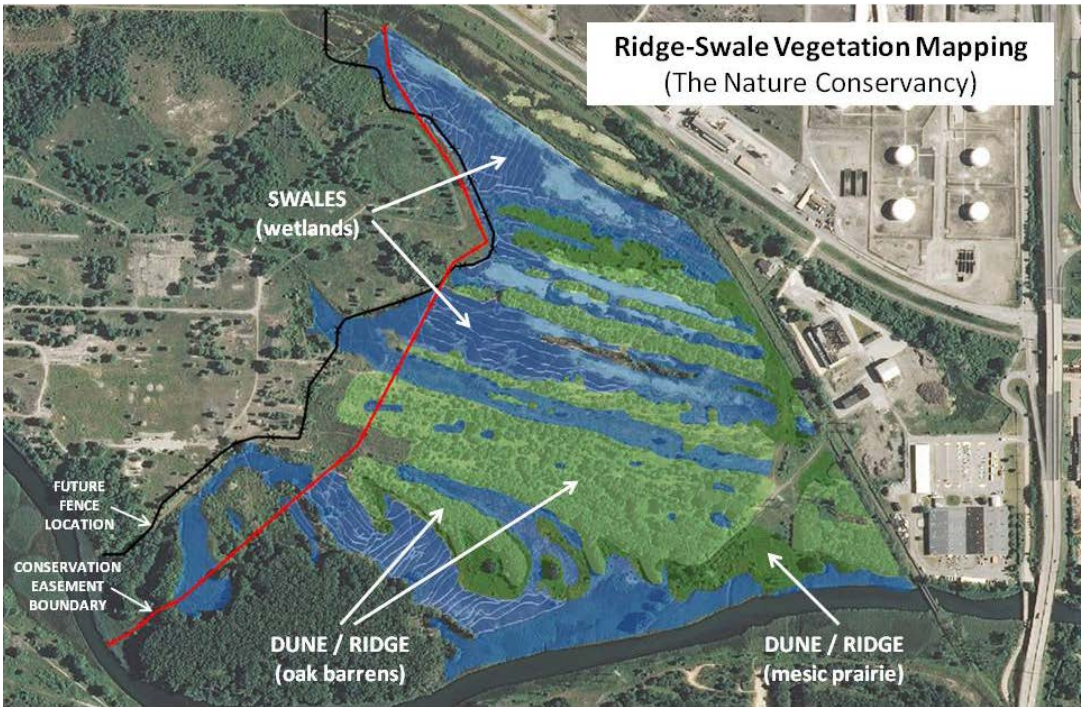
- As part of the IRM, construction of open water habitat to provide additional habitat diversity.

Following the description of habitat improvement actions, an assessment is presented on the potential ecological risk to wildlife species from exposure to soil contamination, as well as potential risk to workers conducting future habitat restoration activities in the Natural Area. The final section of the report presents a long-term plan for monitoring soil conditions and plant communities in Natural Area swales to ascertain the effectiveness of remedial and habitat improvement actions.

1.2 Site Location and Setting

Figure 2 depicts the location of the Natural Area within the East Chicago Site. During production, the western developed area was used mainly for manufacturing purposes, while the eastern section was left relatively undisturbed. Currently, most of the previously active manufacturing areas have been decommissioned and the production facilities have been removed. WR Grace operates a small facility on the western edge of the site via a long-term lease from DuPont. A Buffer Zone of approximately 20 acres has been established that separates the Natural Area from the former manufacturing areas. As noted earlier this Buffer Zone area was remediated during the IRM activities.

Despite extensive urban and industrial development in the surrounding landscape, the Natural Area continues to support a unique and biologically diverse native plant and wildlife community. The Natural Area represents a fragment of the dune and swale habitat that is unique to the Great Lakes and considered globally rare (USACE 2010). The dune and swale habitat once covered nearly 27,000 acres at the southern end of Lake Michigan. It has been reduced to a series of small fragments amounting to less than 2,000 acres due to urban and industrial development over the past 100 years (USACE 2010). The distribution of predominant plant communities within the Natural Area is depicted below.



The dune and swale topography is characterized by low linear beach ridges and intervening swales that run parallel to the shoreline of Lake Michigan. The ridge tops support black oak savanna and xeric sand prairie grading down slope to mesic prairie. The swales support a variety of wetland community types that range from wet prairie to sedge meadow, emergent marsh and open water. This unique mosaic of natural communities supports an exceptional degree of biological diversity within a relatively small area, including many species that are considered rare, threatened and endangered in the State of Indiana. Figure 2 indicates the distribution of ridge and swale plant communities within the East Chicago Site, as mapped by TNC. Also indicated is the future location of shelf wetlands that will be developed as part of the Grand Calumet River – Sediment Remediation Program (GCR-SRP) currently being implemented by the United States Environmental Protection Agency (USEPA) and Indiana Department of Environmental Management (IDEM).

1.3 Report Organization

In addition to this introduction, the report consists of the following sections:

- Section 2 describes ongoing habitat restoration activities conducted by TNC.
- Section 3 discusses results of the 2011 surface water, soil, and plant community survey of the Natural Area.
- Section 4 describes IRM implementation activities.
- Section 5 provides an evaluation of potential risk to human health and wildlife receptor species.
- Section 6 describes the monitoring plan for soil and plant community conditions in Natural Area swales.
- Section 7 lists cited references.

Detailed information is provided in the following appendices:

A. Sampling and analysis plan for the East Chicago Natural Area (July 2011)
B. TNC's detailed assessment of plant communities in the Natural Area based on the fall 2011 vegetation surveys
C. Completion report for Buffer Zone area IRMs (February 2013)
D. Historical soil data for the Natural Area
E. Development of ecological risk-based reference concentrations for surface soil and water accumulation areas (July 2013)
F. Human health risk assessment for the Natural Area (July 2013)

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2.0 HABITAT AND PLANT COMMUNITY MANAGEMENT

TNC has managed the Natural Area since 1999, focusing on restoring the structural, compositional, and functional components of the dune and swale complex through the natural plant communities, and improving habitat for the federally-listed Karner blue butterfly.

The Natural Area is a unique mosaic of natural communities that supports an exceptional degree of biological diversity within a relatively small area, including many species that are considered rare, threatened and endangered in the state of Indiana. Fauna at the site include:

- 52 species of butterflies, including the federally endangered Karner blue butterfly as well as seven other state listed species
- 34 species of insects (other than butterflies) considered indicators of high quality natural areas
- 12 species of amphibians and reptiles including the state-endangered Blanding's turtle
- 20 species of mammals including the state-endangered Franklin's ground squirrel
- 105 species of birds use the site as either nesting or migratory stopover habitat, of which 14 are state listed endangered species. It was one of the last known nesting sites in the region for state-endangered Black terns.

2.1 Previous Biological Investigations

The significance of the Natural Area was first documented in an inventory of natural areas completed by IDNR in 1976. At that time TNC began discussions with DuPont on protecting the site. In the early 1990s, a systematic biological inventory of the Natural Area was conducted as part of the Third Chicago Airport Study. The results of that work expanded the documentation of the unique biological diversity harbored within the site and brought attention to the need for protection and ecological management of the property. Several studies have been completed in the general vicinity of the Natural Area. These are listed and briefly described below.

- Illinois-Indiana regional airport study: biotic communities (Mierzwa, et al. 1991): Environmental assessment for airport containing collection data on DuPont plants and wildlife.
- Status, trends, and potential of biological communities of the Grand Calumet River Basin (Moy and Whitman 1999): An assessment of the intact natural areas within the Grand Calumet River basin and potential effects to these areas from dredging of river sediments.
- Wetland flora of the Grand Calumet River in northwest Indiana: potential impacts of sediment removal and recommendations for restoration (Choi 1999): Describes the Natural Area as high quality habitat for endangered, threatened and/or rare animals and plants in need of conservation.
- The Restoration Revolution in Northwest Indiana (Indiana University Northwest 2006): Identifies recent, ongoing, and planned projects to restore natural areas in Lake, Porter, and LaPorte counties.

- Biodiversity Conservation Opportunities in the Toleston Strandplain of Northern Lake County: A Strategic Action Plan for Conservation Success (TNC and Ball State University 1999): The purpose of the plan was to describe conservation issues relative to the ridge and swale remnants including the current condition of each fragment and its landscape context.
- Strategic Weed Management Plan for the Indiana Macrosite (TNC 2005): Sets goals for reduction of overall weed coverage at the Natural Area and the surrounding landscape, including the former manufacturing areas.
- West Gary Recovery Unit Safe Harbor Agreement (TNC 2006): Identifies the Natural Area as critical habitat for the long-term survival of Karner blue butterfly in the local landscape.
- The Setting of Delisting Targets for the Grand Calumet River Area of Concern (GCR AOC) (Resetar and Resetar 2008): In the assessment of target sites for delisting, the DuPont Dune and Swale Natural Preserve (i.e., the Natural Area) was ranked 3rd in wetland habitat quality among 23 sites evaluated within the GCR AOC.
- DuPont Natural Area Section 506 Great Lakes Ecosystem and Fisheries Restoration (USACE 2010): The planning document addresses the issues of habitat restoration for the Karner blue butterfly, native plant community preservation, invasive species, connectivity, and native species richness.
- Grand Calumet River 312b Feasibility Study (IDEM and IDNR 2010): An ongoing study is determining alternatives for contaminated sediment management in the Grand Calumet River along approximately 15.5 river miles. A river segment along the Natural Area has been identified for placement of a habitat restoration site where shelf wetlands will be constructed following completion of the contaminated sediment removal program.

2.2 Plant Community Management

The overarching goals of the plant community improvement program for the Natural Area are to: 1) prevent establishment of new invasive species; 2) control existing non-native species to prevent them from expanding their range or dominating their current range; 3) substantially reduce coverage of all dominant weed species; and 4) restore appropriate community structure in the upland savanna portions of the preserve.

In ridge habitat, the primary objective is to open dense canopy, allowing sunlight to infiltrate the understory. This in turn allows the growth of a rich herbaceous understory and reduces the risk of further invasion by woody vegetation and scrub shrub. Primary tasks are selective removal of woody species and/or tree girdling. Spot herbicide application removes undesirable understory species such as non-native or exotic species of honeysuckle and buckthorn. This work has been conducted by both TNC and IDEM.

In swale habitat, the primary goal is to restore nearly 70 acres of swale habitat containing marsh and sedge meadow. Herbicide treatment has been used to eradicate the monoculture stands of *Phragmites* and cattails present within the swales. This measure is intended to open up the swales for recolonization by the native seed bank. TNC has conducted intensive broad-scale selective herbicide application since 2001 at various swales within the Natural Area. Extensive herbicide application for invasive species control was also conducted in fall 2011 by IDEM in coordination with TNC.

The primary objective of the weed management program is to control existing infestations of invasive species that grow the fastest, are most disruptive, and affect the most highly valued areas of the site. TNC identified two highest priorities in the Site Weed Management Plant for the DuPont Dune and Swale (2006-2011); these priorities are described below.

High Priority – Prevention

The first priority in managing invasive weeds at the Natural Area is to eradicate those species that exist on the site but are not yet widespread or dominant throughout the preserve. Those species include glossy buckthorn, Canada thistle, crown vetch, cypress spurge, garlic mustard, honeysuckle *sp*., multiflora rose, oriental bittersweet, reed canarygrass, and spotted knapweed.

The weed species in this category have been identified as pests elsewhere in the region. In the long run, it will be less expensive and time-consuming to assure that these species do not have the chance to proliferate. These species have been documented in the Natural Area either in one small, well-defined area or in very low concentrations. Many of the species in this category have been found in concentrations as low as one or two plants, and were immediately treated. However, they are retained in a checklist to monitor for their continued presence due to incomplete kill from previous seasons or seed coming in from off-site sources.

High Priority – Widespread Control

The second priority is to control and manage existing populations of common reed (*Phragmites australis*), cattail (*Typha sp*.) and Purple loosestrife (*Lythrum salicaria*). Control and management of these species is difficult, but necessary for the long-term viability of the conservation targets. Initial herbicide treatment of these weeds has occurred in all the wetlands except those immediately adjacent to the Grand Calumet River. These will be addressed during the current (2013) Great Lakes Legacy Act sediment remediation project. TNC is working on an invasive species management plan that will address wetland weeds in the East Chicago buffer zone. Because these weeds have been established in the Natural Area for several decades and a considerable seed bank now exists, it will not be practical to eradicate these species. The goal is to reduce and maintain the coverage of these species at less than five percent.

2.3 Karner Blue Butterfly Habitat Enhancement

In 1992, the USFWS listed the Karner blue butterfly (*Lycaeides melissa samuelis* Nabokov, Lepidoptera: Lycaenidae) as endangered based on the decline across its historic range (USFWS 2003). In 2003, the butterfly was reported to occur in the states of Minnesota, Wisconsin, Indiana, Michigan, New York, New Hampshire, and Ohio, with Wisconsin and Michigan supporting the greatest number of butterfly sites. The majority of the populations in the remaining states were known to be small, and several were at risk of extinction from habitat degradation or loss (USFWS 2003).

The Karner blue butterfly is dependent on nectar plants and on wild lupine, *Lupinus perennis* L. (Fabaceae), as its only known larval food plant (USFWS 2003). These plants historically occurred in savanna and barrens habitats typified by dry sandy soils, and now occur in remnants of these habitats, as well as other locations such as roadsides, military bases, and some forest lands. The primary limiting factors are loss of habitat through development and canopy closure (succession) without a concomitant restoration of habitat. A shifting geographic mosaic that provides a balance between

closed and open-canopy habitats is essential for the maintenance of large viable populations of Karner blue butterflies (USFWS 2003).

In 2001, TNC implemented the Karner Blue Butterfly Restoration and Management Plan to support the establishment of the species in the Natural Area. The restoration goals were to establish a sufficient population of lupine, enhance nectar plant populations, and continue to restore the appropriate savanna structure to support a permanent population of butterflies. The site was colonized by Karner blue butterflies by 2002. Since then, their numbers have increased, and they currently occupy five distinct habitat patches within the Natural Area. They are also seen occasionally using secondary habitat throughout the central portion of the preserve. The term “habitat patch” is used to describe areas of the preserve with a canopy opening wider than 20 meters that supports over 500 stems of lupine. Savanna with smaller openings and patches of lupine are referred to as secondary habitat.

Habitat Restoration

The Natural Area was divided into three management units (see Figure 3). The predominant cover in each unit is closed canopy savanna. The goal of restoration and management activities was to create sufficient Karner blue butterfly habitat to support one population cluster (deme) within each unit. These management units were incorporated into a prescribed fire regime that maximizes butterfly habitat quality while allowing for easy re-colonization from unburned management units. Restoration efforts were designed to create three individual burn units that will allow for the rotational use of prescribed fire as a long-term management tool.

It was necessary to restore open canopy structure (multiple openings greater than 20 meters) in all three management units of the preserve to create additional appropriate Karner blue butterfly habitat. Outside of the large openings, an average canopy cover of approximately 60% has been maintained by removing mature trees, shrubs, and saplings from the understory. Restoring additional butterfly habitat to the site also required establishing appropriate densities of lupine throughout the preserve, namely core habitat patches of greater than 500 lupine stems in all openings over 20 meters wide, and scattered patches throughout the remaining savanna.

Current Habitat Condition

There are currently nine restored habitat patches in the Natural Area that meet the minimum requirements of a 20-meter canopy opening that supports at least 500 stems of lupine. Three of the restored patches are now occupied by Karner blue butterfly. While the butterflies are concentrated in and around these patches, they are regularly seen using the secondary habitat both inside and outside of the management unit. Figure 3 presents the location of existing and potential Karner blue butterfly habitat within the Natural Area, as mapped by TNC in 2013.

3.0 INVESTIGATION OF PLANT COMMUNITIES, SOIL, AND SURFACE WATER

This section summarizes results of a plant community and soil properties investigation that was undertaken by Parsons in coordination with TNC from August through September 2011 to assess the chemical and biological condition of the Natural Area. In addition, surface water quality data from the surface water accumulation areas present within the Natural Area are summarized.

The objectives of the investigations were to ascertain whether:

- Contamination from former manufacturing areas has reached the Natural Area;
- Plant communities in the Natural Area have been exposed to contaminants; and
- Plant communities have been impacted, if exposure has occurred.

A total of 37 sampling plots were evaluated, 14 plots in the dune/ridge habitat and 23 plots in the swale habitat. Five of those plots were located within or adjacent to the Buffer Zone. Sampling plots were located predominantly in the western section of the Natural Area adjacent to the former manufacturing and waste disposal areas. Figure 4 indicates the distribution of the dune/ridge and swale habitat within the Natural Area, as well as the location of sampling plots. Each plot was analyzed in terms of plant community diversity and soil properties, including arsenic, lead and zinc concentrations.

Appendix A presents the Sampling and Analysis Plan (Parsons 2011), as approved by USEPA Region 5 in July 2011. The plan describes in detail the sampling strategy, data analysis, and quality control methods for the 2011 field investigation. Concurrence with the sampling plan implementation was also obtained from natural resources management agencies, including IDNR and IDEM. Appendix B presents detailed data on the plant community survey conducted by TNC during fall 2011.

3.1 Plant Community Evaluation

The Natural Area is one of the few undisturbed tracts of the dune and swale ecosystem that has survived urban and industrial development along Lake Michigan. TNC has managed the Natural Area since 1999, focusing on restoring the structural, compositional, and functional components of plant communities within the dune and swale habitats. Management of swale communities has been done primarily by herbicide application to control establishment of *Phragmites* and other invasive plant species. Ongoing monitoring of swale management conducted since 2002 has shown a significant improvement in herbicide application areas vs. untreated areas. IDEM conducted extensive herbicide application during the fall of 2011 for control of invasive species in previously untreated swale management areas.

TNC conducted the field investigation of plant communities in the Natural Area (see Appendix B). Vegetation studies were performed on 37 predetermined 50-foot-wide by 80-foot-long rectangular plots within the Natural Area and Buffer Zone, distributed in upland habitat (14 ridge/dune plots) and wetland habitat (23 swale plots). Detailed biological data are provided in Table 1. TNC also provided a comparison of the plant community characterization results to date from a restoration monitoring program of swale and dune habitats by Taylor University that included sampling locations within the Natural Area.

3.1.1 Survey Methods

Vegetation studies were performed on six sampling sites located within each plot. A 3-foot-square quadrant was established at each sampling site. Plant species within the quadrant were recorded and assigned a cover class using the standard Daubenmier method. Bare ground, standing water and invasive species coverage were also documented using the same method. At upland sites, canopy cover was measured at the center of each sampling site using a standard spherical crown densitometer.

The vegetation data were analyzed via standard Floristic Quality Assessment techniques for:

- Coefficient of conservatism (Mean C),
- Species richness, and
- Floristic Quality Index (FQI).

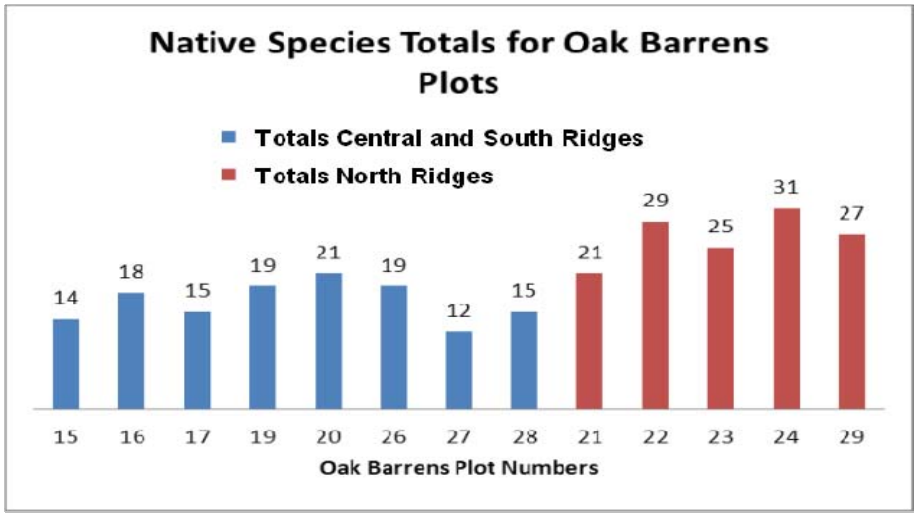
Analysis was performed with the Floristic Quality Assessment (FQA) Computer Applications developed by Wilhelm & Masters (2004). Mean C values are designed to gauge the degree to which species are restricted to natural habitat conditions. In this system individual species are assigned a coefficient of conservatism (C-Value) on a scale of 0 to 10. Species with 0 C-Value are highly tolerant of disturbed habitats; while species with a 10 C-Value are almost never encountered outside of intact natural areas.

Because the Mean C-Value does not take species richness into account, it has limitations as a standalone measure. The FQI is designed to assess the combined Mean C-Value and species richness within a sampling unit or site inventory. Adding species richness makes FQI a more robust measure than Mean C-Values when it is used in the proper context. Because the total number of species is a factor, the size of the sampling unit can have a significant effect on the FQI. Generally, smaller areas tend to support fewer total species than larger areas, which makes it important to consider the size of the sampling unit in using FQI as an assessment tool. Percent cover of individual species is not considered in calculating the FQI or Mean C.

Mean C-Values and FQI scores are useful in identifying how closely a sampling unit resembles an intact natural area. Mean C-Values of 0 to 3.5 and FQI scores between 0 and 35 have been documented for highly altered habitats and de novo restorations and are therefore unreliable in identifying intact natural area. Mean C-Values above 3.5 and FQI scores above 35 indicate at least marginal natural area qualities. Mean C-Values above 4.5 and FQI scores above 45 indicate the potential that a site is an intact natural area. These values represent the relative scoring of assessments across a broad range of altered habitats, restorations and natural community types throughout the Chicago Region.

3.1.2 Ridge/Dune Habitat

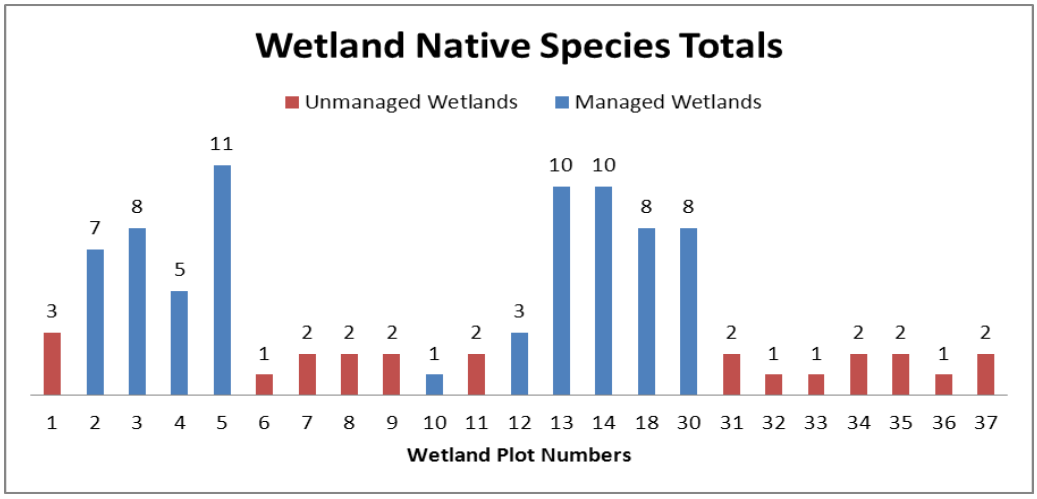
Figure 5 illustrates results of the plant community analysis for the ridge/dune and swale habitats in terms of FQI scores. Fourteen upland plots located on four of the six intact ridges of the Natural Area were evaluated. Vegetation data indicated that the oak barrens community, the predominant plant community in the ridge/dune habitat, is in good condition within the sample area. Individual sampling plots had up to 31 native plant species, as illustrated below.



There was significant variation in the floristic quality of the plots. Plots located on the central and south ridges had lower species diversity and FQI scores and were dominated by grasses and common species. By comparison, the plots on the north ridges were of better quality, had higher species diversity and FQI scores; a higher relative cover of native forbs; and a smaller total percent cover of common species.

3.1.3 Swale Habitat

Vegetation communities were evaluated in 23 plots in wetlands that historically have sustained dense stands of invasive plant species (Figure 5). Thirteen plots were located in unmanaged sections of the swales. The plant communities in these areas are in poor condition because of the extensive cover of invasive plant species, predominantly Phragmites australis. The remaining 10 plots were located in sections of the Natural Area that TNC has managed using herbicide application to reduce invasive species cover. Plant communities in the managed plots were occupied by a limited group of native and non-native species that have recolonized the post-herbicide treatment zones. The figure below indicates the number of native plant species per plot and previous weed control treatment.



Managed plots have made substantial improvements in recovery, exhibiting greater plant diversity and higher floristic quality. Managed plots have a larger number of native species (up to 11 native species) relative to unmanaged plots (up to three native species) and FQI values over two times the value for unmanaged plots. Variations in the quality of plant communities in the managed plots are probably the result of differences in length of time since invasive species control was conducted, local setting, and related management efforts. A comparison of plant community characterization in the Natural Area for the combination of all sampling plots for each type of habitat is provided below.

Type of Sampling Plot	Number of Native Plant Species	Floristic Quality Index * (FQI)	Index of Conservatism * (Mean C)
Ridge plant communities	79	42.1	4.6
Managed swale plots	22	19.6	4.1
Unmanaged swale plots	5	8.2	3.3

* Values for all sampling plots combined by category. Reference values:
FQI >45 for intact natural area; 35-44 for marginal natural area; <35 for altered habitat
Mean C >4.5 for intact natural area; 3.5-4.4 for marginal natural area; <3.5 for altered habitat

Mean C and FQI values for the ridge/dune habitat indicate the presence of plant communities that are representative of intact, or near intact, natural areas. In contrast, plant community composition in managed swales can be best characterized on the basis of biological indices as representative of marginal natural areas. In unmanaged swales, biological indices indicate altered habitat conditions, dominated by one or two species.

3.2 Soil Data Evaluation

Surface soil composite samples (at 0- to 6-inch depth) were collected from each of the 37 sampling plots where plant community characterization was conducted. Composite samples were analyzed for soil properties (pH, moisture, grain size, cation exchange capacity, and total organic carbon) as well as concentrations of arsenic, lead and zinc. Subsurface soil (6- to 18-inch depth) was also collected from plots located in swale habitats. A data summary is presented below. Detailed soil data for ridge/dune and swale habitats by individual sampling plot are provided in Table 2.

Soil	Average Concentration (mg/kg)		
	Arsenic	Lead	Zinc
Natural Area – Dune/Ridge Habitat			
Surface Soil	20	388	2,269
Natural Area – Swale Habitat			
Surface Soil	66	1,018	11,071
Subsurface Soil	61	924	9885
Buffer Zone – Historical Data			
Surface Soil (all habitats)	35	1,080	3,675
Soil Reference Concentration (RBRC)*	51.1	36	117

* Risk-Based Reference Concentrations (RBRCs) derived in the 2012 Baseline Ecological Risk Assessment for the East Chicago Site.

Average soil concentrations of arsenic, lead and zinc are listed above for sampling plot data combined by type of habitat. Also provided as a reference are summary data for

the Buffer Zone that separates the Natural Area from the former manufacturing and water disposal areas, and surface soil risk-based reference concentrations (RBRCs). These reference concentrations, derived in 2012 East Chicago Site Baseline Ecological Risk Assessment, are indicative of soil conditions likely to pose minimal or no risk for adverse effects on biological communities.

Soil sampling data show average lead and zinc soil concentrations that exceed RBRC values. Sampling plot averages are similar to those of samples collected from the Buffer Zone based on historical data. Average concentrations in dune/ridges were below concentrations in swale habitat. In general, similar concentrations were found in surface and subsurface soil. Average concentrations of lead and zinc in surface and subsurface soil exceeded RBRC screening values.

The spatial distributions of arsenic, lead, and zinc soil concentrations in samples collected within the Natural Area are presented in Figures 6, 7 and 8, respectively. Also indicated are locations where IRMs were implemented in fall 2012 along the western boundary of the Natural Area to minimize potential contaminant transfer from the former manufacturing and waste disposal areas to the Natural Area. These figures also indicate the future location of shelf wetlands that will be developed as part of the GCR-SRP currently being implemented by USEPA/IDEM.

Data depicted in Figures 6, 7 and 8 include fall 2011 survey results, data from soil samples collected in 2009 and 2010 in support of the Corrective Measures Study (CMS), and samples collected during various investigations prior to 2009. It must be noted that those results represent conditions prior to soil removal during IRM implementation.

General trends in soil metals concentrations within the Natural Area are as follows:

- Arsenic concentrations are typically below the 51.1 milligram/kilogram (mg/kg) reference value. No RBRC values are exceeded in ridge habitat sampling plots. Some elevated values exist in the swale habitat, mostly in central and south sampling plots.
- Lead concentrations generally exceeded RBRCs values, both in ridge and swale habitat sampling plots. The highest concentrations of lead in soil were found near the Buffer Zone, particularly adjacent to the solid waste landfill. Values decrease toward the east and south sections of the Natural Area. A west-east decreasing concentration gradient, extending from the Buffer Zone, is found in swales located in central section of the Natural Area.
- Spatial distribution of zinc concentrations generally reflects the trends of lead concentrations. Elevated zinc concentrations are found along the landfill boundary and follow a decreasing west-east concentration gradient along ridges and swales. The 2011 sample data indicated elevated zinc concentrations within the north section of the Natural Area.

3.3 Comparison of Plant Community Data and Soil Characterization

The main objective of the field investigation was to assess relationships between plant communities and soil properties, including concentrations of arsenic, lead, and zinc. A two-step statistical evaluation of plant community and soil data was conducted. First, a regression analysis was performed to assess whether a direct correlation could be found between individual metal soil concentrations and a given biological index (number of species, FQI). Second, a multi-variable analysis was conducted to evaluate differences

in the abundance of plant species between sampling sites on the basis of the soil physical and chemical properties.

3.3.1 Plant Community Indices vs. Soil Metals Concentration

A regression analysis was conducted between two individual biological indices (number of native plant species and FQI) and log-transformed arsenic, lead, and zinc concentrations in soil. Figure 9 shows the data distribution diagram of individual metal concentrations versus the number of native plant species for sampling plots in the ridge/dune habitat. Figure 10 shows the data distribution diagram for sampling plots located in the managed swale habitat. In general, a positive but weak correlation was found. This indicates that an increase in biological index values was associated with increasing soil metals concentration. The data correlation – the extent to which variability in the biological index data can be explained by soil concentration data – was quantified using the R^2 value. In all cases, R^2 values were low, within the 0.02 to 0.24 range, both for the ridge and swale sampling plots. These values indicate that 24% or less of the biological index variability can be explained by the observed soil concentrations of arsenic, lead or zinc.

3.3.2 Plant Species Abundance v. Soil Properties

A Canonical Correspondence Analysis (CCA) was conducted to evaluate differences in the abundance of plant species between sampling sites on the basis of the soil physical and chemical properties, including arsenic, lead, and zinc concentrations. CCA seeks to explain differences in the abundance of plant species between sites based on observed environmental variables. Using an approach similar to multiple regression analysis, environmental properties, such as soil texture and element concentration, were used in the CCA as independent variables to explain the variance in species abundance, used as the dependent variables. Species abundance was estimated independently for ridge and swale habitats using percent vegetative cover data from the field survey. Results of CCA evaluation for the ridge and swale habitats are illustrated in Figures 11 and 12, respectively.

In ridge habitat sampling sites, approximately 50% of the variance in plant abundance could be explained by soil clay content and moisture (24% and 12% of the variance, respectively), and to a lesser extent by zinc concentration (15% of the variance). Arsenic and lead concentrations were not statistically correlated with plant species abundance.

The CCA evaluation of swale habitat sites indicated that five environmental factors could explain approximately 64% of the variance in plant species abundance. The major environmental factor is whether the sites have been managed to control Phragmites (31% of the variance). The presence of standing water and soil moisture were also major factors determining plant abundance (16% and 10%, respectively). Sand content and lead concentration were only marginally correlated with plant species abundance (4% of the variance). The statistical evaluation of plant community indices and plant abundance indicated the following:

- In general terms, there was no direct correlation of elevated metals concentration and indices of habitat quality in swale or ridge sampling sites.
- The species abundance variance for ridge sampling plots was best explained by soil properties (moisture and texture), and only marginally by zinc concentration.

- The species abundance variance for swale sampling plots was best explained by prior site management, soil moisture, and other environmental factors.

This evaluation examined soils metals data and plant community data using a variety of statistical methods. These evaluations suggest that elevated metals concentrations are not having a major influence on the quality of the plant communities in the Natural Area.

3.3.3 Plant Tissue Data

Plant tissue was collected in 16 sampling plots from two predominant plant species. Six sampling plots were located in dune/ridge habitat, and 10 plots were located in swale habitat. Detailed data on plant tissue analysis by sampling plot are presented in Table 3. Average concentrations of arsenic, lead and zinc in leaf tissue data are summarized below. Data are also presented as soil-to-tissue transfer factors calculated as the ratio of tissue to soil average concentration.

Leaf Tissue	Arsenic	Lead	Zinc
Dune/Ridge Habitat			
Average concentration (mg/kg)	0.19	5.3	258
Calculated soil-to-tissue transfer	0.9%	1.4%	11%
*Reference values**	*3.8%*	*1.9%*	*15.4%*
Swale Habitat			
Average concentration (mg/kg)	0.7	3.2	86.5
Calculated soil-to-tissue transfer	1.1%	0.3%	0.8%
*Reference values**	*3.8%*	*1.1%*	*7.6%*

* Calculated using EPA's soil-to-tissue transfer empirical equations based on soil concentration (OSWER Directive 9285.7-55: *Guidance for Developing Ecological Soil Screening Values*, Attachment 4-1, 2007).

Overall, there is a very low transfer of metals from soil to leaf tissue, typically below 2% of the soil concentration. A higher average transfer factor (11%) was documented for zinc in dune/ridge habitat sampling plots.

3.3.4 Summary Evaluation

The plant community and soil characterization of the Natural Area provided evidence supporting a conclusion that, while present in some soils, metallic constituents do not appear to have impacted the quality of the plant community. The main findings of the Natural Area ecological evaluation are as follows:

- Biological indices for both ridge and swale habitats did not have decreased values in sampling plots exhibiting elevated metals concentrations.
- The variance in plant abundance can be best explained by prior habitat management, soil moisture and texture, and environmental factors other than soil contamination. Soil metals concentrations were only marginally correlated with plant species abundance.
- There is a relatively low transfer of metals from soil to leaf tissue, typically below values predicted using USEPA's empirical transfer models.

Overall, statistical evaluations of biological indices and plant abundance indicate that elevated metals concentrations are not having a major influence on the quality of the plant communities.

3.4 Surface Water Accumulation Areas

Surface water accumulation areas are present intermittently in swales of the Natural Area. During rainfall periods, those areas receive run-off from the more elevated terrain of the former manufacturing areas and the Buffer Zone. Precipitation also causes the groundwater level to rise and discharge into the swales.

Surface water quality samples were collected in June 2011 from eight areas where surface water intermittently accumulates within the Natural Area (Figure 13). Sampling occurred at a depth of one foot or one-half of the water depth, whichever was less, following EPA Method 1669 protocol for Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels. The samples were analyzed for total and dissolved aluminum, antimony, arsenic, barium, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, nickel, selenium, titanium, vanadium, zinc, calcium, magnesium, potassium, silica, and sodium; total and dissolved speciated (ferrous/ferric) iron; total speciated arsenic; total ammonia, bromide, chloride, fluoride, nitrate/nitrite, phosphate, sulfate, sulfide; total organic carbon (TOC); total dissolved solids (TDS); total suspended solids (TSS); total alkalinity; carbonate alkalinity; and total hardness. Field parameters including pH, temperature, specific conductance, redox potential, dissolved oxygen and turbidity were also collected with each surface water sample.

Table 4 summarizes the results of selected metals analyzed during the June 2011 sampling event. Table 4 includes data for surface water samples collected in June 2011 from isolated accumulation areas in the Extended Buffer Zone. These sampling locations are indicated on Figure 13.

Figure 14 presents surface water data for arsenic within the Natural Area and Extended Buffer Zone as an example of surface water, soil, and groundwater interaction using historical data. The results show the following general trends:

- Surface water metals concentrations decrease with distance from the former manufacturing area.
- The greater the soil metal concentration the greater the surface water concentration.
- Shallow groundwater concentrations have limited influence on surface water metal concentrations.

In addition, soil was removed from the Extended Buffer Zone and selected areas of the Natural Area during the fall 2012 IRM action, described in Section 4. This removal action will minimize transport of contaminated soil in runoff from reaching the Natural Area and will mitigate concentrations of metals in shallow soils that were coincident with some of the surface water accumulation areas. Therefore the historic data for surface water quality for the Natural Area and Extended Buffer Zone are no longer considered representative of current conditions, and likely represent an overestimate of future surface water concentrations. Future sampling of surface water in inundated areas is included as part of the long-term monitoring plan of the Natural Area described in Section 6.

4.0 INTERIM REMEDIAL MEASURES

DuPont implemented an IRM from September to December 2012 as a part of the on-going RCRA Corrective Action Program at the DuPont East Chicago Site (Parsons 2012). IRM measures were implemented in the Natural Area and the Buffer Zone that separates the former manufacturing areas from the Natural Area. The IRM objective was to minimize potential constituent migration into the sensitive habitat of the Natural Area. Activities conducted are summarized below.

4.1 Contaminated Soil Removal

The IRM included excavation of soil containing elevated levels of lead, arsenic, cadmium and zinc and confirmation soil sampling. Additional soil samples were collected from the IRM and the Buffer Zone to confirm concentration reduction following completion of IRM activities. Air monitoring for worker and site protection was also performed in conjunction with the excavation activities.

As a result of contaminant source removal during IRM implementation and the ongoing swale habitat management to control invasive plant species, significant improvements are expected in the Buffer Zone and Natural Area habitats. Soil excavation also resulted in the removal of substantial stands of invasive species and the creation of additional open water habitat. Figure 15 indicates the location of IRM sites. The combined size of IRM excavation sites is approximately 20 acres, as listed below.

IRM Site:	A	C	C'	D	D'	E	F	G	G'	H	I	*Total*
Acreage:	1.37	2.37	0.11	4.63	0.39	2.06	4.73	1.26	1.1	1.21	0.67	*19.9*

The boundaries of the IRM areas (Area A through Area I) were based on review of historical arsenic, cadmium, lead, and zinc surface soil data. Prior to the commencement of excavation activities, the chain-link fence that runs through the Buffer Zone was temporarily removed, and vegetation in and around the proposed IRM areas was cleared and grubbed. Once clearing and grubbing was completed, upgradient and downgradient erosion controls were installed at each of the IRM areas. Detailed information on the IRM completion is provided in Appendix C.

Approximately 77,000 cubic yards of soil (including rubble/debris) were excavated from the IRM areas. Approximately 15,169 cubic yards of clean soil backfill was imported to the site. The imported backfill was selected based on similarity to native soils and was comprised primarily of a grain size similar to the native on-site sand. The purpose of the backfill was to maintain proper surface drainage/grading and provide, at a minimum, 2 feet of clean cover over select sub-areas that had elevated concentrations of lead in post-excavation confirmation sample results. Upon completion of all the IRM excavations and the placement of backfill in select areas, each IRM area was graded and contoured such that it would blend into the natural topography of the surrounding terrain.

4.2 Post-Remedial Activities

Upon completion of final contouring of all the IRM areas, vegetative seeding of approximately 15 acres of uplands was conducted in December 2012. The seed mix was comprised of a variety of native grasses/plants and was approved by TNC prior to seeding. Wetland areas will be allowed to seed naturally, along with herbicide treatment

to control invasive species, and/or will be seeded selectively with native wetland plant species, as determined by TNC.

For the purposes of temporary erosion control, the non-hazardous soil stockpile was hydro-seeded with a mix of winter wheat and rye grass. The seed mix was approved by TNC prior to seed application. The hazardous soil stockpiles were covered with geotextile material.

Management of soils and other debris from IRM activities

The following activities are planned to address remaining Buffer Zone IRM items including management of soils and other debris resulting from the IRM activities:

- DuPont has evaluated various options for managing soil (both hazardous and nonhazardous) resulting from IRM activities as part of the on-going RCRA corrective measures. As part of this IRM action, DuPont has proposed to EPA and IDEM to use the footprint of the landfills to manage these soils prior to placing the final cover on the landfill. Any soils identified as hazardous will be treated on-site to non-hazardous levels prior to incorporation into the existing landfill. It is envisioned that this on-site disposal will stay within the footprint of the existing landfill. If this proposal meets the approval of both IDEM and EPA, Dupont propses to complete additional design tasks including evaluation of the suitability of the material in the existing landfill to handle the additional weight of soils placed above. Debris piles (e.g., concrete, bricks, blocks) will be processed and ground into size fractions suitable for use on site as road base fill material. Scrap metal will be segregated and recycled.
- Cleared vegetation (brush and tree stockpiles) will be ground into mulch and spread on site.
- The fence will be reinstalled following discussions with TNC, IDNR and IDEM on final alignment and easements.

5.0 EVALUATION OF POTENTIAL RISK

This section presents an assessment of the potential risks to ecological receptors from exposure to surface soil in the Natural Area and to workers conducting future habitat restoration activities. Historical data collected from the Natural Area and the Extended Buffer Zone during several surveys conducted at the East Chicago Site since 1999 were used in the evaluation. Detailed sample data and summary statistics are provided in Appendix D.

5.1 Surface Soil Analytical Data

The ecological and human health evaluations were performed for two exposure scenarios: 1) exposure to surface soil within the Natural Area current boundaries, and 2) exposure to surface soil in the Natural Area plus an Extended Buffer Zone covering approximately 23 acres that include some of the former manufacturing and/or waste disposal areas. A substantial portion of the Extended Buffer Zone surface soil contamination was removed during IRM implementation in fall 2012 (Figure 15).

Figure 16 depicts the boundaries of the Natural Area and Extended Buffer Zone, as well as sampling locations where the surface soil data used in the risk evaluation were obtained. Data included soil samples collected from 0 to 2 feet below ground surface (bgs) in the Natural Area and Extended Buffer Zone, as follows:

- Samples collected prior to 2009 as part of various remedial investigations of the former manufacturing and waste disposal areas;
- Samples collected during 2009 and 2010 in support of the CMS development;
- Samples collected during the soil and plant community survey conducted during fall 2011, as discussed in Section 3;
- Samples collected following IRM implementation in fall 2012; post-IRM sample data include data from locations that were covered with clean backfill (Figure 16); and
- Clean backfill samples (substituted for locations that were covered with 2 feet of fill).

The analytical data were obtained from the DuPont Envista Corporate Environmental Database (Envista). Laboratory results were reviewed using the DuPont Analytical Data Quality Management (ADQM) system. Quality Assurance Project Plans (QAPPs) were developed and updated as needed in order to ensure that the appropriate sample collection and laboratory quality assurance/quality control measures were implemented (Appendix D).

The following samples were excluded from the risk evaluation:

- Soil samples collected from portions of the Natural Area and Extended Buffer Zone that were removed during IRM implementation;
- Soil samples collected from locations that were covered with 2 feet of clean fill; and,
- Soil samples collected deeper than 2 feet.

5.2 Potential Ecological Risk

Potential risk from exposure to surface soil was assessed for plant communities and wildlife receptor species in the Natural Area. The plant community evaluation was based on findings of the fall 2011 survey. The assessment of the potential risk to representative wildlife species from exposure to surface soil at the Natural Area was based on the comparison of soil concentrations in the Natural Area and RBRCs indicative of conditions likely to represent a minimum risk for adverse effects on ecological receptors. In addition, ephemeral surface water accumulation areas were evaluated for potential risk to amphibian species.

5.2.1 Potential Risk to Plant Communities

The plant community characterization of the Natural Area conducted in fall 2011 (see Section 3.0 and Appendix B) provided evidence supporting a conclusion that constituents do not appear to have impacted the quality of the plant community. Overall, the combined evaluation of biological indices and plant abundance indicated that elevated metals concentration are not having a major influence on the quality of the plant communities. Key findings of the Natural Area evaluation are as follows:

- Predominant plant communities in ridge habitat are in an overall good condition, supporting a diversified assemblage of native species similar to those found in intact natural areas.
- In general, plant communities in swale habitat support a limited number of native plant species largely due to the presence of invasive vegetation. A substantial improvement in plant diversity and number of native species was observed in managed swales where weed control has been implemented by herbicide application.
- Biological indices for plant communities in both ridge and swale habitats did not have decreased values in sampling plots exhibiting elevated metals concentrations.
- Soil metals concentrations were only marginally correlated with plant species abundance. The variance in plant abundance was best explained by prior habitat management, soil moisture and texture, and environmental factors other than soil contamination.
- There is a relatively low transfer of metals from soil to leaf tissue, typically below predicted values using USEPA's empirical transfer models.

5.2.2 Potential Risk to Wildlife Receptors

A qualitative assessment was made of the potential risk to representative wildlife species from exposure to surface soil in the Natural Area/Extended Buffer Zone. The assessment was based on the comparison of soil concentrations in the Natural Area and RBRCs indicative of conditions likely to represent a minimum risk for adverse effects on ecological receptors.

Risk-Based Reference Concentrations

The derivation of site-specific RBRCs for the East Chicago Site is summarized below. Detailed calculations and support tables are provided in Appendix E. RBRCs were calculated for nine wildlife species, five small-range wildlife ecological receptors (deer mouse, groundhog, short-tailed shrew, American robin and song sparrow), and four

large wildlife receptors (red fox, white-tailed deer, red-tailed hawk, and Canada goose). These species were previously identified as representative of wildlife receptors potentially present at the East Chicago site in the scoping document and work plan for assessment of potential ecological risk at former manufacturing and waste disposal areas (Parsons 2010, 2011).

RBRCs were derived for a given wildlife receptor species by comparison of an expected exposure dose by dietary ingestion and a no-effect dose derived from laboratory tests. The RBRC is defined as a soil concentration at which the exposure dose and the no-effect dose are equal.

The exposure dose for wildlife is equal to the amount of constituent in the diet that is taken up or transferred from the soil. Consistent with USEPA's (2007) recommended approach, the dietary exposure of an ecological receptor to a given constituent of potential ecological concern (COPEC) was estimated as an average daily dose, based on the consumer organism food ingestion rate, incidental soil ingestion, and soil-to-biota transfer factors, as follows:

$$ADD_j = [(Soil_j * P_s * FIR) + \sum_{i=1}^{N} (Soil_j * T_{ij}) * P_i * FIR]$$

where,

ADD_j = average daily ingestion of constituent (j) in diet (mg/kg dry weight-day)
$Soil_j$ = soil exposure point concentration of constituent (j) (mg/kg dry weight)
P_s = soil ingestion as a proportion of the diet
FIR = food ingestion rate (kg food [dry weight]/kg body [wet weight]/day)
N = number of different biota types in diet
T_{ij} = soil-to-biota transfer factor for constituent (j) for biota type (i)

Exposure parameters used in the dietary intake calculations for each individual wildlife receptor species are presented in Appendix E.

The no-effect dose was quantified using a toxicity reference value (TRV) from laboratory tests measuring effects on growth and reproduction associated with chronic exposures of mammal and avian test species. The TRV (expressed in units of mg/kg-day) was based on the highest exposure level that does not cause a statistically significant difference in effect compared to the test control organisms (No-Observed Adverse Effect Level, NOAEL). TRVs selected for the RBRC derivation are presented in Appendix E.

Surface Soil Characterization

Surface soil conditions were characterized on the basis of historical samples collected within a 0- to 2-foot depth interval. Table 5 presents summary data for surface soil in the Natural Area, as well as data for the Natural Area in combination with the extended Buffer Zone (Natural Area/Extended Buffer Zone). The number of analyzed samples is listed for 13 metals (antimony, arsenic, barium, cadmium, chromium, cobalt, copper, lead, manganese, selenium, silver, vanadium and zinc), along with the mean, median, minimum, and maximum detected values. Those metals were identified as COPECs based on previous data analysis of soil conditions within the Buffer Zone.

Assessment of Potential Risk to Wildlife

Table 6 presents a comparison of calculated RBRCs for the nine receptor species and surface soil concentration data for 13 metals in the Natural Area. The comparison between average and median soil concentrations and RBRCs indicates the following:

- Soil concentrations for 13 metals in the Natural Area are below all calculated RBRCs for the four high mobility receptor species, both for mammalian and avian species (red fox, white-tailed deer, red-tailed hawk, and Canada goose). No risk of adverse effects on large wildlife species from exposure to Natural Area surface soil is anticipated based on site-specific reference values developed for the East Chicago Site.
- In general, metals concentrations in surface soil are below RBRCs for herbivore receptors, for species with both small and large foraging ranges (groundhog, white-tailed deer, Canada goose).
- For omnivore and insectivore species with small foraging ranges, average surface soil concentrations are below RBRCs for 10 out of 13 metals identified as COPECs (antimony, arsenic, barium, chromium, cobalt, copper, manganese, selenium, silver, and vanadium). Soil concentrations exceed calculated RBRCs for lead and zinc in the Natural Area. For cadmium, the RBRC would also be exceeded on the basis of the average soil concentration, but not the median value.

Table 7 presents data for the Natural Area/Extended Buffer Zone. Inclusion of the extended Buffer Zone into the fenced area of the conservation easement would result in an increase in surface soil metals concentrations relative to the Natural Area data listed in Table 6. In general, the comparison between average and median soil concentrations and RBRCs for the Natural Area/Extended Buffer Zone indicates the following:

- Soil metals concentrations for the Natural Area/Extended Buffer Zone remain below calculated RBRCs for both for mammalian and avian high mobility receptor species, with a single exception (a minimal exceedance of avian RBRC for lead).
- Soil metals concentrations in surface soil are below calculated RBRCs for all herbivore receptors.
- For omnivore and insectivore species with small foraging range receptors, average surface soil concentrations of antimony, cadmium chromium, copper, lead and zinc would exceed RBRC values. The increase in average soil concentration for the Natural Area in combination with the extended Buffer Zone varies from less than 10% (lead and zinc) to greater than 100% (cadmium and chromium).

5.2.3 Potential Risk to Semi-aquatic Organisms

In addition to soil exposure, intermittent surface water accumulation areas within the Natural Area represent a potential pathway for exposure of ecological receptors. Water quality data presented in Table 4, while very limited, indicate that metals concentrations in surface water are low relative to toxicity reference values for exposure of semi-aquatic organisms. The derivation of reference concentrations is presented in Appendix E.

Surface water samples were collected in the Natural Area in 2011 prior to the IRM action. Because the objective of the IRM was to remove or cover soil that could be contributing constituents to surface water (see Figure 14), the existing data are likely not

representative of current conditions as constituent concentrations are expected to decrease in the future due to the IRM. The available data likely overestimate the potential risk for amphibian exposure to constituents in surface water. Sampling of surface water is a component of the long-term monitoring plan described in Section 6.

5.2.4 Summary Evaluation

The summary assessment of potential risk to plant communities and wildlife receptors from exposure to surface soil contamination in the Natural Area is as follows:

- There is no indication that contaminants in soils are impacting Natural Area plant communities. IRM activities for removal of contaminated soil from the Buffer Zone and eastern portion of the former manufacturing areas have been completed to prevent future migration of soil contamination into the Natural Area.
- There is measureable evidence that the habitat restoration work by TNC has greatly improved the quality of those sections of the Natural Area where invasive plant species have been controlled. The habitat improvement is expected to continue as TNC and IDEM continue to implement the vegetation management plan.
- In general, a minimum or no potential risk for adverse effects can be expected for high mobility receptor species in the Natural Area, based on the comparison of surface soil metals concentrations to site-specific reference values. A minimum risk to herbivorous receptor species is also likely.
- There is a potential for adverse effects on small foraging range species in some sections of the Natural Area where elevated concentrations of cadmium, lead or zinc may be present, particularly near the Extended Buffer Zone.
- The Extended Buffer Zone will continue to function as an intermediate protection area between the Natural Area and former manufacturing areas.

Based on the above observations, it appears that the limited potential risk on small receptor species from exposure to surface soil can be best addressed by monitored natural attenuation rather than further remedial actions. The integrity of important threatened and endangered species' valuable habitat, as well as regionally important plant and wildlife species, would be severely impacted by habitat disruption within the Natural Area. Soil removal and equipment mobilization would likely be damaging to the spatial continuity and sustainability of this important natural community. Section 6 outlines the long-term monitoring plan for soil conditions and plant communities that will be implemented to evaluate the effectiveness of remedial and habitat improvement actions.

In addition to soil exposure, intermittent surface water accumulation areas within the Natural Area represent a potential pathway for exposure of ecological receptors. Water quality data indicate that metals concentrations in surface water are low relative to toxicity reference values for exposure of semi-aquatic organisms. Because surface water samples were collected in 2011, prior to the IRM action, the existing data are likely not representative of current conditions as constituent concentrations are expected to decrease in the future due to the IRM.

5.3 Human Health Risk Assessment

A human health risk assessment (HHRA) was conducted for the Natural Area, and the Natural Area plus the Extended Buffer Zone (Natural Area/Extended Buffer Zone), portions of the East Chicago Site (Figure 16). The purpose of the HHRA was to evaluate environmental sampling results from 1) the Natural Area and 2) the Natural Area/Extended Buffer Zone to determine the potential human health risks to trespassers and to TNC workers potentially exposed to constituents in soil[1] while working in the Natural Area or the Natural Area/Extended Buffer Zone. The methodology and assumptions presented in the USEPA approved scoping document for Human Health Risk Assessment – East Chicago report, were used in this Natural Area HHRA (PIONEER Technologies Corporation [PIONEER] 2012).

5.3.1 Data Analysis

The following data were included in the HHRA (see Appendix D, Table D-3):

- Soil samples results collected from 0 to 2 feet bgs in the Natural Area and the Natural Area/Extended Buffer Zone;
- Soil sample results from clean backfill were substituted for locations that were covered with 2 feet of fill; and,
- Surface water data collected in the Natural Area in 2011[2].

The following data were not included in the HHRA:

- Soil sample results collected from portions of the Natural Area and the Natural Area/Extended Buffer Zone that were removed during the IRM; and
- Soil sample results collected from locations that were covered with two feet of fill.

Exposure Point Concentrations (EPCs) are concentrations of constituents in a given medium to which a receptor may be exposed. Consistent with the East Chicago HHRA, soil EPCs for the HHRA were calculated as the 95% upper confidence limit (UCL) on the mean or the maximum detected concentration, whichever was lower for samples detected more than two times (PIONEER 2012). The EPCs for the key constituents in soil, (i.e., arsenic, cadmium, lead, and zinc) were calculated using the latest version of the USEPA ProUCL software (v. 4.1.00) (USEPA 2010). The soil EPCs identified for the HHRA are presented in Appendix D, Tables D-4 through D-7. The surface water EPCs are presented in Table D-8 and D-9 for in Appendix D and the total concentrations were used in the evaluation.

[1] *Samples identified as sediment were included in the HHRA and evaluated as soil.*

[2] *Surface water samples were collected in the Natural Area in 2011 prior to the IRM. However, the objective of the IRM was to remove or cover soil that could be contributing constituents to surface water (see Figure 14). Thus the existing data are likely not representative of current conditions as constituent concentrations are expected to decrease in the future due to the IRM. In the absence of post-IRM surface water data, these data were included and evaluated in the risk assessment even though they likely overestimate current and future conditions. In addition, surface water samples will be collected and evaluated in the future as part of the Long-Term Monitoring Plan (See Section 6).*

5.3.2 Exposure Assessment

Exposure Scenarios

The objective of the exposure assessment is to identify complete exposure pathways and estimate the type and magnitude of potential exposures to constituents. The exposure assessment is accomplished by determining current and potential future land uses, receptors, media, and exposure pathways. Exposures are then quantitatively estimated for the complete exposure pathways.

The Natural Area of the East Chicago Site has been managed by TNC since 1999. TNC is conducting a restoration program in the Natural Area that involves preventing new invasive species from establishing, controlling existing non-native species to prevent them from expanding or dominating their current range, and reducing coverage of all dominant weed species to five percent. Restoration activities could result in exposure to surface soil and surface water in the Natural Area/Extended Buffer Zone, as follows:

Receptor	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Windblown Dust	Dermal Contact with Surface Water	Incidental Surface Water Ingestion
Project Supervisor	✓	✓	✓	✓	✓
Restoration Workers	✓	✓	✓	✓	✓
Trespasser	✓	✓	✓	✓	✓

Exposure to soil from zero to two feet below ground surface is anticipated for restoration workers who may be weeding or planting. Exposure to soil from 0 to 6 inches is a potential route of exposure for trespassers. Exposure to surface water is anticipated for restoration workers and potentially for trespassers.

TNC Use Survey

A survey was conducted to determine the extent to which TNC workers would be working in the Natural Area and Natural Area/Extended Buffer Area, and the types of workers involved. TNC was asked to complete a questionnaire that asked:

- What types of workers conduct activities in the Natural Area?
- How many days would they likely work in the Natural Area each month?
- How many hours/day they would be expected to work?
- How many years are the work activities expected to occur?

Paul Labus of the TNC responded to the survey, and the results are presented in Table 3-1 of Appendix F. These results were used to determine the long-term exposure frequency for a restoration project supervisor and worker to soil and surface water assuming that they access the Natural Area for 25 years, which is the USEPA standard default exposure duration for a worker (see Table 3-2 of Appendix F). For soil, it was assumed that exposure could occur every day when work is conducted. For surface water, it was assumed that exposure could occur 25% of the time a worker performed restoration activities in the natural area, based on the the survey results. The number of days when surface water contact occurs was not subtracted from the total number of

days per year of soil exposure, which likely resulted in an overestimate of potential exposure to soil. The TNC survey results also indicated that restoration workers may access the Natural Area five to six hours per day. However, an exposure duration of eight hours per day (the USEPA standard default), was assumed for soil exposure.

Calculation of Constituent Daily Intakes

The intake of a constituent is estimated from at least six basic parameters: constituent concentration, exposure frequency, exposure duration, ingestion or contact rate, body weight, and averaging time. The exposure parameters presented in the East Chicago HHRA for the Redevelopment Worker receptor were also used for the Project Supervisor and the Restoration Worker in this HHRA, with the exception of the area-specific exposure frequency, exposure duration, and relative soil arsenic bioavailability (PIONEER 2012; USEPA 2012). The exposure parameters presented in the East Chicago HHRA for the Trespasser were also used for the Trespasser in this HHRA, with the exception of the relative soil arsenic bioavailability. Exposure parameters for this HHRA are presented in Tables 3-2 through 3-5 of Appendix F.

5.3.3 Toxicity Assessment

The toxicity assessment identifies toxicity values for each of constituent. Toxicity values are used in conjunction with exposure estimates (identified in the Exposure Assessment) to calculate potential risks. The toxicity values used in this HHRA include cancer slope factors (CSFs) and noncancer reference doses (RfDs). Consistent with USEPA guidance, the following sources of toxicity information, in order of priority, were consulted to identify toxicity values:

1. The Integrated Risk Information System (IRIS) (USEPA 2011a)
2. Provisional Peer-Reviewed Toxicity Values (PPRTVs) in the USEPA Regional Screening Level (RSL) tables (USEPA 2011b)
3. Other values available in the USEPA RSL tables (USEPA 2011b)
4. The Health Effects Assessment Summary Tables – Annual Update (USEPA 1997)

5.3.4 Risk Characterization

Risk characterization involves integrating exposure and toxicity information into a quantitative estimate of cancer risks and noncancer hazards. Incremental risk estimates for the Natural Area and Natural Area/Extended Buffer Zone were calculated for each constituent, by receptor, for each complete exposure pathway in this HHRA.

The USEPA's Advance Notice of Proposed Rulemaking for Corrective Action of Releases from Solid Waste Management Units references an incremental cancer risk range for risk management purposes of 1.0E-06 to 1.0E-04 (USEPA 1996). The background arsenic concentration in soil is 13 mg/kg, (which corresponds to an incremental cancer risk of 3.9E-06 for a Natural Area Restoration Worker). Therefore, a 1.0E-05 cancer risk is the appropriate benchmark for evaluating cancer risk estimates associated with soil.

A hazard index (HI) of one was identified as the noncancer benchmark for the Natural Area/Extended Buffer Zone. An HI is the estimate of the total noncancer hazard, and a value of one is typically set as the benchmark below which adverse, noncancer health effects are not expected to occur.

Lead screening levels for each receptor (calculated using the Adult Lead Model [ALM]) were calculated based on a USEPA default blood-lead concentration of 10 micrograms per deciliter (µg/dl). Screening levels were compared to Natural Area and Natural Area/Extended Buffer Zone lead concentrations to determine exceedance factors (EFs) (USEPA 2003). An EF greater than one indicates that the screening level was exceeded, and that the baseline blood-lead concentration of the receptor, under the assumed exposure conditions, may exceed the screening level.

5.3.5 Risk Characterization Results

Table 8 summarizes the risks for each receptor for the Natural Area and Natural Area/Extended Buffer Zone and also presents the cancer risk associated with Chicago Metro Background. Based on the results of the HHRA, the incremental soil cancer risks (i.e., the total cancer risk minus the arsenic background cancer risk), for a Project Supervisor and Trespasser are approximately one in one million (1.0E-06), and the incremental soil cancer risk for a Restoration Worker are two to three in one million. The surface water cancer risks range from five in ten million to two in a million. The risks for the Natural Area discretely are similar to the risks for the combined Natural Area/Extended Buffer Zone.

In summary, the cumulative cancer risks for all receptors are less than the benchmark of 1.0E-05. The noncancer hazard indices and the lead EFs for all receptors are less than 1. The majority of the cancer risks and noncancer hazards are associated with exposure to arsenic. The HHRA results for each constituent and receptor in the Natural Area and the Natural Area/Extended Buffer Zone are presented in Tables 5-1 through 5-4 of Appendix F.

5.3.6 Conclusions

The results of this HHRA demonstrate that the cancer risks and the noncancer hazards associated with the Natural Area and the Natural Area/Extended Buffer Zone soil are all below benchmark values. Risks are expected to decrease in the future as concentrations of constituents in surface water decrease due to the completion of IRM activities. In addition, the cancer risks and noncancer hazards are similar for the Natural Area and the Natural Area/Extended Buffer Zone.

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6.0 LONG-TERM MONITORING PLAN

DuPont has identified monitored natural attenuation (MNA) for a final remedy of the Natural Area that would be consistent with plans for long-term stewardship of the conservation easement. The technical basis for adoption of MNA was discussed in Section 5.2.

A long-term monitoring plan will be implemented to ascertain the effectiveness of remedial and habitat improvement actions based on the combined evaluation of soil conditions and plant communities in the Natural Area. The monitoring plan will focus on characterization of plant communities and soil conditions within swales of the Natural Area and the extended Buffer Zone. Monitoring will also be conducted in seeded uplands areas within IRM sites located west of the Natural Area. The ridge habitat will not be included in the monitoring program because no contaminant migration has been observed from former manufacturing and waste disposal areas into elevated ridge terrain of the Natural Area. Results of the fall 2011 investigation documented that the floristic quality of the oak-barrens community, predominant vegetation throughout the ridge habitat is comparable to plant communities found intact, or near intact, from undisturbed natural areas.

6.1 Sampling Locations

Monitoring of soil and vegetation will be conducted to assess the effectiveness of physical controls in preventing contaminant migration and to verify the expected long-term habitat improvement following removal of contaminant sources from the Buffer Zone and TNC's ongoing implementation of vegetation management activities. Nineteen locations will be sampled at uplands and periodically inundated areas within excavated IRM sites within the extended Buffer Zone, as well as sites located along major runoff pathways into the Natural Area swales. The spatial distribution of monitoring sites, depicted in Figure 17, is as follows:

- Five sites are located within upland areas west of the extended Buffer Zone (sites UP1 – UP5) that were excavated during IRM implementation, and subsequently seeded. Sampling at these locations is intended to document the re-establishment of plant communities. A clean soil cover was placed over several upland excavation areas prior to seeding, as depicted in Figure 15.
- Ten sites are located in wetlands within the Buffer Zone (WBZ1 – WBZ10), at periodically-inundated IRM excavation sites. Monitoring at those sites will document the establishment of native wetland vegetation and control of invasive species and provide data on soil/sediment characterization and water quality.
- Four sites are located in wetlands within the upper reach of Natural Area swales (sites WNA1 – WNA4), along main runoff pathways from IRM-remediated sites. Monitoring at these sites will characterize soil/sediment and water quality and document the re-establishment of native wetlands vegetation following herbicide treatment and, in two cases, excavation of contaminated soil (sites WNA1 and WNA4).

It is anticipated that the initial sampling will be conducted during fall 2013 to document change in site conditions after an "equilibration" period following IRM removal of contaminant sources from the Buffer Zone (fall 2012) and herbicide treatment by IDEM of over 30 acres of swales in the north and central sections of the Natural Area (fall 2011). The survey will be repeated annually through 2017, unless initial survey findings

indicate the need or benefit of conducting future surveys with a greater frequency. DuPont has provided a 5-year (2012 through 2017) funding cycle to the TNC to support improvements to the Natural Area and Buffer Zone. Those improvements will be monitored and documented annually. It is anticipated that an additional 12 acres of wetlands in the Natural Area will be restored over the next two years as part of the sediment remediation project on the Grand Calumet River.

6.2 Plant Community Characterization

Plant community characterization will be conducted at the 20 monitoring locations following the same approach used in the fall 2011 field investigation (Appendix B). Each sampling plot will be sized as a rectangle 50 feet wide and 80 feet long, covering an area of approximately 0.1 acre. Each sample plot will be marked with six distinct subsample locations. These will be positioned at intervals along three transects (three transects along the 80-foot length), two sub-samples per transect. At each of the six sub-sampling locations, vegetation studies will be performed placing 3-foot square quadrant within which plant species will be recorded and assigned a cover class using the standard Daubenmier method. Bare ground, standing water and invasive species coverage will also be documented using the same method. The vegetation data were analyzed via standard FQA techniques for:

- Coefficient of conservatism (Mean C),
- Species richness, and
- FQI.

The sampling approach and data analysis methods, as well as the rationale for their selection, were previously described in Section 3.1. Detailed information on sampling methods is provided Appendix B.

6.3 Surface Soil and Water Characterization

Periodically flooded areas within the extended Buffer Zone and upper reach of Natural Area swales will be characterized in terms of soil/sediment conditions and water quality. Sampling will be conducted concurrently with the evaluation of plant communities.

6.3.1 Soil/Sediment Sampling

Soil/sediment characterization data will be used to 1) determine whether there are spatial differences in terms of chemical composition between IRM remediated areas and sampling areas within Natural Area swales, and 2) to assess effectiveness of contaminated soil migration control from the Buffer Zone into the Natural Area. Composite surface soil (0.0 to 0.5 feet bgs) samples will be collected from each of the 20 sampling plots selected for monitoring of plant communities. Each composite sample will be obtained within an approximately 6-inch by 6-inch area to a depth of 6 inches using a decontaminated stainless-steel trowel or shovel. The soil aliquot will be placed in a decontaminated stainless-steel bowl for mixing to homogenize the soil. The soil will then be placed into new, clean sample containers using decontaminated stainless-steel trowels. Detailed procedures for sample collection, processing, analysis, and quality control are described in Appendix B, 2011 Natural Area Sampling and Analysis Plan (Parsons 2011). The constituents of potential concern to be analyzed in all soil samples are antimony, cadmium, lead, and zinc, as discussed in Section 5.2. In areas with

standing water, samples will be collected from the top 6 inches of sediment using a trowel.

6.3.2 Water Sampling

Surface water quality will be evaluated in terms of concentrations of selected metals as an indication of exposure conditions for semi-aquatic receptor organisms, as well as from a human health perspective. Surface water samples will be collected from a depth of 1 foot or one half of the water depth, whichever is less, using the submersion technique. USEPA Method 1669 protocol for Sampling Ambient Water for Trace Metals at USEPA Water Quality Criteria Levels will be followed for surface water sampling. These surface water samples will be analyzed for total and dissolved, antimony, arsenic, cadmium, lead, and zinc, as well as total hardness.

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TABLES

Table 1. Natural Area Sampling Plots - Plant Community Characterization

Location	Date	Swale/Ridge	Number of Species		Mean C Index		Floristic Quality Index	
			Native Species	All Species	Native Species	All Species	Native Species	All Species
Ridge Habitat								
NAPLOT-15	8/22/11	R3	14	14	4.4	4.4	16.3	16.3
NAPLOT-16	8/23/11	R4	18	19	4.4	4.2	18.6	18.6
NAPLOT-17	8/23/11	R4	15	16	4.3	4.0	16.5	16.0
NAPLOT-19	8/22/11	R3	19	20	4.6	4.3	20.0	19.5
NAPLOT-20	8/22/11	R3	21	22	4.5	4.3	20.5	20.0
NAPLOT-21	8/26/11	R2	21	22	4.5	4.3	20.7	20.3
NAPLOT-22	8/26/11	R2	29	30	4.6	4.4	24.5	24.1
NAPLOT-23	8/25/11	R2	25	28	5.0	4.5	25.0	23.6
NAPLOT-24	8/29/11	R1	31	34	5.0	4.5	27.7	26.4
NAPLOT-25	8/29/11	R1	19	20	4.2	4.0	18.4	17.9
NAPLOT-26	8/23/11	R5	19	21	4.5	4.1	19.7	18.8
NAPLOT-27	8/23/11	R5	12	14	3.5	3.0	12.1	11.2
NAPLOT-28	8/22/11	R3	15	17	4.5	3.9	17.3	16.2
NAPLOT-29	8/29/11	R1	27	29	4.8	4.4	24.8	24.0
	All plots in combination:		***79***	***84***	***4.9***	***4.6***	***43.4***	***42.1***
Managed Swale Habitat								
NAPLOT-02	8/25/11	S5	7	8	4.3	3.8	11.3	10.6
NAPLOT-03	8/22/11	S5	8	9	5.0	4.4	14.1	13.3
NAPLOT-04	8/22/11	S5	5	6	3.8	3.2	8.5	7.8
NAPLOT-05	8/25/11	S5	11	11	3.9	3.9	13.0	13.0
NAPLOT-10	8/29/11	S3	1	1	5.0	5.0	5.0	5.0
NAPLOT-12	8/29/11	S3	3	3	2.3	2.3	4.0	4.0
NAPLOT-13	8/26/11	S6	10	11	5	4.5	15.8	15.8
NAPLOT-14	8/25/11	S6	10	11	4.7	4.3	14.9	14.2
NAPLOT-18	8/25/11	S7	8	9	2.9	2.6	8.1	7.7
NAPLOT-30	8/25/11	S7	8	8	2.9	2.9	8.1	8.1
	All plots in combination:		***22***	***45***	***4.3***	***4.1***	***20***	***19.6***
Unmanaged Swale Habitat								
NAPLOT-01	8/26/11	S5	3	4	4.3	3.3	7.5	6.5
NAPLOT-06	8/26/11	S4	1	1	1.0	1.0	1.0	1.0
NAPLOT-07	8/29/11	S4	2	2	3.0	3.0	4.2	4.2
NAPLOT-08	8/29/11	S4	2	2	3.0	3.0	4.2	4.2
NAPLOT-09	8/26/11	S4	2	2	3.0	3.0	4.2	4.2
NAPLOT-11	8/29/11	S2	2	2	3.0	3.0	4.2	4.2
NAPLOT-31	8/25/11	S8	2	2	1.5	1.5	2.1	2.1
NAPLOT-32	8/26/11	S8	1	1	1.0	1.0	1.0	1.0
NAPLOT-33	8/26/11	S8	1	1	1.0	1.0	1.0	1.0
NAPLOT-34	8/30/11	S1	2	2	3.0	3.0	4.2	4.2
NAPLOT-35	8/30/11	S1	2	2	3.0	3.0	4.2	4.2
NAPLOT-36	8/30/11	S1	1	1	1.0	1.0	1.0	1.0
NAPLOT-37	8/29/11	S1	2	2	3.0	3.0	4.2	4.2
	All plots in combination:		***5***	***6***	***4.0***	***3.0***	***8.9***	***8.2***

Table 2. Soil Physico-Chemical Properties - Natural Area Sampling Plots

Location	Date	Depth (ft)	Arsenic (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	pH (units)	Percent Solids (%)	Ash Content (%)	Moisture Content (%)	Total Organic Carbon (mg/kg)	Total Organic Matter (%)	Cation Exchange Capacity (meq/100g)	Clay (%)	Coarse Sand (%)	Fine Sand (%)	Gravel (%)	Medium Sand (%)	Silt (%)
Ridge Habitat - Surface Soil																		
NAPLOT-15	8/22/11	0 - 0.5	7.6	327	1000	6.7	82.8	97.3	10	14700	2.7	8.07	1.3	0.4	96.1	0.1	0.9	1.2
NAPLOT-16	8/23/11	0 0.5	11.9	194	1890	7.02	91.3	97.7	26.5	18400	2.3	7.75	2.2	0.1	93.5	0.1	0.8	3.3
NAPLOT-17	8/23/11	0 - 0.5	13.5	247	1910	6.83	84	95.4	27.5	35900	4.6	12.5	2.4	0.4	91.5	0.2	0.9	4.6
NAPLOT-19	8/22/11	0 - 0.5	10.8	261	1630	6.56	72.6	91.8	30.7	58500	8.2	16.9	2.6	2.5	83.2	0.6	3.6	7.5
NAPLOT-20	8/22/11	0 - 0.5	14.5	311	2210	6.47	80.2	90.5	27.4	49800	9.5	24.8	4.1	5.1	78.3	0	1.4	11.1
NAPLOT-21	8/26/11	0 - 0.5	37	760	3860	7.03	67.6	90.1	47.8	71800	9.9	31.8	5.3	0.6	76.1	0	1.9	16.1
NAPLOT-22	8/26/11	0 - 0.5	19.5	271	2330	6.92	84.7	94.8	17.6	37300	5.2	17.6	3.1	0.2	86.8	0	1.1	8.9
NAPLOT-23	8/25/11	0 - 0.5	16.1	141	1270	7.24	90.1	95.5	11.2	24900	4.5	12.1	3.7	0.7	88.3	0.2	0.8	6.3
NAPLOT-24	8/29/11	0 - 0.5	37.3	771	4460	6.33	49.9	79.1	101.6	125000	20.9	78.1	9.1	0	58.2	0	4.3	28.4
NAPLOT-25	8/29/11	0 - 0.5	45.1	951	3040	6.47	50.9	71	79.3	259000	29	64.8	5.6	11.7	27.1	0.3	24.1	31.2
NAPLOT-26	8/23/11	0 - 0.5	9.8	116	1770	6.68	89.9	98.3	14.6	12500	1.7	6.42	1.4	0.1	95	0.1	0.4	3.1
NAPLOT-27	8/23/11	0 - 0.5	11.9	157	2160	6.11	87.6	97.2	20.6	14900	2.8	7.89	2.4	0.1	91.1	0.1	0.6	5.7
NAPLOT-28	8/22/11	0 - 0.5	25.1	710	2790	6.61	70.5	92.2	24.6	76500	7.8	27.2	2.8	2.3	80.9	0.3	1.6	12.1
NAPLOT-29	8/29/11	0 - 0.5	16.1	211	1440	6.88	69.3	93.9	61.7	57600	6.1	24.2	5.2	0	84.3	0	1.2	9.3
Swale Habitat - Surface Soil																		
NAPLOT-01	8/26/11	0 - 0.5	1050	10300	14100	6.45	55.9	93.5	72.1	23900	6.5	32.7	13.2	2.5	76.1	0.1	2.4	5.7
NAPLOT-02	8/25/11	0 - 0.5	223	3100	5520	6.69	58.5	94.4	73	26400	5.6	18	8.8	1.7	67	0.4	5.2	17
NAPLOT-03	8/22/11	0 - 0.5	84	1420	2150	6.73	44.3	91.7	109.1	43200	8.3	23.7	4.9	6.1	82.3	1.9	0.8	4
NAPLOT-04	8/22/11	0 - 0.5	53.8	2090	2440	6.73	39.3	84.8	136	94700	15.2	47.6	5.7	3.5	67.2	1.3	1.4	20.9
NAPLOT-05	8/25/11	0 - 0.5	27.2	675	1490	6.86	35.3	85.7	165.4	71100	14.3	49.2	7.2	1.8	75.2	0	2.6	13.2
NAPLOT-06	8/26/11	0 - 0.5	247	2850	12400	6.86	20.3	66.4	379	204000	33.6	115	15.1	10.7	27	0	2.8	44.4
NAPLOT-07	8/29/11	0 - 0.5	49.4	697	6170	6.35	21.9	73.1	296.4	153000	26.9	79.4	11.2	0.3	28.9	0.3	3.7	55.6
NAPLOT-08	8/29/11	0 - 0.5	26.3	419	1740	6.36	23.3	76.5	277.3	128000	23.5	79.3	13.1	0	55.6	0	8.3	23
NAPLOT-09	8/26/11	0 - 0.5	9.8	268	1130	6.54	34.3	86.8	161.3	104000	13.2	39	5	5.3	70.7	0.4	2.6	16
NAPLOT-10	8/29/11	0 - 0.5	3.4	77.2	301	6.83	48.3	95.8	79.3	33000	4.2	10.8	3	0	88.8	0	4.3	3.9
NAPLOT-11	8/29/11	0 - 0.5	34.3	1180	2930	6.68	13.3	53.2	699.6	265000	46.8	141	26.9	1.3	21.1	0.4	7.5	42.8
NAPLOT-12	8/29/11	0 - 0.5	9.1	196	1110	6.79	26.4	81.1	249.2	113000	18.9	77.6	9.2	0	60.5	0	4.3	26
NAPLOT-13	8/26/11	0 - 0.5	33.2	201	884	6.52	36.6	88	115.8	71500	12	48.4	8.2	0.9	66.7	0	3.5	20.7
NAPLOT-14	8/25/11	0 - 0.5	17.1	1020	1850	6.05	50.8	93.4	99.2	37600	6.6	17.6	4.4	1.2	83.5	0.4	4.3	6.2
NAPLOT-18	8/25/11	0 - 0.5	54.1	771	3210	7.26	12.2	56.2	667.8	304000	43.8	135	10.4	5.6	15.5	4.5	3.6	60.4
NAPLOT-30	8/25/11	0 - 0.5	57.9	723	2700	7.06	13.2	47.6	677.9	265000	52.4	183	10.6	13.9	20.6	0.5	4.9	49.5
NAPLOT-31	8/25/11	0 - 0.5	277	1500	11900	6.88	20.7	69.2	352.9	202000	30.8	96.7	14.3	9.7	40.5	0	1.9	33.6
NAPLOT-32	8/26/11	0 - 0.5	44.3	964	8210	6.88	19.1	49.5	426.7	303000	50.5	179	21.3	12.2	16.9	0	6.8	42.8
NAPLOT-33	8/26/11	0 - 0.5	66.6	746	11100	6.88	16.5	59.5	429.8	252000	40.5	181	20	14	12.1	7.5	15.8	30.6
NAPLOT-34	8/30/11	0 - 0.5	23.5	200	2310	6.95	20.3	71.6	409.2	176000	28.4	78.5	5.5	0	57.3	0	5.1	32.1
NAPLOT-35	8/30/11	0 - 0.5	42.1	516	71700	7.08	11.6	53.8	916.8	297000	46.2	119	20.4	7.4	21.4	3.8	5.1	41.9
NAPLOT-36	8/30/11	0 - 0.5	34.7	1930	86300	7.06	11.6	53.5	696.1	311000	46.5	166	21.9	0	23.1	0	6.7	48.3
NAPLOT-37	8/29/11	0 - 0.5	27.6	848	6020	9.88	14.2	51.8	590.1	264000	48.2	166	12.6	0	23.1	0	10.3	54
Swale Habitat - Subsurface Soil																		
NAPLOT-01	8/26/11	0.5 - 1.5	608	25800	33100	6.31	65.8	97.1	45.9	17800	2.9	11.9	12.2	1	76.8	0.1	2.2	7.7
NAPLOT-02	8/25/11	0.5 - 1.5	211	4790	12500	6.72	56.6	95.3	60	18100	4.7	18.6	9.1	0.7	76.2	1.1	1.2	11.7
NAPLOT-03	8/22/11	0.5 - 1.5	54.8	852	1800	6.64	57.7	96.1	48.4	23900	3.9	11.8	2.7	0.6	89.6	0.2	0.7	6.2
NAPLOT-04	8/22/11	0.5 - 1.5	19.1	893	1180	6.59	52.3	95.4	59.9	25200	4.6	20	3.1	0.3	92.7	0.2	0.8	2.9
NAPLOT-05	8/25/11	0.5 - 1.5	9.7	184	615	6.84	56.2	95.4	64.6	25600	4.6	19.1	4.6	0.4	89.7	0.2	1.3	3.9
NAPLOT-06	8/26/11	0.5 - 1.5	226	3230	15100	7	19.2	68.4	367.4	219000	31.6	99.2	11.2	14.3	23.5	0	1.4	49.6
NAPLOT-07	8/29/11	0.5 - 1.5	25.2	344	1660	6.49	41.9	90.7	108.5	56000	9.3	37.6	7.8	0	82.9	0	2.5	6.8
NAPLOT-08	8/29/11	0.5 - 1.5	15.2	292	1040	6.42	43.2	91.5	99.3	50100	8.5	35	6.1	0	82.4	0	2.3	9.2
NAPLOT-09	8/26/11	0.5 - 1.5	10.3	165	931	6.63	49.9	94.9	78.4	30400	5.1	11.7	4	1.1	88.7	0	1.1	5.1
NAPLOT-10	8/29/11	0.5 - 1.5	3.4	124	360	6.79	48	94.6	92	34100	5.4	22.5	4.9	0	89.5	0	2.4	3.3
NAPLOT-11	8/29/11	0.5 - 1.5	39.3	674	2410	6.73	17.6	64.6	541.8	224000	35.4	156	21	0	34	0	5.2	39.8
NAPLOT-12	8/29/11	0.5 - 1.5	5	132	553	6.94	54.4	94.1	96	29300	5.9	21.7	5.1	0	84.6	0	3.9	6.5
NAPLOT-13	8/26/11	0.5 - 1.5	29.7	216	1400	6.51	52	90.9	95	44600	9.1	32.5	8.9	1	80.7	0	3.8	5.6
NAPLOT-14	8/25/11	0.5 - 1.5	16.2	971	4920	6.17	43.1	92.8	95.5	57700	7.2	30.8	4.3	2.3	84.2	0.3	2.5	6.4
NAPLOT-18	8/25/11	0.5 - 1.5	46.9	711	3980	7.01	12.2	45.6	771.5	259000	54.4	141	12.3	20.1	18.2	2.6	10.9	35.9
NAPLOT-30	8/25/11	0.5 - 1.5	75.6	812	4690	6.98	10.3	47.7	794	377000	52.3	111	13.7	14.4	15.4	2.6	5.3	48.6
NAPLOT-31	8/25/11	0.5 - 1.5	278	658	9710	6.78	26.9	73	294.9	169000	27	87.2	12.1	5.1	55.3	0.2	5.3	22
NAPLOT-32	8/26/11	0.5 - 1.5	81.1	1510	11100	6.83	27.7	66	290.1	208000	34	111	22.2	7.7	18.6	2.4	13.3	35.8
NAPLOT-33	8/26/11	0.5 - 1.5	66.1	830	6600	6.79	28	76.1	261.4	138000	23.9	105	46.2	5.6	9.9	1.1	6.6	30.6
NAPLOT-34	8/30/11	0.5 - 1.5	9.3	91.8	1440	6.82	40.8	91.9	138.3	52500	8.1	28.7	4.3	0	80.8	0	3.6	11.3
NAPLOT-35	8/30/11	0.5 - 1.5	62.6	982	65900	6.98	13.3	56.8	628.3	229000	43.2	126	18.3	6.7	22	0.6	4	48.4
NAPLOT-36	8/30/11	0.5 - 1.5	26.9	1090	65600	7.04	13.6	60.4	703.1	247000	39.6	110	22.9	5.8	23.2	0.8	5.2	42.1
NAPLOT-37	8/29/11	0.5 - 1.5	38.4	770	3990	7.05	23	76	315.9	173000	24	93.9	10.5	0.5	50.2	0.2	3.8	34.8

Table 3. Plant Tissue Metals Concentration - East Chicago Site Natural Area

Location	Habitat	Date	Tissue	Arsenic (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	Plant Species	
NAPLOT-16-A-LF	dune/ridge	2-Sep-11	leaf	0.36	11.9	292	Little Blue Stem	*Andropogon scoparius*
NAPLOT-16-B-LF	dune/ridge	2-Sep-11	leaf	0.32	8.5	395	Slender Sand Sedge	*Cyperus filiculmis*
NAPLOT-17-A-LF	dune/ridge	2-Sep-11	leaf	0.17	4.8	150	Little Blue Stem	*Andropogon scoparius*
NAPLOT-17-B-LF	dune/ridge	2-Sep-11	leaf	0.043	2.6	187	Indian Grass	*Sorghastrum nutans*
NAPLOT-21-A-LF	dune/ridge	6-Sep-11	leaf	0.09	1.7	237	Golden Rod	*Solidago altissima*
NAPLOT-21-B-LF	dune/ridge	6-Sep-11	leaf	0.084	1.3	261	Big Blue Stem	*Andropogon gerardii*
NAPLOT-25-A-LF	dune/ridge	6-Sep-11	leaf	0.13	1.4	62.8	Big Blue Stem	*Andropogon gerardii*
NAPLOT-25-B-LF	dune/ridge	6-Sep-11	leaf	0.17	2.1	124	Rough Horsetail	*Equisetum hymale*
NAPLOT-27-A-LF	dune/ridge	2-Sep-11	leaf	0.14	9.8	213	Indian Grass	*Sorghastrum nutans*
NAPLOT-27-B-LF	dune/ridge	2-Sep-11	leaf	0.24	5.9	222	Little Blue Stem	*Andropogon scoparius*
NAPLOT-28-A-LF	dune/ridge	2-Sep-11	leaf	0.35	6.7	153	Little Blue Stem	*Andropogon scoparius*
NAPLOT-28-B-LF	dune/ridge	2-Sep-11	leaf	0.15	6.3	801	Scribner's Panic Grass	*Panicum oligosantes*
			Average	***0.19***	***5.3***	***258***		
NAPLOT-16-A-BG	dune/ridge	2-Sep-11	root	1.5	341	3120	Little Blue Stem	*Andropogon scoparius*
NAPLOT-16-B-BG	dune/ridge	2-Sep-11	root	2.3	565	4440	Slender Sand Sedge	*Cyperus filiculmis*
NAPLOT-17-A-BG	dune/ridge	2-Sep-11	root	1.7	74.8	1930	Little Blue Stem	*Andropogon scoparius*
NAPLOT-17-B-BG	dune/ridge	2-Sep-11	root	1.4	59.2	1180	Indian Grass	*Sorghastrum nutans*
NAPLOT-21-A-BG	dune/ridge	6-Sep-11	root	2.7	108	988	Golden Rod	*Solidago altissima*
NAPLOT-21-B-BG	dune/ridge	6-Sep-11	root	4.1	306	1770	Big Blue Stem	*Andropogon gerardii*
NAPLOT-25-A-BG	dune/ridge	6-Sep-11	root	1.2	139	1320	Big Blue Stem	*Andropogon gerardii*
NAPLOT-25-B-BG	dune/ridge	6-Sep-11	root	3.5	111	1650	Rough Horsetail	*Equisetum hymale*
NAPLOT-27-A-BG	dune/ridge	2-Sep-11	root	2.5	263	2610	Indian Grass	*Sorghastrum nutans*
NAPLOT-27-B-BG	dune/ridge	2-Sep-11	root	0.62	79.9	758	Little Blue Stem	*Andropogon scoparius*
NAPLOT-28-A-BG	dune/ridge	2-Sep-11	root	1.3	160	1410	Little Blue Stem	*Andropogon scoparius*
NAPLOT-28-B-BG	dune/ridge	2-Sep-11	root	1.2	149	1840	Scribner's Panic Grass	*Panicum oligosantes*
			Average	***2.00***	***196***	***1,918***		

Table 3 (cont.). Plant Tissue Metals Concentration - East Chicago Site Natural Area

Location	Habitat	Date	Tissue	Arsenic (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	Plant Species	
NAPLOT-01-A-LF	swale	31-Aug-11	leaf	3.2	5.9	64.3	Common Reed	*Phragmites australis*
NAPLOT-01-B-LF	swale	31-Aug-11	leaf	22.3	50.3	198	Common Reed	*Phragmites australis*
NAPLOT-03-A-LF	swale	1-Sep-11	leaf	3.7	7.5	189	Common Water Plantain	*Alisma subcordatum*
NAPLOT-03-B-LF	swale	1-Sep-11	leaf	1.6	2.5	59.4	Great Bulrush	*Scirpus validus*
NAPLOT-07-A-LF	swale	31-Aug-11	leaf	1	1.1	67.5	Common Reed	*Phragmites australis*
NAPLOT-07-B-LF	swale	31-Aug-11	leaf	0.85	2.3	57.6	Common Reed	*Phragmites australis*
NAPLOT-13-A-LF	swale	1-Sep-11	leaf	0.2	1.2	16.1	Great Bulrush	*Scirpus validus*
NAPLOT-13-B-LF	swale	1-Sep-11	leaf	0.46	1.3	111	Mild Water Pepper	*Polygonum hydropiperoides*
NAPLOT-14-A-LF	swale	31-Aug-11	leaf	0.44	3.5	35.9	Great Bulrush	*Scirpus validus*
NAPLOT-14-B-LF	swale	31-Aug-11	leaf	0.94	4.8	275	Red Rooted Spike Rush	*Eleocharis erythropoda*
NAPLOT-18-A-LF	swale	1-Sep-11	leaf	0.57	5.9	59.9	Common Water Plantain	*Alisma subcordatum*
NAPLOT-18-B-LF	swale	1-Sep-11	leaf	0.22	3.1	24.7	Great Bulrush	*Scirpus validus*
NAPLOT-30-A-LF	swale	1-Sep-11	leaf	0.22	9.5	54.6	Long Scaled Nut Sedge	*Cyperus strigosus*
NAPLOT-30-B-LF	swale	1-Sep-11	leaf	0.57	5.6	58.2	Rice Cut Grass	*Leersia oryzoides*
NAPLOT-32-A-LF	swale	30-Aug-11	leaf	0.25	0.95	42.1	Common Reed	*Phragmites australis*
NAPLOT-32-B-LF	swale	30-Aug-11	leaf	0.17	1.1	39.5	Common Reed	*Phragmites australis*
NAPLOT-35-A-LF	swale	31-Aug-11	leaf	0.31	0.84	126	Common Reed	*Phragmites australis*
NAPLOT-35-B-LF	swale	31-Aug-11	leaf	0.17	0.71	78.5	Common Reed	*Phragmites australis*
			Average	***0.73***	***3.2***	***86.5***		
NAPLOT-01-A-BG	swale	31-Aug-11	root	2260	1680	12800	Common Reed	*Phragmites australis*
NAPLOT-01-B-BG	swale	31-Aug-11	root	1460	1700	7650	Common Reed	*Phragmites australis*
NAPLOT-03-A-BG	swale	1-Sep-11	root	634	303	15200	Common Water Plantain	*Alisma subcordatum*
NAPLOT-03-B-BG	swale	1-Sep-11	root	190	586	4730	Great Bulrush	*Scirpus validus*
NAPLOT-07-A-BG	swale	31-Aug-11	root	92.4	80.5	4770	Common Reed	*Phragmites australis*
NAPLOT-07-B-BG	swale	31-Aug-11	root	54.4	55	2500	Common Reed	*Phragmites australis*
NAPLOT-13-A-BG	swale	1-Sep-11	root	35.1	90.6	1100	Great Bulrush	*Scirpus validus*
NAPLOT-13-B-BG	swale	1-Sep-11	root	22.4	27.7	1130	Mild Water Pepper	*Polygonum hydropiperoides*
NAPLOT-14-A-BG	swale	31-Aug-11	root	22.6	790	2900	Great Bulrush	*Scirpus validus*
NAPLOT-14-B-BG	swale	31-Aug-11	root	36.2	52.3	4460	Red Rooted Spike Rush	*Eleocharis erythropoda*
NAPLOT-18-A-BG	swale	1-Sep-11	root	123	271	1100	Common Water Plantain	*Alisma subcordatum*
NAPLOT-18-B-BG	swale	1-Sep-11	root	7.7	34.2	232	Great Bulrush	*Scirpus validus*
NAPLOT-30-A-BG	swale	1-Sep-11	root	15.4	63.5	211	Long Scaled Nut Sedge	*Cyperus strigosus*
NAPLOT-30-B-BG	swale	1-Sep-11	root	63.2	382	1520	Rice Cut Grass	*Leersia oryzoides*
NAPLOT-32-A-BG	swale	30-Aug-11	root	12.4	108	1900	Common Reed	*Phragmites australis*
NAPLOT-32-B-BG	swale	30-Aug-11	root	9.3	193	1410	Common Reed	*Phragmites australis*
NAPLOT-35-A-BG	swale	31-Aug-11	root	5.5	28.1	23500	Common Reed	*Phragmites australis*
NAPLOT-35-B-BG	swale	31-Aug-11	root	4.3	28.4	24800	Common Reed	*Phragmites australis*
			Average	***83.0***	***193***	***5,716***		

Table 4. Surface Water Sampling Data for the East Chicago Natural Area and Buffer Zone

			Natural Area								Buffer Zone - Prior to IRM Implementation						Amphibian
			NA-SW-1	NA-SW-2	NA-SW-3	NA-SW-4	NA-SW-5	NA-SW-6	NA-SW-7	NA-SW-8	BFZ-SW-2A	BFZ-SW-3A	BFZ-SW-4	BFZ-SW-5	BFZ-SW-6	BFZ-SW-7	Reference
Analyte	**Units**	**Form**	6/10/11	6/9/11	6/10/11	6/8/11	6/9/11	6/9/11	6/9/11	6/9/11	6/8/11	6/8/11	6/9/11	6/8/11	6/10/11	6/10/11	**Value***
Arsenic	ug/L	dissolved	0.54	19	2.8	35	3.2	1.9	3.3	1.6	1.4	0.48	5.1	41	0.88	0.64	140
Arsenic	ug/L	total	0.65	35	3.7	49	3.3	2.4	3.5	1.8	1.4	0.45	2.5	150	1.4	0.72	140
Cadmium	ug/L	dissolved	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.41	0.99	0.15	550
Cadmium	ug/L	total	<0.5	0.18	0.14	0.22	0.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	1.7	0.19	550
Chromium	ug/L	dissolved	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.73	<5	<5	<5	<5	13,700
Chromium	ug/L	total	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	13,700
Copper	ug/L	dissolved	0.75	0.67	<2	1	1.5	<2	0.49	1.1	0.43	<2	0.72	1.6	1.4	2.3	190
Copper	ug/L	total	0.92	1.3	1.4	1.1	2.4	0.88	0.65	0.56	<2	0.59	0.58	1.2	1.9	2.1	190
Lead	ug/L	dissolved	0.18	0.2	2.5	0.34	0.73	<0.5	0.16	0.13	<0.5	<0.5	1.1	0.2	0.59	<0.5	95
Lead	ug/L	total	0.85	1.5	6.9	1.8	1.7	0.71	0.48	0.25	<0.5	0.23	1.4	10	7.4	0.39	95
Manganese	ug/L	dissolved	140	510	780	78	160	2900	400	140	480	1000	3500	770	380	150	1460
Manganese	ug/L	total	120	600	780	81	170	3100	440	160	510	790	870	970	370	120	1460
Nickel	ug/L	dissolved	0.81	2.9	0.49	14	0.85	0.38	0.44	0.67	1.2	0.53	1.6	27	3.2	1.7	2530
Nickel	ug/L	total	0.76	3.3	0.53	15	1	0.45	0.41	<2	0.61	0.53	1.3	26	3.2	1.1	2530
Zinc	ug/L	dissolved	23	37	14	1000	86	<20	23	6.6	9.7	<20	33	4400	1500	170	1605
Zinc	ug/L	total	30	84	29	1700	110	30	41	8.6	12	28	150	4700	1500	170	1605

* Appendix E presents the derivation of reference values for semi-aquatic organisms. Reported test values were divided by a factor of 10 to extrapolate from a short-term exposure to a chronic exposure. Highlighted values exceed toxicity reference values.

Table 5. Surface Soil Metals Concentration Within Natural Area and Extended Buffer Zone

Analyte	Units	Number of Detections	Mean	Median	Minimum Detected Value	Maximum Detected Value
CURRENT NATURAL AREA EASEMENT BOUNDARY						
Antimony (metallic)	mg/kg	52 / 67	3.71	0.91	0.17	58
Arsenic (inorganic)	mg/kg	126 / 126	16.7	8.58	0.47	84
Barium	mg/kg	37 / 37	27.3	13.4	3.2	120
Cadmium	mg/kg	61 / 73	5.66	0.79	0.054	143
Chromium	mg/kg	73 / 73	11.9	3.70	1.5	159
Cobalt	mg/kg	34 / 34	2.03	1.94	0.23	6.7
Copper	mg/kg	64 / 73	28.9	5.00	0.51	483
Lead (inorganic)	mg/kg	126 / 126	274	93.6	1.7	2,910
Manganese	mg/kg	30 / 30	159	136	6.0	818
Selenium (and compounds)	mg/kg	17 / 64	0.95	0.57	0.48	10
Silver	mg/kg	30 / 34	0.57	0.38	0.21	1.7
Vanadium	mg/kg	34 / 34	8.10	5.86	2.2	27
Zinc	mg/kg	120 / 120	1,480	890	6.8	11,100
NATURAL AREA INCLUDING EXTENDED BUFFER ZONE						
Antimony (metallic)	mg/kg	59 / 76	4.62	1.17	0.17	58
Arsenic (inorganic)	mg/kg	205 / 205	15.0	5.90	0.47	84
Barium	mg/kg	48 / 48	44.9	17.7	3.2	629
Cadmium	mg/kg	140 / 152	13.6	2.1	0.054	370
Chromium	mg/kg	87 / 87	51.1	4.42	1.5	1,940
Cobalt	mg/kg	40 / 40	3.15	1.99	0.23	22
Copper	mg/kg	73 / 82	51.7	6.60	0.51	748
Lead (inorganic)	mg/kg	205 / 205	288	85.0	1.7	4,600
Manganese	mg/kg	33 / 33	238	143	6.0	1,760
Selenium (and compounds)	mg/kg	20 / 78	1.14	0.57	0.48	10
Silver	mg/kg	33 / 43	0.63	0.28	0.15	3.9
Vanadium	mg/kg	40 / 40	10.5	6.47	2.2	43
Zinc	mg/kg	198 / 198	1,600	648	6.8	17,000

* Detailed data and summary statistics are presented in Appendix D.

Table 6. Comparison of Risk-Based Reference Concentrations and Surface Soil Data for the Natural Area

	Antimony	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Selenium	Silver	Vanadium	Zinc
SURFACE SOIL CONCENTRATION (mg/kg)													
Average concentration	3.71	16.7	27.3	5.66	11.9	2.03	28.9	274	159	0.95	0.57	8.1	1,480
Median concentration	0.91	8.6	13.4	0.79	3.7	1.94	5.0	93.6	136	0.57	0.38	5.86	890
RISK-BASED REFERENCE CONCENTRATION (mg/kg) [1]													
High Mobility Receptor Species													
Herbivore (white-tailed deer)	61.5	950	15,500	820	2,070	14,000	10,900	10,000	27,500	11.2	9,350	8,800	76,000
Herbivore (Canada goose)	--	445	--	266	514	2,020	835	382	26,500	9.5	500	94.0	9,700
Carnivore (red fox)	9.3	366	14,100	185	385	805	1,560	1,180	11,400	6.10	2,200	1,270	22,800
Carnivore (red-tailed hawk)	--	1,000	--	500	462	825	1,120	280	48,000	38.0	845	112	25,700
Small Foraging Range Receptor Species													
Herbivore (groundhog)	22.0	354	5,700	197	770	5,200	3,150	3,350	10,200	4.50	3,450	3,250	18,000
Invertivore (short-tailed shrew)	4.0 [3]	51.1	2,350	0.91	55.6	290	87.0	103	3,150	1.51	28.0	240	574
Omnivore (deer mouse)	4.0 [3]	84.0	2,100	1.01	72.0	504	96.0	145	3,950	1.15	33.4	560	585
Invertivore (song sparrow)	--	95.0	--	1.18	44.0	245	40.5	36 [3]	9,000	1.85	6.3	25.2 [3]	117
Omnivore (American robin)	--	59.0	--	1.82	43.5	200	38.0	36 [3]	4,500	1.59	8.9	25.2 [3]	203
Chicago Regional Background Values (mg/kg) [2]	4.0	13	110	0.6	16	8.9	19.6	36	636	0.48	0.55	25.2	95

1. Site-specific risk-based reference concentrations for the East Chicago Site based on No Observed Adverse Effect Levels (NOAELs). The RBRC calculation basis is presented in Appendix E. Highlighted values indicate average concentrations within the conservation easement that are higher than the RBRC for a given receptor species.
2. Soil background concentrations for Chicago metropolitan areas from Illinois EPA, IAC Title 35, Part 742, Appendix A (*http://www.ipcb.state.il.us/documents/dsweb/Get/Document-384080*).
3. Calculated RBRC value is below Chicago metropolitan area soil background concentration. Background value is the default soil reference concentration.

Table 7. Comparison of Risk-Based Reference Concentrations and Surface Soil Data for the Natural Area and Extended Buffer Zone

	Antimony	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Selenium	Silver	Vanadium	Zinc
SURFACE SOIL CONCENTRATION (mg/kg)													
Average concentration	4.62	15.0	44.9	13.6	51.1	3.15	51.7	288	238	1.14	0.63	10.5	1,600
Median concentration	1.17	5.9	17.7	2.05	4.42	1.99	6.60	85	143	0.57	0.28	6.47	648
RISK-BASED REFERENCE CONCENTRATION (mg/kg) [1]													
High Mobility Receptor Species													
Herbivore (white-tailed deer)	61.5	950	15,500	820	2,070	14,000	10,900	10,000	27,500	11.2	9,350	8,800	76,000
Herbivore (Canada goose)	--	445	--	266	514	2,020	835	382	26,500	9.5	500	94.0	9,700
Carnivore (red fox)	9.3	366	14,100	185	385	805	1,560	1,180	11,400	6.10	2,200	1,270	22,800
Carnivore (red-tailed hawk)	--	1,000	--	500	462	825	1,120	280	48,000	38.0	845	112	25,700
Small Foraging Range Receptor Species													
Herbivore (groundhog)	22.0	354	5,700	197	770	5,200	3,150	3,350	10,200	4.50	3,450	3,250	18,000
Invertivore (short-tailed shrew)	4.0 [3]	51.1	2,350	0.91	55.6	290	87.0	103	3,150	1.51	28.0	240	574
Omnivore (deer mouse)	4.0 [3]	84.0	2,100	1.01	72.0	504	96.0	145	3,950	1.15	33.4	560	585
Invertivore (song sparrow)	--	95.0	--	1.18	44.0	245	40.5	36 [3]	9,000	1.85	6.3	25.2 [3]	117
Omnivore (American robin)	--	59.0	--	1.82	43.5	200	38.0	36 [3]	4,500	1.59	8.9	25.2 [3]	203
Chicago Regional Background Values (mg/kg) [2]	4.0	13	110	0.6	16	8.9	19.6	36	636	0.48	0.55	25.2	95

1. Site-specific risk-based reference concentrations for the East Chicago Site based on No Observed Adverse Effect Levels (NOAELs). The RBRC calculation basis is presented in Appendix E. Highlighted values indicate average concentrations within the conservation easement that are higher than the RBRC for a given receptor species.
2. Soil background concentrations for Chicago metropolitan areas from Illinois EPA, IAC Title 35, Part 742, Appendix A (*http://www.ipcb.state.il.us/documents/dsweb/Get/Document-384080*).
3. Calculated RBRC value is below Chicago metropolitan area soil background concentration. Background value is the default soil reference concentration.

Table 8: Risks for Natural Area and Natural Area/Extended Buffer Zone

Pathway	Natural Area						Natural Area and Extended Buffer Zone					
	Project		Restoration		Trespasser		Project		Restoration		Trespasser	
	Cancer	Noncancer	Cancer	Noncancer	Cancer	Noncancer	Cancer	Noncancer	Cancer	Noncancer	Cancer	Noncancer
Soil Risks												
Dermal Contact with Soil	4.6E-07	0.0042	9.3E-07	0.014	4.7E-07	0.016	3.8E-07	0.0039	7.7E-07	0.013	4.7E-07	0.016
Ingestion of Soil	3.0E-06	0.081	6.2E-06	0.27	2.2E-06	0.41	2.5E-06	0.030	5.1E-06	0.10	2.1E-06	0.43
Inhalation of Particulates from Soil	4.8E-09	0.00089	9.7E-09	0.0030	1.0E-09	0.00079	3.5E-09	0.00019	7.0E-09	0.00063	1.3E-09	0.0013
Soil Total	**3.5E-06**	**0.086**	**7.1E-06**	**0.29**	**2.6E-06**	**0.42**	**2.9E-06**	**0.035**	**5.9E-06**	**0.12**	**2.6E-06**	**0.44**
Background risk for arsenic	1.9E-06	0.012	3.9E-06	0.041	1.4E-06	0.028	1.9E-06	0.012	3.9E-06	0.041	1.4E-06	0.028
Incremental Risk (excluding arsenic)	***1.6E-06***	***0.074***	***3.2E-06***	***0.25***	***1.2E-06***	***0.40***	***9.9E-07***	***0.023***	***2.0E-06***	***0.076***	***1.2E-06***	***0.41***
Surface Water Risks												
Dermal Contact with Surface Water	3.8E-07	0.0046	7.7E-07	0.015	1.7E-07	0.0065	7.2E-07	0.0084	1.4E-06	0.027	3.3E-07	0.012
Ingestion of Surface Water	1.2E-07	0.0023	2.5E-07	0.0073	6.9E-08	0.0040	2.3E-07	0.0029	4.6E-07	0.0093	1.3E-07	0.0051
Surface Water Total	**5.1E-07**	**0.0069**	**1.0E-06**	**0.022**	**2.4E-07**	**0.010**	**9.5E-07**	**0.011**	**1.9E-06**	**0.037**	**4.6E-07**	**0.017**
Total Incremental Risks	**2.4E-06**	**0.019**	**4.9E-06**	**0.063**	**1.7E-06**	**0.038**	**2.9E-06**	**0.023**	**5.8E-06**	**0.077**	**1.9E-06**	**0.045**
Lead Exceedance Factor	**0.080**		**0.27**		**0.13**		**0.082**		**0.28**		**0.11**	

Notes:

- Results are displayed as two significant figures except for samples greather than 10 are rounded to the nearest whole number.

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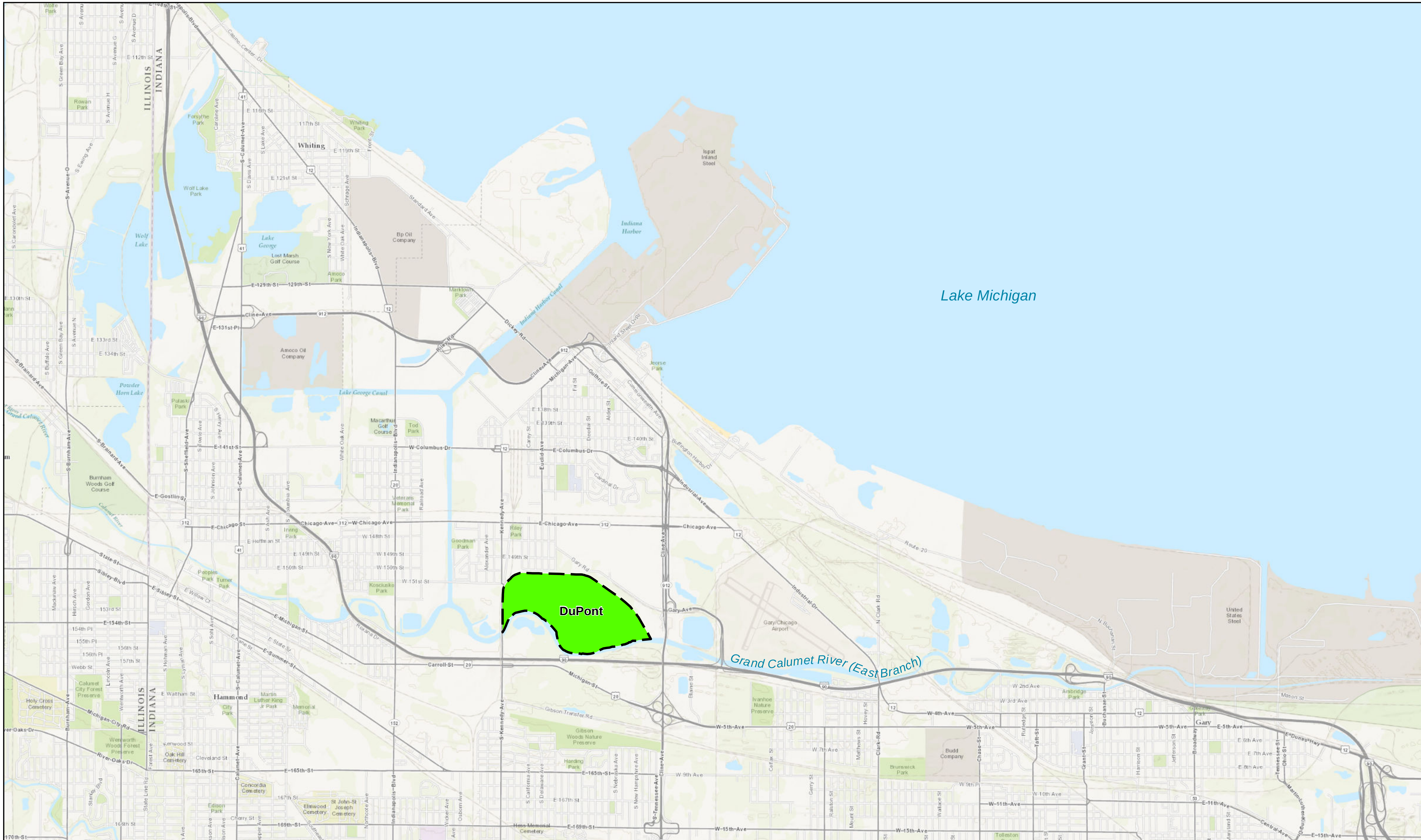
FIGURES



PARSONS Parsons Commercial Technology Group 10 S. Riverside Plaza Chicago, IL DUPONT	**Figure 1** **DuPont Site Location Map** Natural Area Evaluation and Management Plan DuPont East Chicago Facility East Chicago, Indiana	DuPont Property Boundary N W E S 0 0.5 1 2 Miles

Prepared by: Garner Peterson	Date: 6/3/2013	DuPont Project No: 507942
Reviewed by: Carlos Victoria	Figure No: 1	PARSONS Project No: 446650
Filename: Fig_1_Site_Location .mxd		

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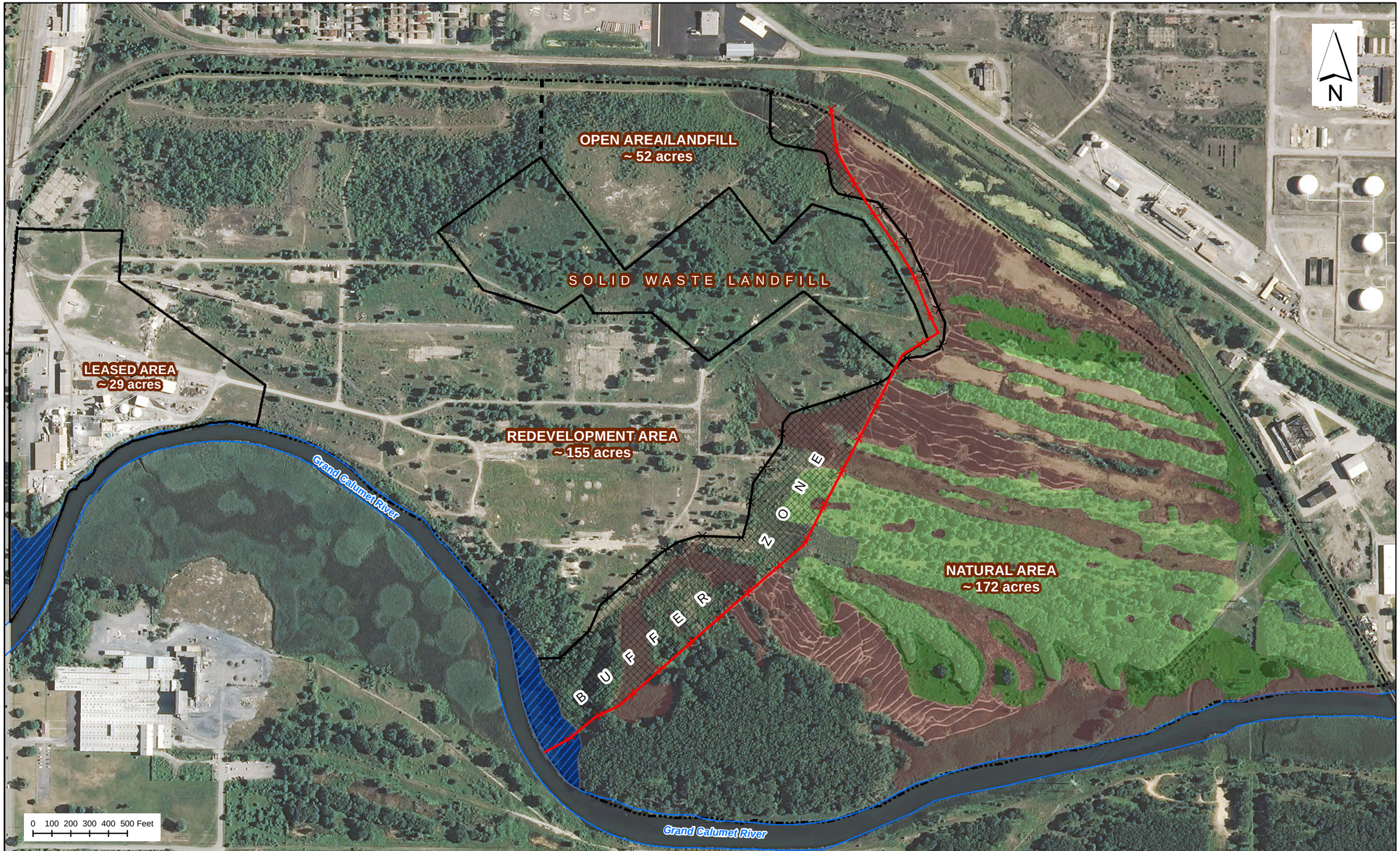

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Figure 2
Natural Area Ridge and Swale Vegetation

Natural Area Evaluation and Management Plan
DuPont East Chicago Facility
East Chicago, Indiana

Current Easement Boundary
New Fence
Extended Buffer Zone (~23 acres)
Future GCR-SRP Shelf Wetlands

Plant Community Mapping
Swale (Wetland)
Dune/Ridge - Mesic Praire
Dune/Ridge - Oak Barrens

River
Property Boundary

Prepared by: Garner Peterson	Date: 6/3/2013	DuPont Project No: 507942
Reviewed by: Carlos Victoria	Figure No: 2	PARSONS Project No: 446650

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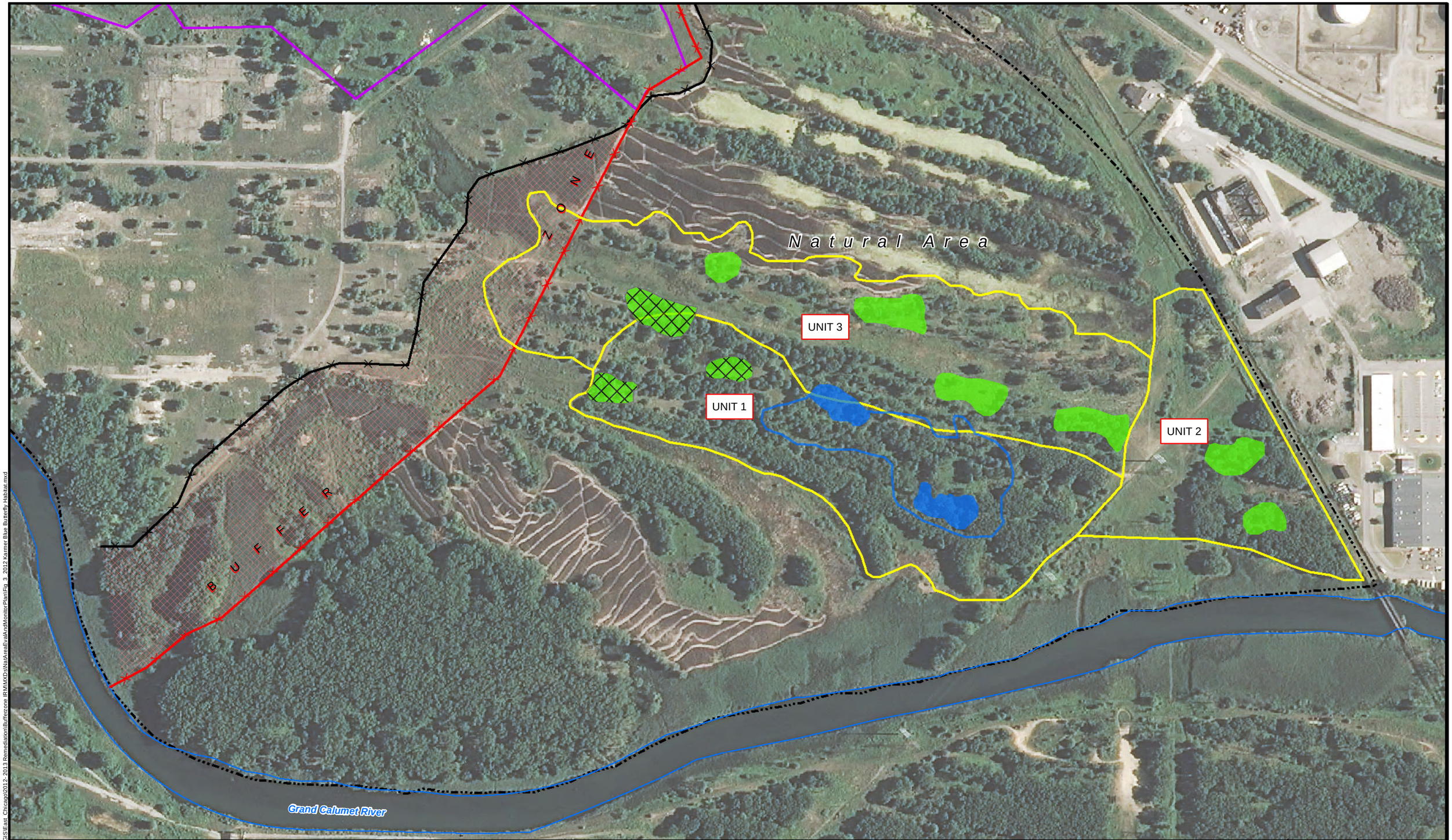

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Figure 3
2013 Karner Blue Butterfly Habitat

Natural Area Evaluation and Management Plan
DuPont East Chicago Facility
East Chicago, Indiana

- Occupied Habitat
- Occupied Habitat Core Area
- Restored Habitat
- Restored Habitat - Occupied
- Protected Habitat Units
- Current Easement Boundary
- New Fence
- Extended Buffer Zone
- River
- Property Boundary
- Solid Waste Landfill

N

0 100 200 400 Feet

Prepared by: Garner Peterson	Date: 6/5/2013	DuPont Project No: 507942
Reviewed by: Carlos Victoria	Figure No: 3	PARSONS Project No: 446650

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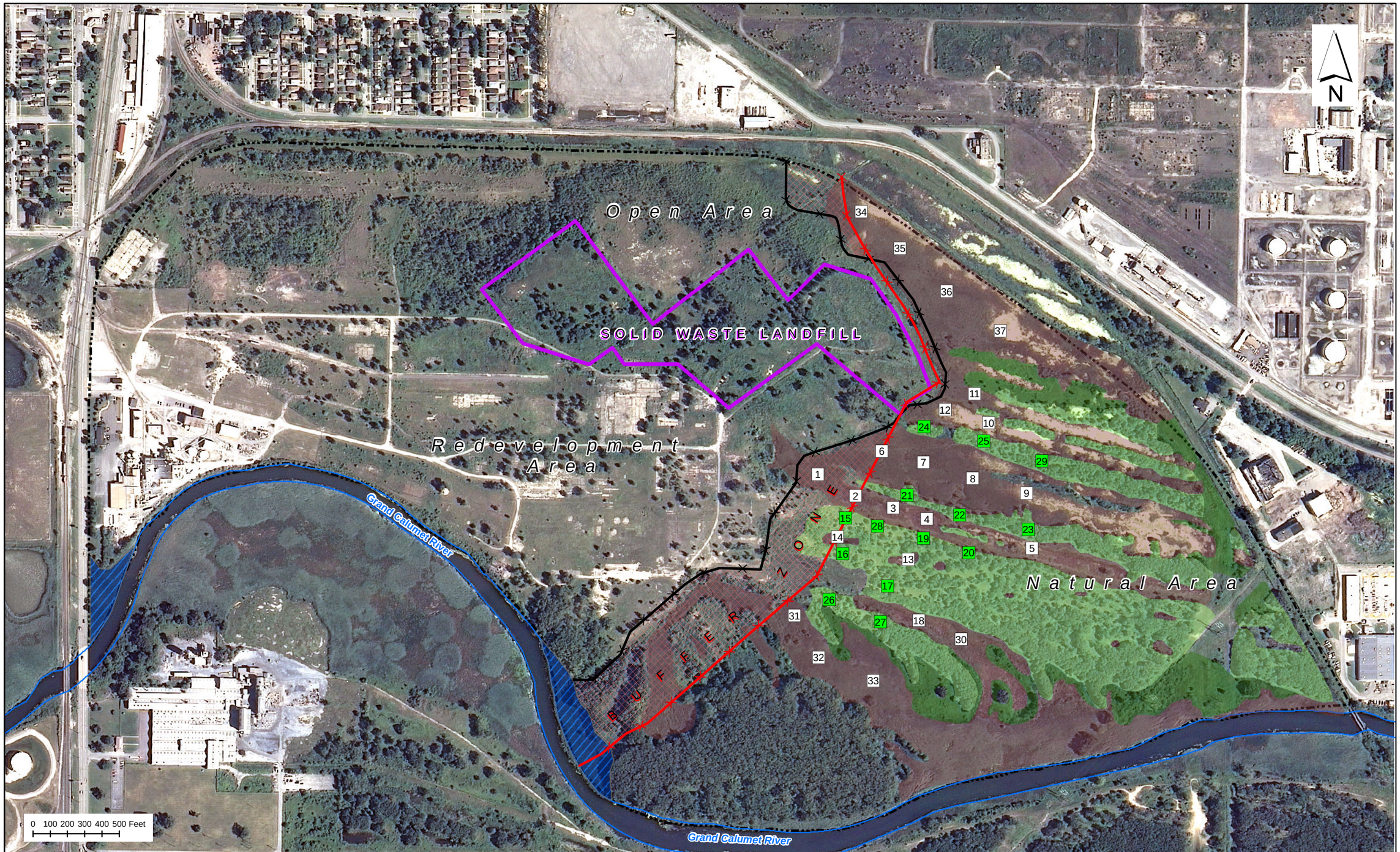

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Figure 4
Plant Community and Soil Sampling Plot Locations

Natural Area Evaluation and Management Plan
DuPont East Chicago Facility
East Chicago, Indiana

- 50' x 80' Swale Sampling Plots
- 50' x 80' Ridge Sampling Plots
- Current Easement Boundary
- New Fence
- Extended Buffer Zone
- Future GCR-SRP Shelf Wetlands
- Property Boundary
- River

Plant Community Mapping
- Swale (Wetland)
- Dune/Ridge - Mesic Praire
- Dune/Ridge - Oak Barrens

Prepared by: Garner Peterson	Date: 6/3/2013	DuPont Project No: 507942
Reviewed by: Carlos Victoria	Figure No: 4	PARSONS Project No: 446650

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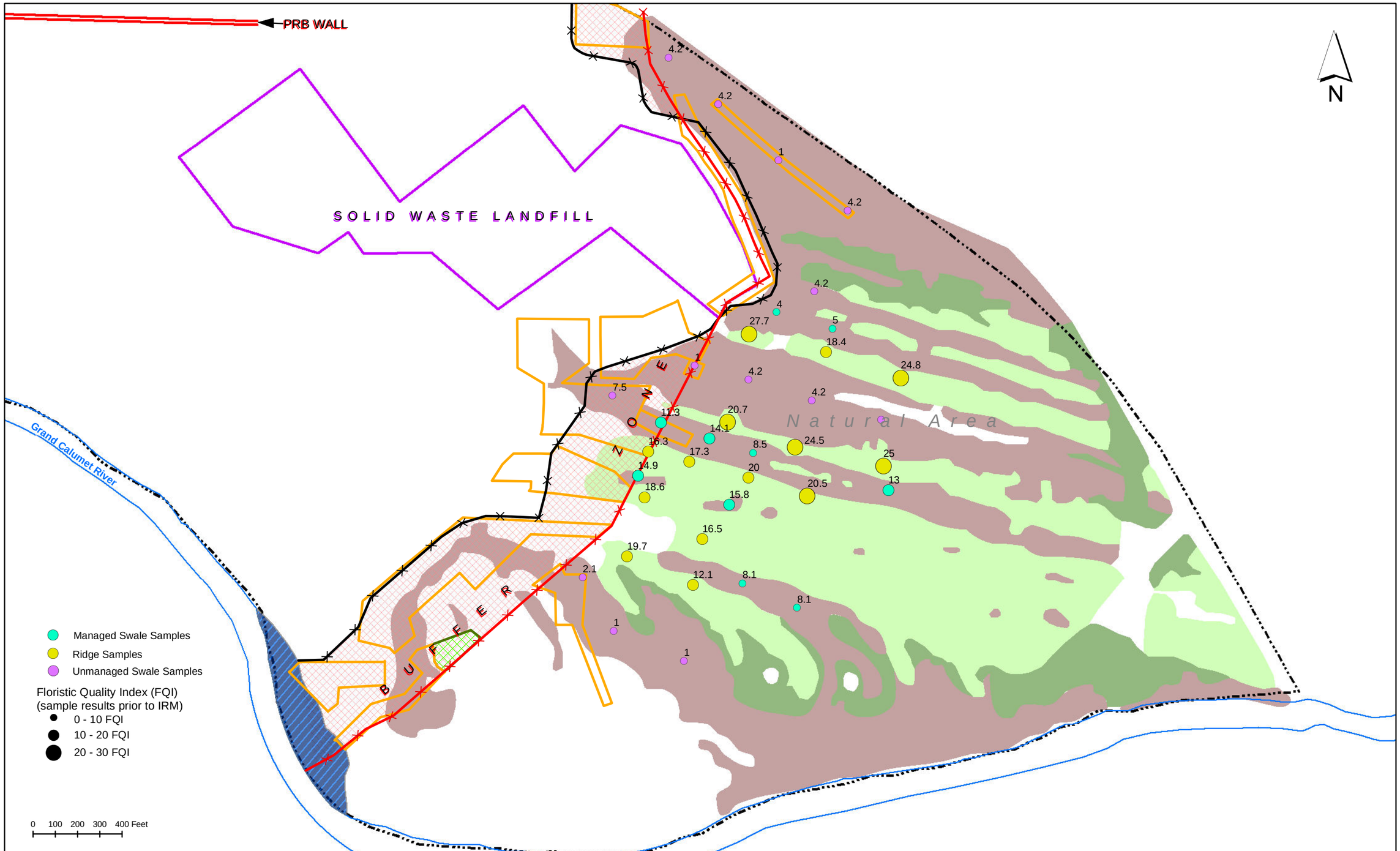

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Figure 5
Plant Community Evaluation- Floristic Quality Index

Natural Area Evaluation and Management Plan
DuPont East Chicago Facility
East Chicago, Indiana

Current Easement Boundary
New Fence
Future GCR-SRP Shelf Wetlands
Extended Buffer Zone
Interim Remedial Measures Site Boundaries
Sensitive Habitat - Avoid Excavation
River
Property Boundary
Solid Waste Landfill

Plant Community Mapping
Swale (Wetland)
Dune/Ridge - Mesic Praire
Dune/Ridge - Oak Barrens

Prepared by: Garner Peterson	Date: 6/3/2013	DuPont Project No: 507942
Reviewed by: Carlos Victoria	Figure No: 5	PARSONS Project No: 446650

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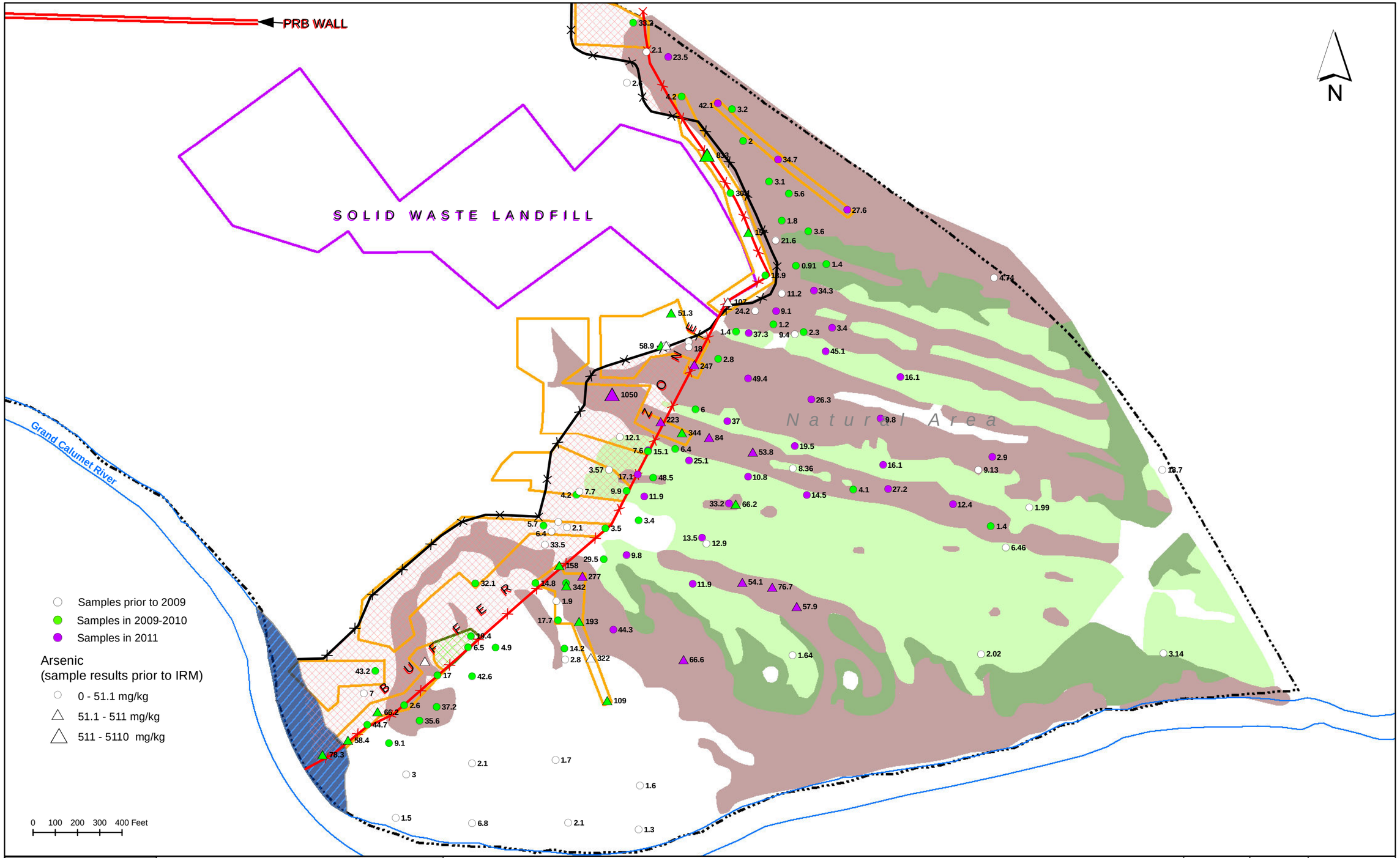

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Figure 6
Surface Soil Arsenic Concentration
Natural Area Evaluation and Management Plan
DuPont East Chicago Facility
East Chicago, Indiana

Current Easement Boundary
New Fence
Extended Buffer Zone
Future GCR-SRP Shelf Wetlands
Interim Remedial Measures Site Boundaries
Sensitive Habitat - Avoid Excavation
River
Property Boundary
Solid Waste Landfill
Plant Community Mapping
Swale (Wetland)
Dune/Ridge - Mesic Praire
Dune/Ridge - Oak Barrens

Prepared by: Garner Peterson	Date: 6/3/2013	DuPont Project No: 507942
Reviewed by: Carlos Victoria	Figure No: 6	PARSONS Project No: 446650

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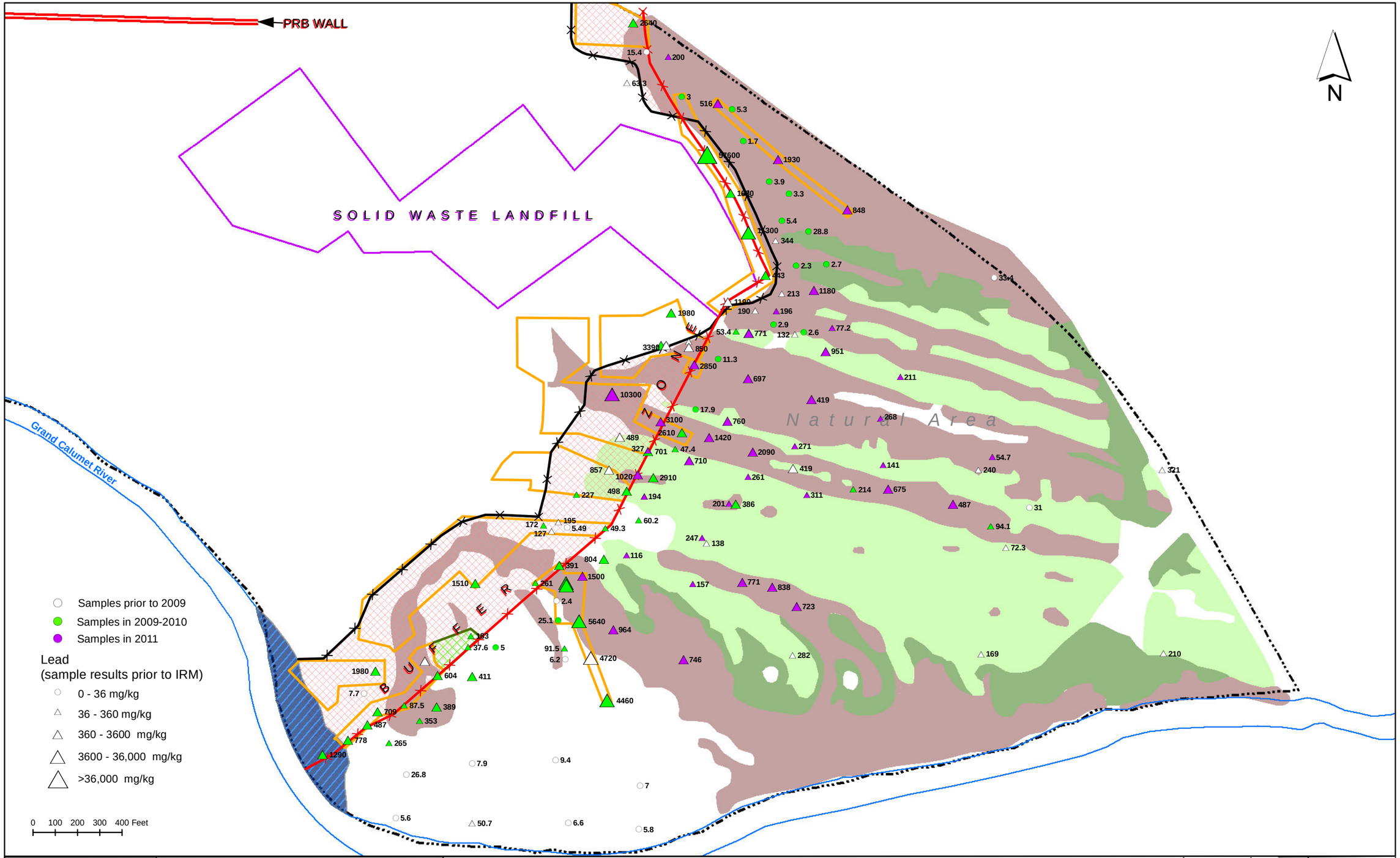

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Figure 7
Surface Soil Lead Concentration
Natural Area Evaluation and Management Plan
DuPont East Chicago Facility
East Chicago, Indiana

- Current Easement Boundary
- New Fence
- Interim Remedial Measures Site Boundaries
- Sensitive Habitat - Avoid Excavation
- Future GCR-SRP Shelf Wetlands
- Extended Buffer Zone
- River
- Property Boundary
- Solid Waste Landfill

Plant Community Mapping
- Swale (Wetland)
- Dune/Ridge - Mesic Praire
- Dune/Ridge - Oak Barrens

Prepared by: Garner Peterson	Date: 6/3/2013	DuPont Project No: 507942
Reviewed by: Carlos Victoria	Figure No: 7	PARSONS Project No: 446650

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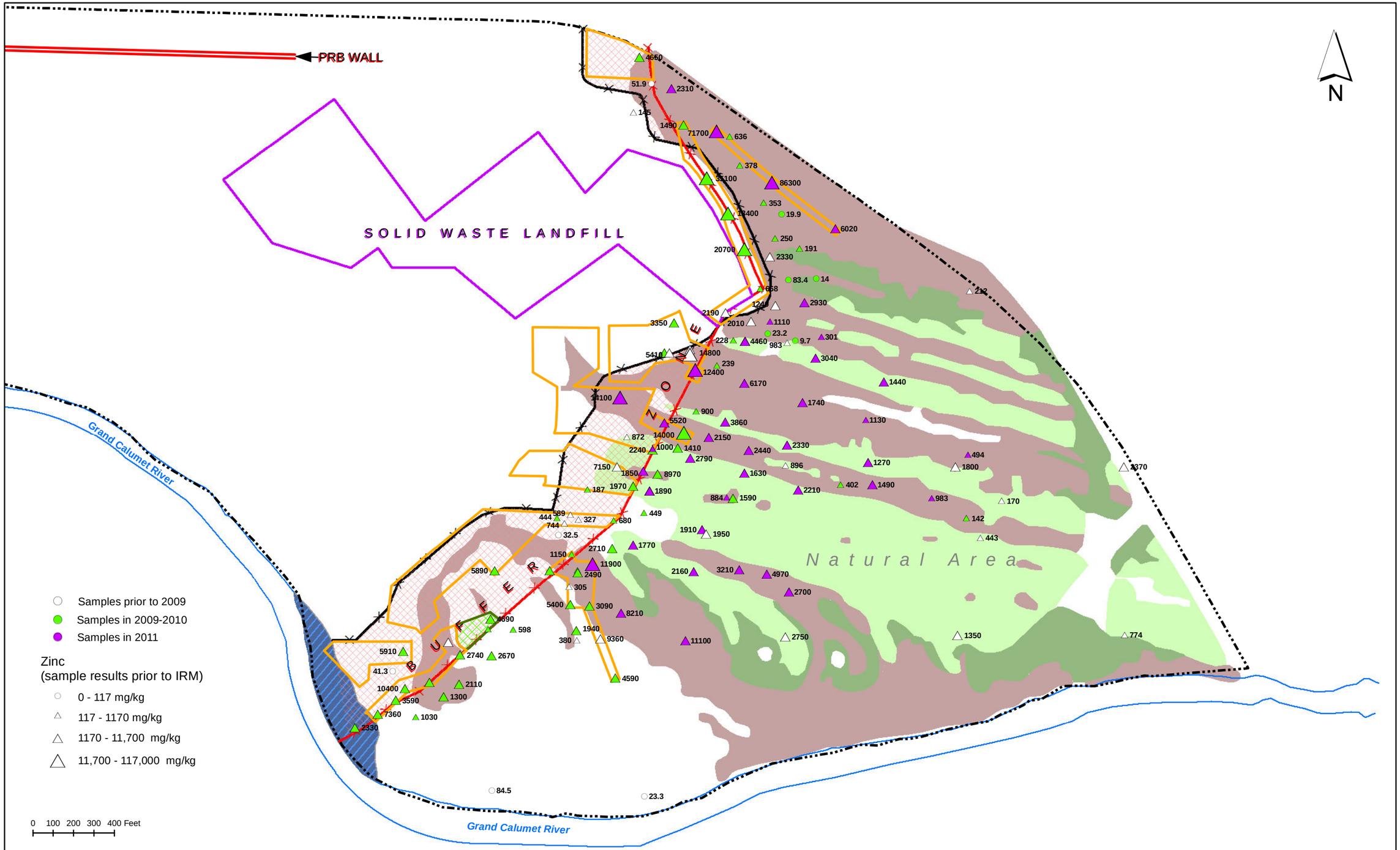

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Figure 8
Surface Soil Zinc Concentration
Natural Area Evaluation and Management Plan
DuPont East Chicago Facility
East Chicago, Indiana

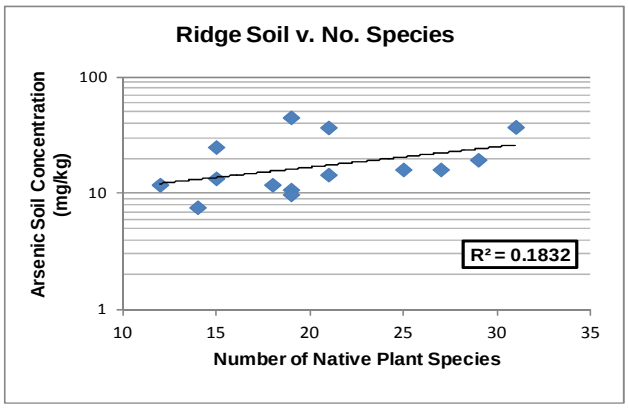
Property Boundary
Interim Remedial Measures Site Boundaries
Sensitive Habitat - Avoid Excavation
Current Easement Boundary
New Fence
Extended Buffer Zone
Future GCR-SRP Shelf Wetlands
Solid Waste Landfill
River

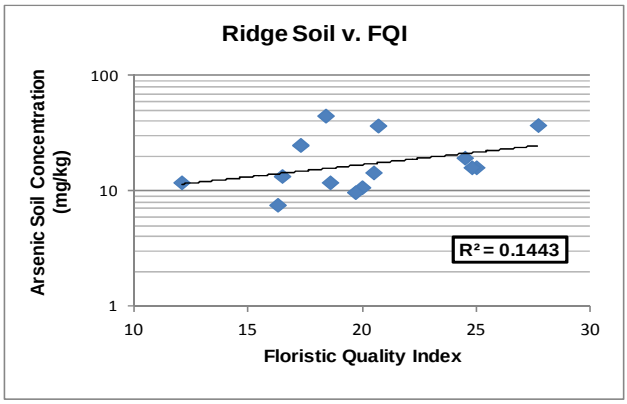
Plant Community Mapping
Swale (Wetland)
Dune/Ridge - Mesic Praire
Dune/Ridge - Oak Barrens

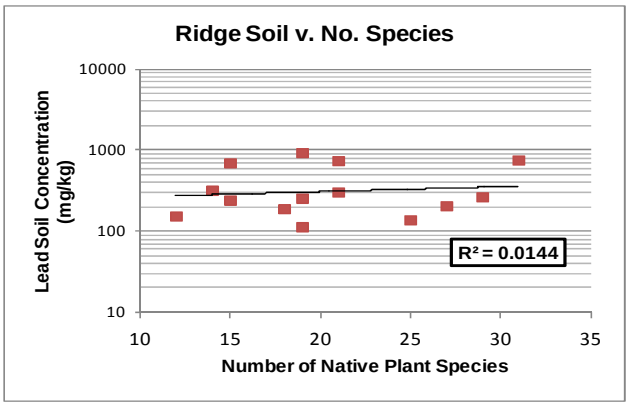
Prepared by: Garner Peterson	Date: 6/3/2013	DuPont Project No: 507942
Reviewed by: Carlos Victoria	Figure No: 8	PARSONS Project No: 446650

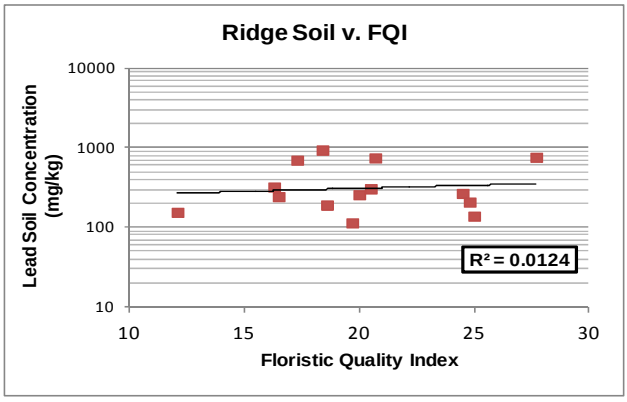
J:\DuPont East Chicago\DUPONT\GIS\East_Chicago\2012- 2013 Remediation\Bufferzone IRM\MXDs\NatAreaEvalAndMonitorPlan\Fig_8_Surface Soil Zinc Concentration.mxd

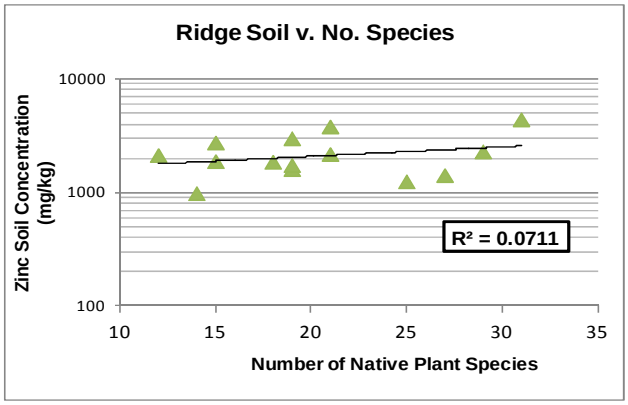
Figure 9. Biological Indices v. Soil Metals Concentration in Ridge Habitat











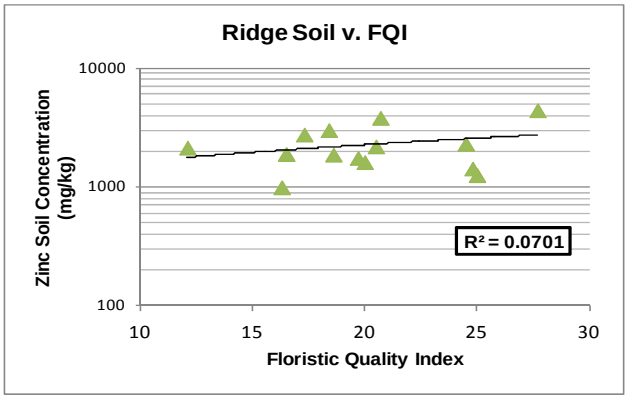
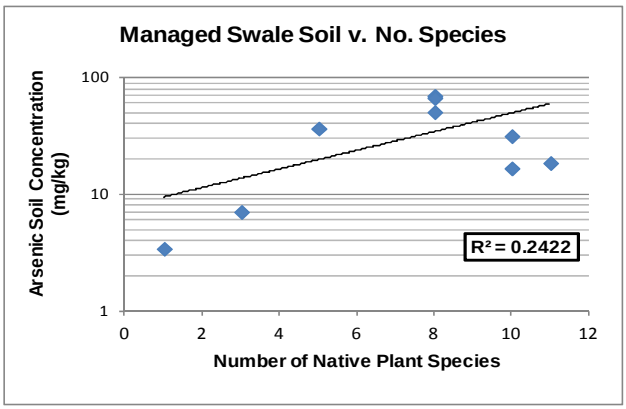
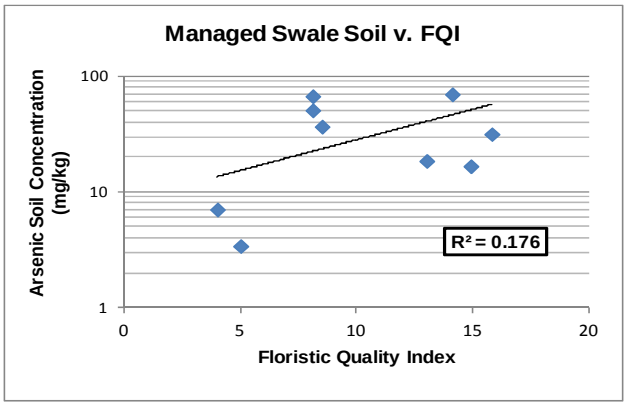
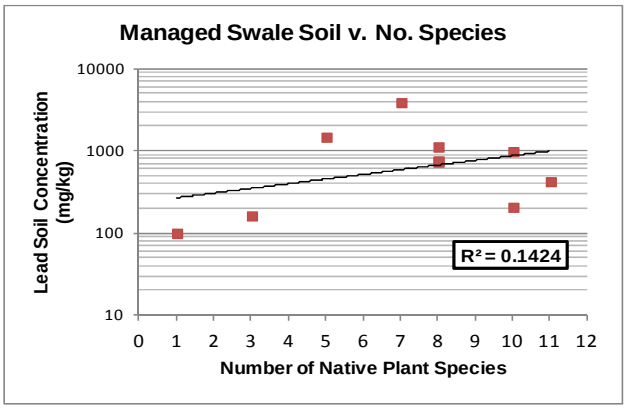
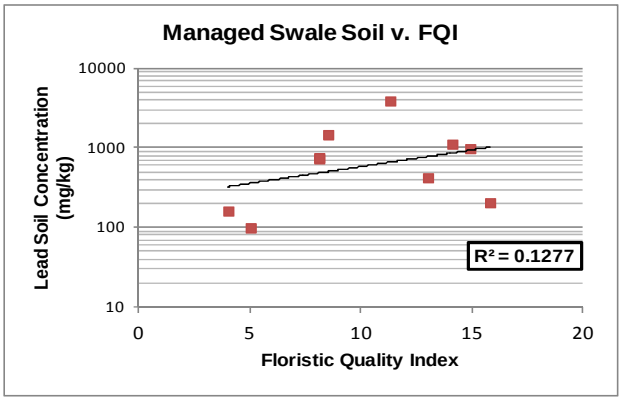


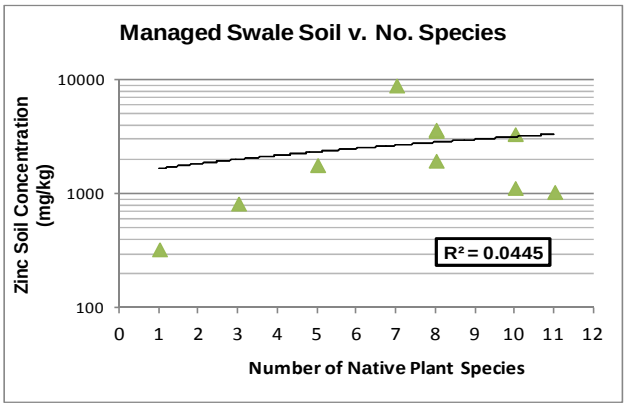
Figure 10. Biological Indices v. Soil Metals Concentration in Swale Habitat











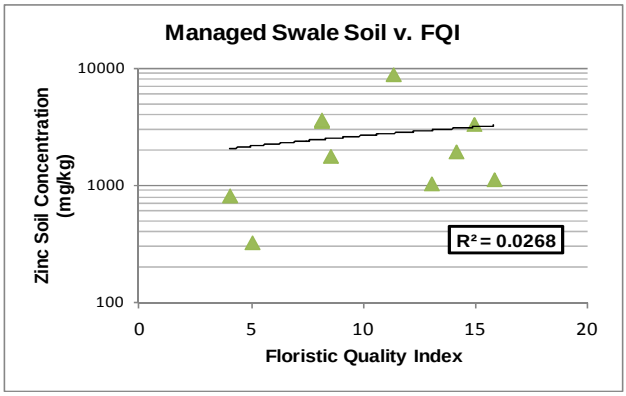
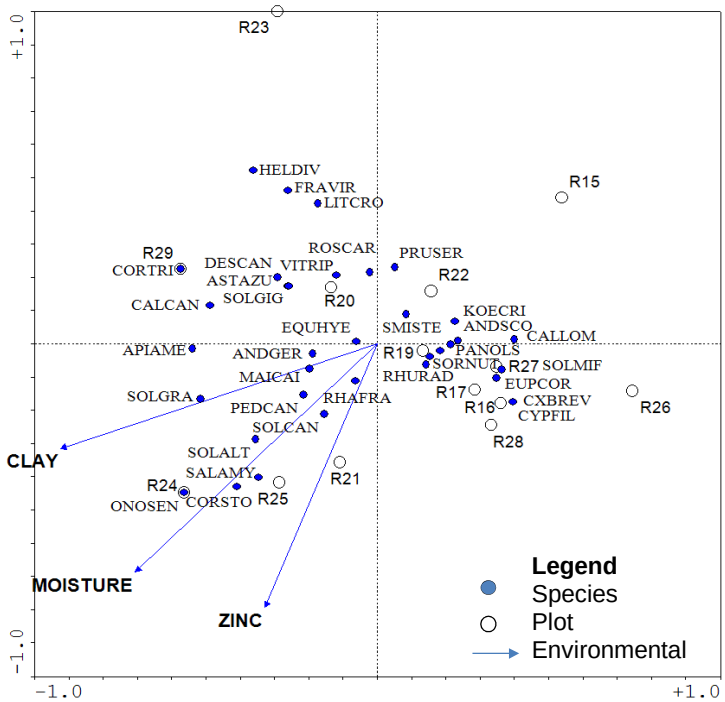


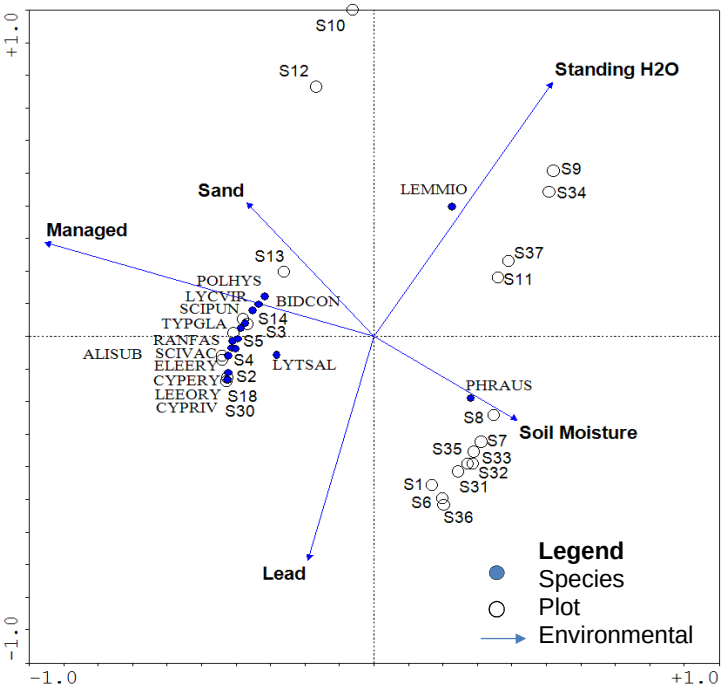
Figure 11. Canonical Correlation Analysis of Soil Environmental Variables and Plant Species Abundance in Ridge Habitat Sampling Plots



ONOSEN = Sensitive Fern (8)
CORSTO = Red-Osier Dogwood (6)
SALAMY = Peach-leaved Willow (5)
PEDCAN = Wood Betony (9)
SOLGRA = Hairy Grass-Leaved Goldenrod (3)
SOLALT = Tall Goldenrod (1)
SOLCAN = Canada Goldenrod (1)
MAICAI = Wild Lily of the Valley (8)
ANDGER = Big Bluestem (5)
RHAFRA = Glossy Buckthorn (0)
PRUSER = Wild Black Cherry (1)
SMISTE = Starry False Solomon's Seal (5)
KOECRI = June Grass (7)
ANDSCO = Little Blustem (5)
EQUHYE = Tall Scouring Rush (3)
ROSCAR = Pasture Rose (5)
HELDIV = Woodland Sunflower (5)
FRAVIR = Wild Strawberry (1)
LITCRO = Hairy Puccoon (8)
VITRIP = Riverbank Grape (2)

Variable	%Variance Explained	P-Value
Clay	24%	0.001
Zinc	15%	0.001
Soil Moisture	12%	0.007
Total	~50%	

Figure 12. Canonical Correlation Analysis of Soil Environmental Variables and Plant Species Abundance in Swale Habitat Sampling Plots



LEMMIO = Small Duckweed (5)
PHRAUS = Phragmites (1)
TYPGLA = Cattail (1)
POLHYS = Mild Water Pepper (7)
LYCVIR = Bugle Weed (9)
BIDCON = Purple-Stemmed Tickseed (5)
SCIPUN = Chairmaker's Rush (5)
SCIVAC = Great Bulrush (5)
RANFAS = Early Buttercup (6)
ALISUB = Common Water Plantain (4)
ELEERY = Red-Rooted Spike Rush (2)
CYPERY = Red-Rooted Nut Sedge (2)
CYPRIV = Brook Nut Sedge (4)
LEEORY = Rice Cut Grass (4)

Variable	%Variance Explained	P-Value
Managed	31%	0.001
Stand H2O	16%	0.001
Soil Moisture	10%	0.001
Lead	4%	~0.048
Sand	4%	~0.045
Total	~64%	

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DuPont

Figure 13
2011 Surface Water Sampling

DuPont East Chicago Facility
East Chicago, Indiana

- Current Easement Boundary
- New Fence
- Extended Buffer Zone (~23 acres)
- Future GCR-SRP Shelf Wetlands

Plant Community Mapping
- Swale (Wetland)
- Dune/Ridge - Mesic Praire
- Dune/Ridge - Oak Barrens

- Surface Water Sample
- River
- Property Boundary
- IRM Site Boundaries
- Periodically Inundated IRM Areas
- Seeded Areas

Prepared by: Garner Peterson	Date: 7/18/2013	DuPont Project No: 507942
Reviewed by:	Figure No: 13	PARSONS Project No: 446650

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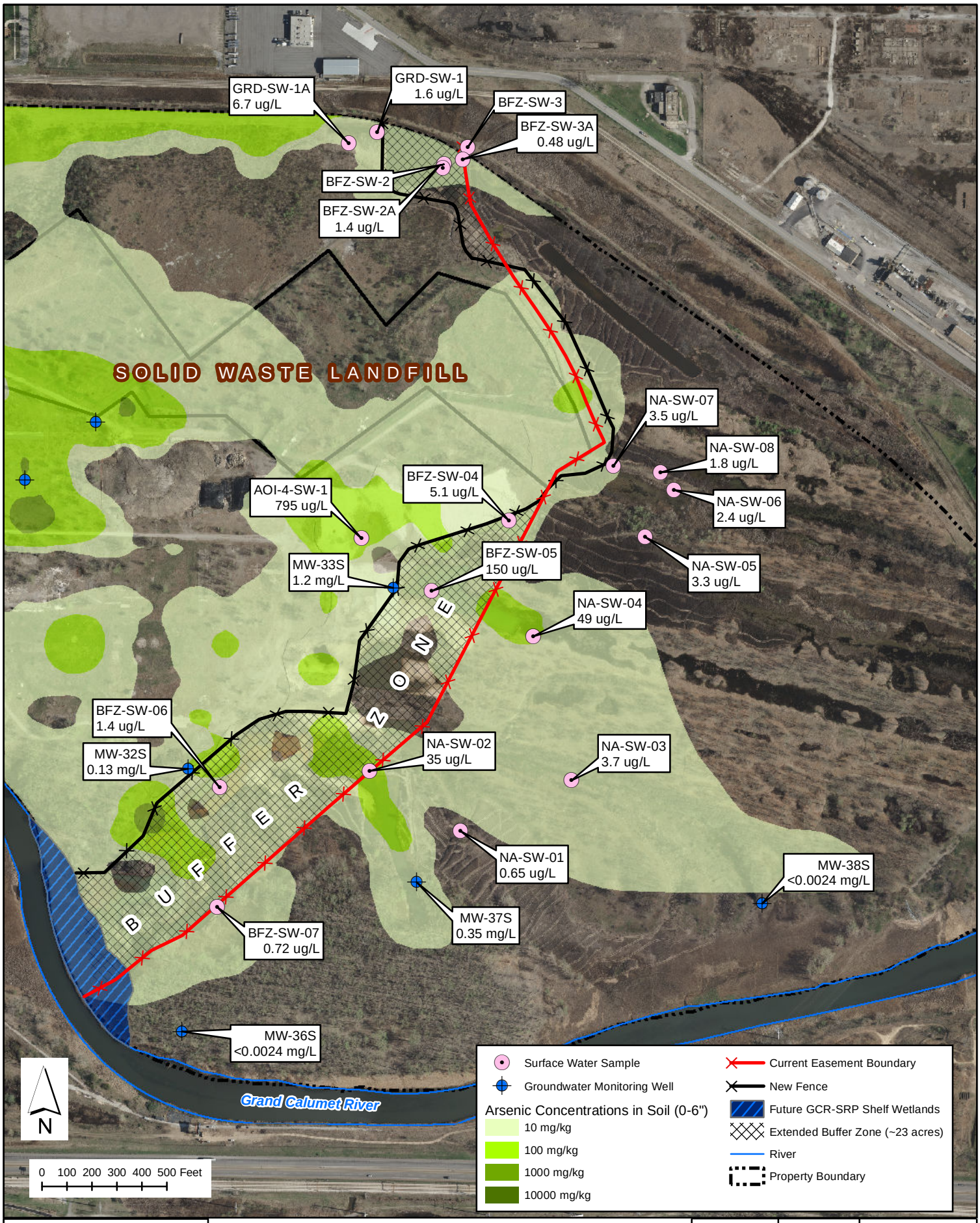

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Figure 14
Comparison of Arsenic Concentrations in Surface Soil (0-6") Surface Water, and Shallow Groundwater

DuPont East Chicago Facility
East Chicago, Indiana

Prepared by: Garner Peterson	Date: 6/28/2013	DuPont Project No: 507942
Reviewed by:	Figure No: 14	PARSONS Project No: 446650

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Figure 15
Interim Remedial Measure (IRM) Sites
Natural Area Evaluation and Management Plan
DuPont East Chicago Facility
East Chicago, Indiana

- IRM Boundaries - 2012
- Sensitive Habitat - Avoid Excavation
- Backfill Area
- Future GCR-SRP Shelf Wetlands
- Solid Waste Landfill
- Property Boundary
- Current Easement Boundary
- New Fence
- Extended Buffer Zone

N W E S

0 125 250 500 750 Feet

Prepared by: Garner Peterson	Date: 6/3/2013	DuPont Project No: 507942
Reviewed by: Carlos Victoria	Figure 15	PARSONS Project No: 446650

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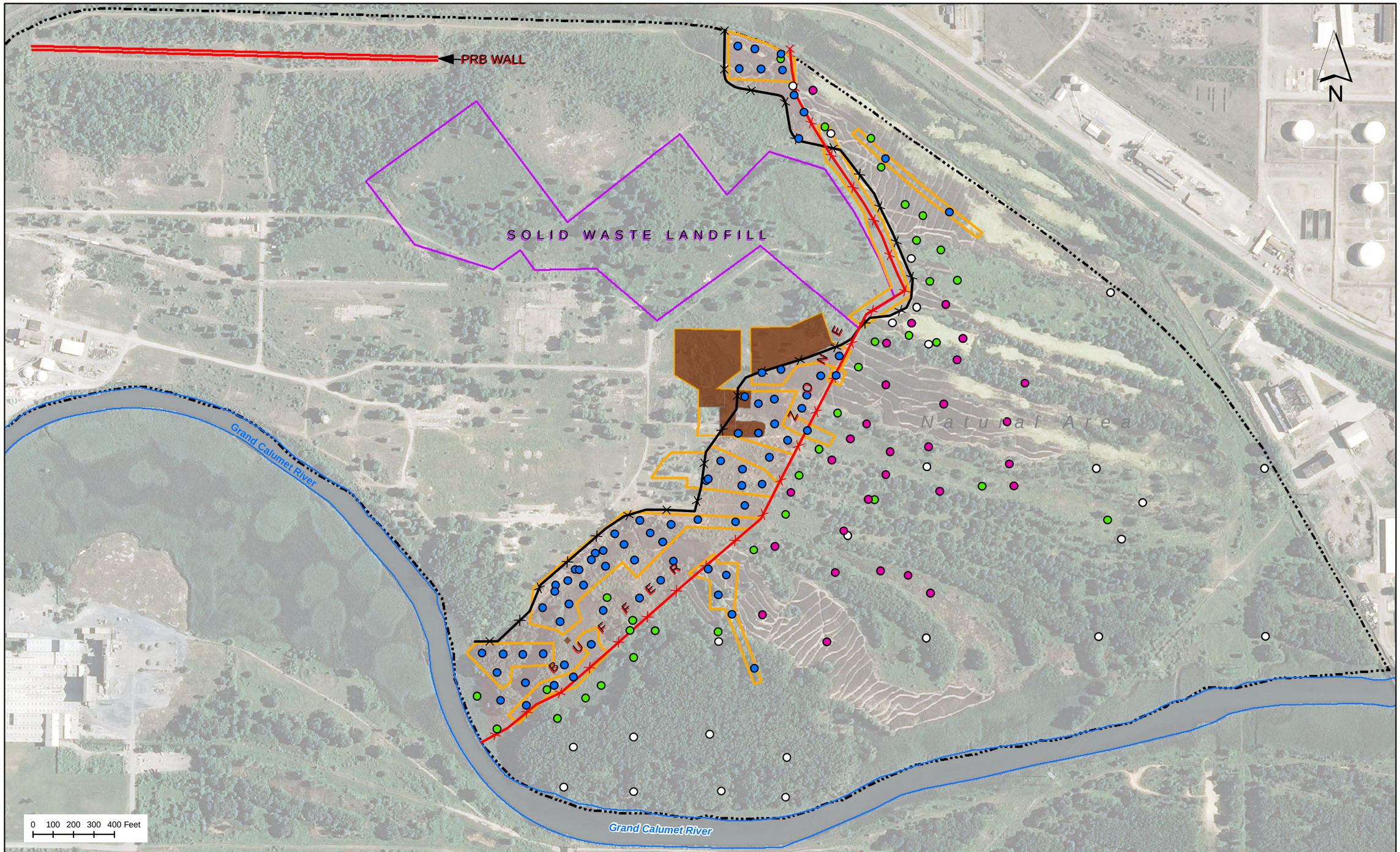

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Figure 16
Historical Surface Soil Sampling Locations
Natural Area Evaluation and Management Plan
DuPont East Chicago Facility
East Chicago, Indiana

- Current Easement Boundary
- New Fence
- Backfill Area
- Interim Remedial Measures Site Boundaries
- Extended Buffer Zone
- River
- Property Boundary
- Solid Waste Landfill

Sampling
- Collected prior to 2009
- Collected 2009-2010
- Fall 2011 Survey
- Post-Remediation (Fall 2012)

Prepared by: Garner Peterson	Date: 6/28/2013	DuPont Project No: 507942
Reviewed by: Carlos Victoria	Figure No: 16	PARSONS Project No: 446650

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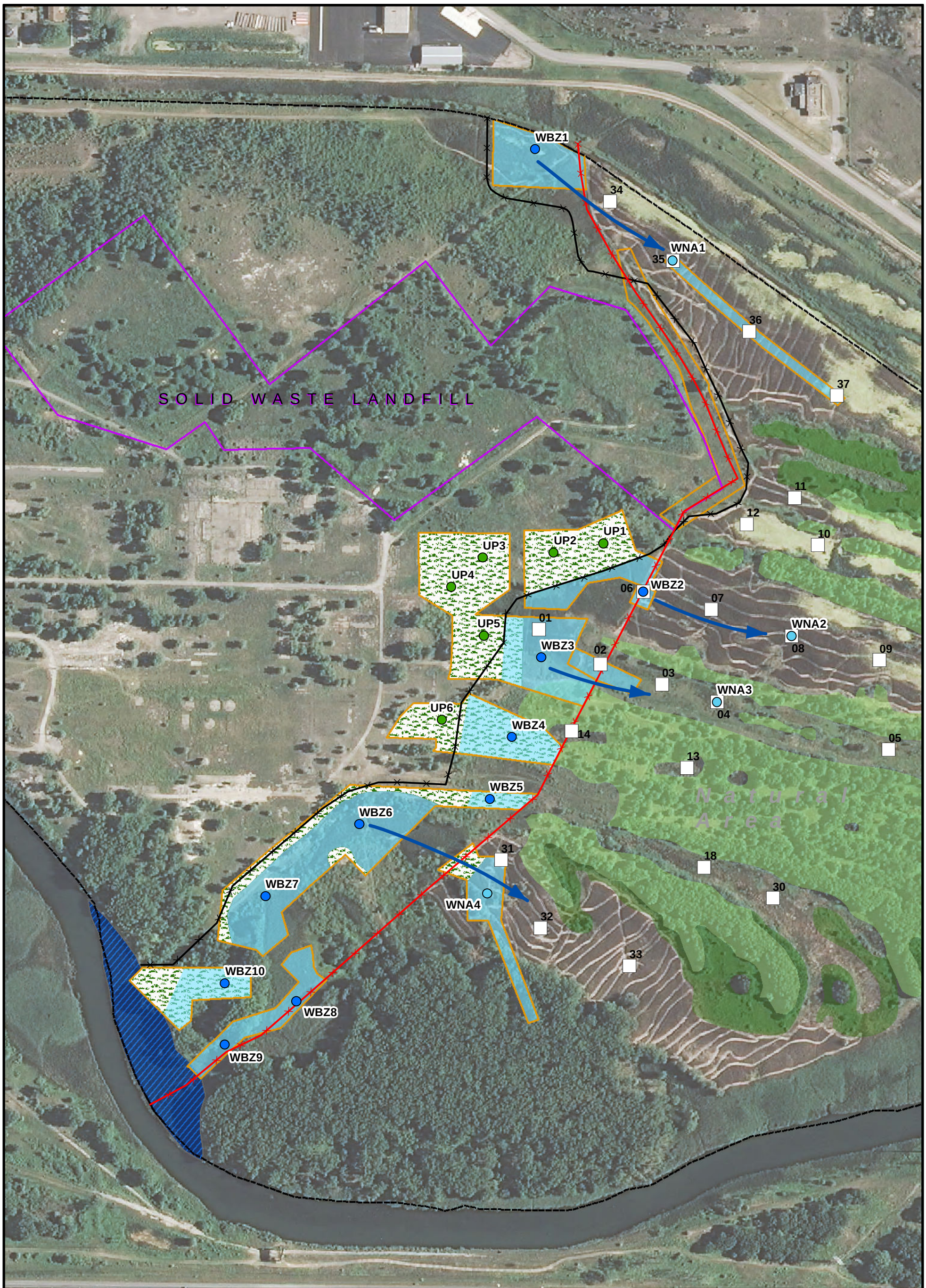

Sampling Locations
- UP: Upland Area
- WBZ: Wetlands - Buffer Zone
- WNA: Wetlands - Natural Area
- 2011 Swale Sampling Locations

- Current Easement Boundary
- New Fence
- Solid Waste Landfill
- DuPont Property Line
- IRM Site Boundaries
- Periodically Inundated IRM Areas

- Seeded Areas
- Dune/Ridge - Mesic Praire
- Dune/Ridge - Oak Barrens
- Future GCR-SRP Shelf Wetlands
- Runoff Pathway into Natural Area

N

0 100 200 300 Feet

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Figure 17
Long-Term Monitoring Plan

Natural Area Evaluation and Management Plan
DuPont East Chicago Facility
East Chicago, Indiana

Prepared by: Garner Peterson	Date: 5/24/2013	DuPont Project No: 507942
Reviewed by: Carlos Victoria	Figure No: 17	PARSONS Project No: 446868

PATH
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APPENDIX A
SAMPLING AND ANALYSIS PLAN, DUPONT EAST CHICAGO NATURAL AREA (PARSONS 2011)

PARSONS

DUPONT EAST CHICAGO NATURAL AREA

SAMPLING AND ANALYSIS PLAN

DUPONT EAST CHICAGO FACILITY
EAST CHICAGO, INDIANA

Prepared for:

E. I. du Pont de Nemours and Company
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Chestnut Run Plaza 715
4417 Lancaster Pike
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Cincinnati, Ohio 45241

July 2011

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Figure 3. Example Plot Schematic

ACRONYMS

Acronym	Definition / Description
BG	Below-ground Portion of Plants
CCA	Canonical Correspondence Analysis
Mean C	Conservatism Index
COPC	Contaminants of Potential Concern
HASP	Health and Safety Plan
IDNR	Indiana Department of Natural Resources
LF	Leaf Portion of Plants
PPE	Personal Protective Equipment
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
SAP	Sampling and Analysis Plan
TNC	The Nature Conservancy

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1.0 INTRODUCTION

This document represents a draft sampling plan to implement a field investigation of the Natural Area which is adjacent to the main manufacturing area on the DuPont property, in East Chicago, Indiana. The objective of sampling is to characterize and assess the relationships between potential soil contaminant levels and two biological communities (dune and swales), and to evaluate potential ecological effects on the plant community in the natural area from potential contaminants released from the former manufacturing area. The sampling will also provide additional surface soil data from the ridges and surface soil/sediment data from the swales, and further delineate metals concentrations in soils and sediments east of the buffer zone (proposed fence line).

This investigation encompasses a survey of two vegetation communities. The dune and swale topography is characterized by low linear beach ridges and intervening swales that run parallel to the shoreline of Lake Michigan. The dune ridge tops support black oak savanna and xeric sand prairie, and the slopes support mesic prairie. The swales support a variety of wetland communities, including wet prairie, sedge meadow, emergent marsh, and open water. This mosaic of natural communities is considered globally rare and endemic to the Great Lakes Region (USACE 2010).

This sampling approach is designed to provide data to address the Resource Conservation and Recovery Act (RCRA) Corrective Action primary assessment endpoints of protecting the dune and swale ecosystem and their associated plant communities.

This sampling and analysis plan (SAP) also specifies quality assurance/quality control (QA/QC) guidelines to ensure that high quality, usable data are collected during the investigation.

This SAP is organized as follows.

- Section 1 identifies objectives of the investigation.
- Section 2 provides background information on the Natural Area and summarizes previous and ongoing investigations.
- Section 3 discusses sampling design and general field sampling and data collection plans.
- Section 4 details methods for collection of soil and biological samples, field preparation of samples, and field documentation.
- Section 5 presents laboratory protocols for preparation and analysis of collected soil and vegetation samples, as well as QA/QC methods.
- Section 6 lists reference material used in preparation of this SAP.

Figures cited in the text are provided at the end of the document.

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2.0 BACKGROUND

The DuPont East Chicago Site is located at 5215 Kennedy Avenue, East Chicago, Lake County, Indiana. The approximately 410-acre site is bounded to the south by the East Branch of the Grand Calumet River, to the east and north by residential and commercial areas, and to the west by industrial areas, including a former lead processing facility. Figure 1 illustrates the East Chicago Site and vicinity.

An inorganic chemical manufacturing facility was initially constructed within the western part of the property by the Grasselli Corporation in 1892. DuPont operated the facility for the Grasselli Corporation from 1927 through 1936 at which time DuPont acquired ownership and continued operation until 1986, when plant operations were discontinued.

The southern part of this western developed area was used mainly for manufacturing purposes, while the northwest and eastern sections were used as waste management areas. Currently, most of the previously active manufacturing areas have been decommissioned and the production facilities have been removed, with the exception of approximately 30 acres in the southwest corner of the site where industrial facilities continue to operate under separate ownership. The eastern portion of the East Chicago Site, approximately 163 acres, was not developed and retained its original plains/dunes geomorphology and associated plant communities. This section of the East Chicago Site, commonly referred to as Natural Area, is currently managed by The Nature Conservancy for habitat preservation.

Over its operating lifetime, the DuPont East Chicago facilities produced primarily inorganic acids and chemicals; various chloride, ammonia, and zinc products; and inorganic agricultural chemicals. Organic chemical manufacturing, primarily of trichlorofluoromethane or Freon® products, began in 1948 and was discontinued in 1986 (DuPont 2004).

The Natural Area is a remnant of the dune and swale system that characterized the Toleston Strandplain which developed when the waters of Lake Michigan gradually receded over the past 2,500 years. Initially this beach formation and associated natural communities covered about 70 square miles, but currently occupies approximately 1,400 acres of fragmented remnants.

Dune and swale systems and their associated natural communities are unique to the Great Lakes and considered globally rare (USACE 2010). The DuPont Natural Area is one of the few undisturbed tracts of the dune and swale system which has survived development along the southern shore of Lake Michigan. This area is home to many rare, threatened, or endangered plant or wildlife species and serves as core habitat for the federally endangered Karner Blue Butterfly.

The Indiana Department of Natural Resources (IDNR) Division of Nature Preserves holds a conservation easement on 172 acres of the DuPont Natural Area. The Natural Area was conveyed to IDNR as part of the settlement of natural resource

damage claims with the Natural Resource Trustees of Indiana for the Grand Calumet River.

The Nature Conservancy (TNC) has managed this tract since 1999, focusing on restoring the structural, compositional, and functional components of the dune and swale complex thru the natural plant communities and will continue to do so under a management agreement with the IDNR (TNC 2006).

The DuPont Natural Area is associated with southern Lake Michigan and the Great Lakes watershed. The DuPont property is located along the north side of the Grand Calumet River, near the I-90 tollway and Gary Avenue. A majority of the Grand Calumet River flow drains into Lake Michigan via the Indiana Harbor and Ship Canal. Figure 1 provides an overview of the Dupont site, showing the Natural Area to the east of the Buffer Zone fence line.

2.1 Prior Studies, Reports and Existing Projects

Several studies have been completed in the general area of the Natural Area. Below is a list of studies, and a brief description of each.

- Illinois-Indiana regional airport study: biotic communities. 1991 (Mierzwa, et al. 1991). Environmental assessment for airport containing collection data on DuPont plants and wildlife.
- Status, trends, and potential of biological communities of the Grand Calumet River Basin. 1999 (Moy and Whitman, 1999). An assessment of the intact natural areas within the Grand Calumet River basin and potential effects to these areas from dredging of river sediments.
- Wetland flora of the Grand Calumet River in northwest Indiana: potential impacts of sediment removal and recommendations for restoration. 1999 (Choi, 1999). Describes the DuPont area as high quality habitat for endangered, threatened and/or rare animals and plants in need of conservation.
- The Restoration Revolution in Northwest Indiana. 2006 (Indiana University Northwest, 2006). Identifies recent, ongoing, and planned projects to restore natural areas in Lake, Porter, and LaPorte counties.
- Biodiversity Conservation Opportunities in the Toleston Strandplain of Northern Lake County: A strategic Action Plan for Conservation Success. 1999. (TNC and Ball State University 1999). The purpose of the plan was to describe conservation issues relative to the ridge and swale remnants including the current condition of each fragment and its landscape context.
- Strategic Weed Management Plan for the Indiana Macrosite. 2005. (TNC 2005). Sets goals for reduction of overall weed coverage at DuPont and the surrounding landscape.
- West Gary Recovery Unit Safe Harbor Agreement. 2006. (TNC 2006). Identifies the DuPont Natural Area as critical habitat for the long-term survival of Karner blue butterfly in the local landscape.

- DuPont Natural Area Section 506 Great Lakes Ecosystem and Fisheries Restoration. 2010. (USACE 2010). The planning document addresses the issues of habitat restoration for the Karner blue butterfly, native plant community preservation, invasive species, connectivity, and native species richness.

3.0 BIOLOGICAL COMMUNITIES EVALUATION

3.1 Objective

Ecological communities may be affected by a number of factors, including off site contamination, natural changes in vegetation, and invasive species.

A commonly used method to assess the ways that ecological communities may have been affected by different factors is the use of representative attributes, or metrics, indicative of habitat condition and biological community function. Metric values are measures at the affected site and reference locations to describe the similarities and differences between sites that may be affected by one of the above factors, and sites that have presumably not been affected by those factors.

The objective of the fieldwork described below is to obtain data required to quantify biological community metrics in areas potentially affected by the manufacturing side of the DuPont property. The rationale for metrics selection and sampling methods are provided below. Sample collection methods are presented in Section 4.0, and analytical methods are presented in Section 5.0.

The sampling design is intended to address two major habitat types in the natural area – topographically represented as dune ridges and intervening swales. Dune ridges are topographic uplands typically dominated by oak barrens with patches of xeric and mesic sand prairie. Swales are the topographically low areas between the ridges, and most are covered by wetlands that range from wet sand prairie to marsh.

The relationships between biological communities and soil metals will be complicated in swales by seasonally-driven variations in water levels, by dense monocultures of invasive phragmites and management/restoration activities including herbicide application. For the past 10 years, TNC has been actively involved in habitat restoration at the Natural Area. Some of the TNC work has included herbicide treatments to remove *Phragmites*, and allow natural recolonization of native plants. The treated areas are in various stages of native plant recolonization. Therefore, the habitat restoration in the swales will add complexity to the analysis of the vegetation and soils in the swales.

3.2 Biological Community Metrics

Selection of biological community metrics is typically made subjectively, on a case-by-case basis, depending on the type and extent of habitat potentially impacted and consistent with management goals of the project.

- Two biological community metrics were selected taking into account that habitat conditions at the Natural area have been affected by physical disturbance, invasion of wet swale areas by the invasive plant *Phragmites*, and by potential soil contamination from the DuPont manufacturing area. The rationale for the metric selection is as follows: Plant community composition and vegetative cover of dominant species are metrics indicative of habitat condition for which well established sampling methods are available. Impacted vegetation communities are typically expected to be less diverse

and dominated by relatively few invasive species with a greater tolerance for disturbed site conditions. Conversely, a greater and more diverse plant cover is indicative of the healthier habitat. The proportion of native plant species to non-native, invasive species also provides supporting information on habitat conditions.

- Elevated levels of contaminants in plant tissues, relative to soil concentrations could lead to less vigorous plant growth or plant reproduction. Further, elevated levels of contaminants in plant tissues would indicate that ecological receptors using the plants within the Natural Area as a food source would have a greater chance of exposure to contaminants of potential concern (COPCs) and increased risk for adverse effect.

3.3 Sampling Design

Multiple sampling plots, each covering an area of approximately 0.1 acre, will be used to conduct the vegetative cover survey and to collect information relative to potential accumulation of contaminants in plant tissues. Within the 0.1 acre plots, surface soil samples will be collected, and samples of two dominant plant species will be collected, and retained for future analysis. Both roots and leaves will be retained for potential future analysis.

Sample plots and Sample locations. There will be thirty three sampling plots. Fourteen sampling plots will be in the dune ridge habitat and nineteen sampling plots will be in the swale habitat. Each sampling plot will be sized as a rectangle 50 feet wide and 80 feet long. The sampling plots will be located with the long axis parallel to the dune ridge or swale to be sampled. The major dune ridges and swales within the Natural Area will be sampled. The location of the centroid of each proposed sampling plot is displayed in Figure 2. The specific locations of sampling plots may be adjusted slightly by field personnel from those shown to better reflect the habitat of interest. The sampling plots in swales will include plots with varying levels of historical restoration activities (Table 1). Some plots have been treated with herbicides multiple times since 2002. These plots and locations were selected to identify potential runoff from the former manufacturing area into the natural area. Sample locations begin closer to the buffer zone and then establish sampling points further to the east to allow the detection of any potential migration of COPCs away from the main site area. Collocation of plant community samples will allow the correlation of plant indices with soil/sediment concentrations.

Each sample plot will be marked with six distinct subsample locations. These will be positioned at intervals along three transects (three transects along the 80 foot length) through each plot (two sub-samples per transect (three transects times two samples per transect = six sample locations per sampling plot). For each sampling plot, the four corners and the six distinct sample locations will be identified via survey or GPS (to within 2’ x and y accuracy) and marked with wooden stakes. Each stake will be marked with the appropriate identification. Figure 3 shows the configuration of the sampling plot in relation to the land features. This figure also shows the layout of the six sample locations in each sample plot. Care will be

exercised to avoid sensitive ecological areas and areas disturbed by pathways or recent plant eradication/restoration efforts, if these are identified prior to sampling.

The area to the north and east of the buffer zone will not be sampled as the existing data indicates lower concentrations and thus no concern for potential influence from the manufacturing area.

Table 1. Proposed Sample Plots and Prior Weed Treatments

Sample Plot	Type	Past Weed Treatments
1	swale	Not treated
2	swale	2002-03, 2005-06, 2007-10
3	swale	2002-03, 2005-06, 2007-10
4	swale	2002-03, 2005-06, 2007-10
5	swale	2007-10
6	swale	Not treated
7	swale	Not treated
8	swale	Not treated
9	swale	Not treated
10	swale	2005-06, 2007-10
11	swale	2005-06, 2007-10
12	swale	2005-06, 2007-10
13	swale (pocket wetlands)	2005-06, 2007-10
14	swale (pocket wetlands)	2005-06, 2007-10
15	dune/ridge	Not treated
16	dune/ridge	Not treated
17	dune/ridge	Not treated
18	swale	2002-03, 2005-06, 2007-10
19	dune/ridge	Not treated
20	dune/ridge	Not treated
21	dune/ridge	Not treated
22	dune/ridge	Not treated
23	dune/ridge	Not treated
24	dune/ridge	Not treated
25	dune/ridge	Not treated
26	dune/ridge	Not treated
27	dune/ridge	Not treated
28	dune/ridge	Not treated
29	dune/ridge	Not treated
30	swale	2002-03, 2005-06, 2007-10
31	swale	Not treated
32	swale	Not treated
33	swale	Not treated

Surface Soil Samples. At all 33 sampling plots (both the ridges and swales), surface soils (0.0 to 0.5 feet below grade) will be sampled. The surface samples will be representative of the majority of root depth for plant species in this region. If water is present in the swales, this plan and the sample identification scheme will continue to refer to the "sediment" as soil. The COPCs to be analyzed in all soil samples are **arsenic**, **lead**, and **zinc**. Additional analyses include pH, moisture, grain size, cation exchange, and organic matter content.

Deeper Soil Samples in Swales. To assess the potential that COPCs are elevated in the surface (0 – 6 inch) samples due to elevated root mass and naturally decaying surface vegetation in swales, an additional soil sample will be collected from a depth of 0.5 to 1.5 feet in the nineteen swale plots. Table 1 lists the swale sampling plots.

Barren Area Soil Sampling. Up to five barren areas will be sampled from swale areas if observed. These would be sampled for COPCs and associated soil sampling metrics. These will provide evidence to document the soil concentrations associated with these locations and determine if they have similar or elevated levels.

Herbaceous Species and Percent Cover Assessment. The primary biological community metrics are the extent and diversity of vegetative cover. Plant community composition and vegetative cover of dominant species are metrics indicative of habitat condition. Vegetation data will be analyzed via standard Floristic Quality Assessment techniques for conservatism index (mean C), species richness, and floristic quality index.

Vegetation sampling will follow the methods established in the Great Lakes Coastal Wetlands Monitoring Plan 2008. This herbaceous vegetation sampling (not woody plants) will consist of assessing at least 6 subplots, which will be 3 foot by 3 foot in plan view, per sampling plot.

The vegetation species and aerial cover by species for each subplot will be documented. TNC will perform the vegetation species and percent cover assessment effort. Additional sampling of selected sites on the DuPont property will occur over the next 3 years, using this same methodology. This work will be funded under a separate grant with Taylor University and is part of a larger Great Lakes Monitoring program. The collaboration of these two programs will provide an additional benefit to the understanding of plant communities in the area.

In the cases where a sampling plot is entirely covered by a dense monoculture of *Phragmites sp*. or *Typha sp*., this will be noted and vegetation sampling may not be performed. Soil sampling will, however, be performed at these plots.

The TNC will document any signs of plant stress that is observed in the sampling plots. They will use best professional judgement to determine potential stressed vegetation.

Canonical correspondence analysis (CCA) will be performed to relate soil contaminant levels to floristic quality. CCA is a multivariate statistical method applied to relate community composition to known variation in the environment (ter Braak 1986, 1987; Borcard et al, 1992; Palmer 1993). In this ordination method, ordination axes are chosen to be linear combinations of environmental variables

(such as element concentrations, soil moisture, or pH,), and community composition is expressed directly as measured species abundances or frequencies of occurrence. In the ordination diagram, points represent species or samples and axes represent environmental variables. By use of Monte Carlo permutation analysis, the significance of associations between species abundances and individual environmental variables (such as chemical stressors) can be tested after adjusting for (partialling out) the effects of other environmental variables. The analysis will be performed using CANOCO software (http://www.pri.wur.nl/uk/products/canoco/).

Cover of exotics versus native species will be calculated. The proportion of native plant species to non-native, invasive species provides supporting information on habitat conditions. However, the rapid spread of the invasive *Phragmites sp.* and *Typha sp.* throughout the area will complicate the analysis, as this is driven by recent changes in wetland hydrology associated with the receding levels of Lake Michigan and is largely independent of soil constituents. Impacted vegetation communities are expected to be less diverse and dominated by dense stands of invasive species with very limited habitat value. Vegetative cover measurements are commonly used to determine plant community composition because they equalize the contribution of species that are very small, but abundant, and species that are large, but less abundant (Elzinga, et al., 1998). Vegetative cover data can also be interpreted as a surrogate measure for biomass measurements without the need for vegetation removal. Estimates of vegetative cover capture the dominant species at the location, while rare plant species are likely encountered only occasionally during the survey. These rare species, however, would represent a relatively minor contribution to the overall vegetative cover at the site.

Canopy Cover and Percent Cover Assessment. For the dune ridge sites, woody canopy cover will be measured by employing a spherical crown densiometer utilized at the plot centers. Tree species and percent of canopy observed in the densitometer, by species, will be documented.

Herbaceous Vegetation Samples for Laboratory Analysis. Herbaceous vegetation samples for laboratory analysis will be collected at, or immediately adjacent to, the surface soil sample locations (six per each sampling plot). These samples will be separated into two distinct samples, one for below ground portion and one for leaf portion. The plant material will be cut into approximately equal aliquots of each of the two predominant herbaceous plant species.

4.0 SAMPLE COLLECTION

This section describes sample collection methods, field preparation of samples, and field documentation. Sampling plot placement and sample types to be collected were discussed in Section 3.

4.1 Methodology

4.1.1 Preparation for Sampling

The field tasks are planned to be completed within approximately two weeks.

Sampling will be conducted in Level D personal protection equipment (PPE), in accordance with the project-specific Health and Safety Plan (HASP).

Materials and supplies for sampling activities will be organized before sampling begins to ensure that personnel are prepared for the planned field activities.

Coordinates for sample plot corners and sample locations (six per plot) will be developed electronically using GIS before the field effort begins to facilitate quicker location and marking in the field.

4.1.2 Sample Collection

Surface Soil Samples

Each soil composite sample will be obtained within an approximately 6 inch by 6-inch area to a depth of 6 inches using a decontaminated stainless-steel trowel or shovel. The soil aliquot will be placed in a decontaminated stainless-steel bowl for mixing to homogenize the soil. The soil will then be placed into new, clean sample containers (provided by the analytical laboratory) using decontaminated stainless-steel trowels with the sampler wearing new latex or similar gloves. Sample container labeling and handling is detailed in a later section of this plan.

Deeper Soil Samples (in Swale Plots only)

For the 19 swale plots, an additional soil sample will be collected from deeper soils. These samples will be collected below the surface soil sample location, by excavating an additional 1.0-foot of depth (collected from 0.5-foot to 1.5-foot depth). All sampling equipment contacting the soil to be collected for this deeper sample will be decontaminated prior to beginning each deeper soil sample. The soil aliquot will be placed in a decontaminated stainless-steel bowl for mixing to homogenize the soil and will be completed in the same process as the surface soil samples above.

Vegetation Samples for Laboratory Analysis

The vegetation samples for laboratory analysis will be collected at, or immediately adjacent to, the surface soil sample locations (six per sampling plot).

For each vegetation sampling location, specimens of the two predominant herbaceous species will be collected. Information on predominant species will be obtained from or verified with TNC staff performing the herbaceous plant percent cover and species documentation tasks discussed in Section 3.

These samples will be separated into two distinct samples for below ground portion and leaf portion. The plant material will be cut into approximately equal aliquots of each of the two predominant species. Each sample will be placed into a labeled, new, clean 4-mil or thicker zip lock type bag.

The vegetation samples will be collected using a decontaminated stainless steel shovel or trowel, by hand (with new latex type gloves on), or with stainless steel shears or machete. Plant samples will be field cleaned by shaking any soil or dust from the plant material and gently scraping the plant with a decontaminated stainless steel trowel or similar gear if necessary. If substantial soil debris remains, the remainder will be removed by dipping the root into a tub of tap water to remove soil particles, then spraying the root area with distilled or deionized water from a hand sprayer bottle. .

4.2 Field Preparation of Samples

Proper handling and preparation of biological samples requires very exacting procedures to maintain sample quality from the time of sample collection to the time of analytical testing at the laboratory. This section describes the field preparation tasks for the samples.

4.2.1 Sampling Equipment Decontamination

Equipment and sampling tools will be decontaminated before each use according to the procedures specified below. Sampling equipment decontamination water will be collected and managed in accordance with procedures developed by the waste management plan for this project. Decontamination of sample collection equipment will be as follows.

- Wash and scrub in a solution of tap water and detergent (Alconox, Liquinox, or equivalent)
- Rinse or spray rinse with distilled or deionized water
- Air-dry

Decontaminated sampling equipment will not be placed directly on the ground or on other contaminated surfaces following decontamination and prior to being used. Any deviations from these procedures will be documented in the field logbook.

4.2.2 Handling of Samples

Samples will be handled and prepared only with either decontaminated equipment or clean latex gloves. All gross non-sample material will be removed from the samples. This will require removal of external soil material from vegetation samples and removal of any significant non-soil material from the soil samples. The gross non-sample material removal may require cleaning the exterior of some biological samples by dipping the root area into a bucket with tap water, distilled water, or deionized water. Then a final rinsing of this root area will be performed using a spray bottle of distilled or deionized water to rinse the exterior of the biological samples. The use of these rinse water methods on the biological samples will be as limited as possible.

Biological samples will be placed into the appropriate composite sample containers. The analytical laboratory will provide clean sample containers for each media to be collected. Excess biological sample mass will be collected (when possible) to ensure there is ample tissue available for the analytical laboratory to prepare and analyze the sample. Immediately after collection, identification, and field preparation, samples will be placed in a cooler on ice.

4.2.3 Handling and Storage of Samples before Shipping

From the earliest time possible in the sample handling process and then continuing during sample storage and shipping (storage by both by the field crew and at the analytical laboratory), each media of samples will be maintained as follows:

- Biological samples will be maintained frozen from the soonest time possible until the laboratory begins sample preparation for analysis.
- Soil samples will be kept at 4 ± 2 °C, but not frozen.

4.2.4 Packaging and Shipping Procedures

The sample packaging procedures will be in accordance with all U.S. Department of Transportation and commercial carrier regulations. Only waterproof ice chests or coolers will be considered acceptable shipping containers. Samples will be packaged carefully to eliminate accidental breakage and generally sent to the laboratory on the day of sample collection.

Samples will be packaged for shipment as follows.

- Samples will be tightly sealed in laboratory provided sample bags, and labeled prior to packaging.
- Biota samples will be placed into an additional large, heavy duty, self-sealing bag, and then double-bagged into a second self-sealing bag to maintain coldness of samples.
- Bubble wrap will be placed in the bottom of the cooler.
- Each glass sample container will be wrapped with protective material to prevent breakage and packaged in an upright position.

- For soil samples, ice will be placed in double-bagged, heavy duty, self-sealing type bags around and on the top of the samples to maintain sample temperature at 4 ± 2 °C. For biota samples, dry ice will be used as the coolant.
- Additional ice (in double-bagged, heavy duty, self sealing bags) or packaging material will be spread throughout the voids between the sample bottles.
- The completed chain-of-custody record will be placed in a self-sealing bag and attached to the inside top of the cooler.
- A signed and dated custody seal will be affixed to the opening edge (front of container) so that the seal must be broken if the cooler is opened. The custody seal will be taped to the cooler while sealing the cooler lid with clear packaging tape.
- The name and address of the receiving laboratory will be clearly labeled on the outside of the cooler.
- The samples will be preserved to ensure that sample integrity is maintained until the samples are received at the laboratory.

Samples will be shipped to the laboratory via an overnight courier under custody procedures. The laboratory will be notified immediately when samples are shipped.

4.2.5 Waste Management

Each type of waste generated during this sampling event will be placed into one drum for solids and one drum for liquids kept on the Natural Area site. These drums will be labeled by the field team with the types (or media) of waste placed inside it, and both the initial and the final dates of placement of sampling waste. The DuPont Waste Management Group will procure the appropriate disposal of this investigation-derived waste. For this project, investigation-derived waste will include small volumes of the following media types:

- Leftover surface soil from compositing
- Decontamination fluid

There will not be any leftover waste of plant material, as any mass not utilized in a sample will be placed back at the sample location.

Disposable sampling equipment and paper towels will be disposed of as non-hazardous waste in a proper receptacle.

4.3 Field Documentation

Organized and accurate written records contribute to the reliability and comparability of field data. The primary means of record keeping will be the field logbook, field log sheets, and possibly photographs. Additional sample documentation (labels, chain of custody records) has been previously discussed as part of the sample management details.

4.3.1 Field Logbook

Field information will be maintained in a field logbook as a written record. The field logbook will contain consecutively numbered, bound, and water-resistant pages. Data will be entered in permanent, waterproof black ink, in a legible fashion. Corrections will be made by crossing out the initial entry and writing the correction beside it with initials and date. The corrected information should remain legible.

Field observations will be recorded in the field logbook including any deviations from this work plan and key decisions made. All conversations of importance with project personnel will be documented, and so will any significant agreements, discussions or decisions by the field crew. All health and safety events, including toolbox meetings, the Project Safety Analysis/Job Safety Analysis (PSA/JSA), and other safety events and discussions (e.g., Near Miss, Stop Work) also will be documented in the field logbook. Each entry will be dated and assigned a time. Field logbooks are intended to provide sufficient data and observations to enable one to reconstruct the field investigation.

At a minimum, the field logbook will be used to document the following:

- Project name
- Personnel
- Weather conditions
- Equipment decontamination
- Health and safety monitoring, if any
- Decontamination procedures
- Records of telephone calls or on-site meetings pertaining directly to the decision making process of the field investigation
- Sample data
- Location of sample site
- Date of sample collection
- Time of sample collection
- Method of sample collection
- Sample media
- Sample identification numbers
- Sampling method

4.3.2 Sample Identification and Labeling

Samples collected for laboratory analyses will be identified by using standard sample labels, which will be attached to the sample containers. The labels will be durable and water-resistant so they remain legible when wet. Labels may be

prepared by the laboratory, if prescribed by the project staff. Labels will be attached securely to the sample container. Clear shipping tape will be used to assure labels are secured to any glass sample bottles.

Each sample will be labeled with a unique alphanumeric sample identification number. For example, the nomenclature for the sample identification number ECHI-21-05-SS is formed from the following sequence:

- The first four letters are the site identification ("ECHI" for East Chicago).
- The next two numbers are the sampling plot number (1 to 33).
- The next two numbers are the distinct sample location identifier in that plot (1 to 6). These will be set by the GIS electronic mapping of the sample locations that will then be staked and labeled in the field.
- The next two letters indicate the sample media for the project. SS is for surface soil, DS is for deep soil, and VG is for vegetation sample.
- For vegetation samples, an additional abbreviation will be added for below ground portion (BG) or leaf portion (LF). The full common or scientific name and sample ID nomenclature will be documented in the field logbook for each sample to allow tracking of species.
- QC samples will have an abbreviation for the type of sample collected ("Dup" for duplicate samples, "MS/MSD" for matrix spike/matrix spike duplicate samples, or "Equip" for Equipment Blank samples).

The following information will be included on the sample label, as appropriate:

- Sample ID
- Sample type
- Date and time sampled
- Sampler's initials
- Analysis requested
- Preservative(s) used

4.3.3 Chain of Custody

The chain–of-custody record will be used to record custody of all samples collected and maintained throughout the project. A standard chain-of-custody record form provided by the analytical laboratory will be used to track each sample. The chain-of-custody record serves as the sample tracking mechanism. The original chain-of-custody record will remain with the samples from sample collection/shipping in the field to transportation to the laboratory for analysis. The following information must be supplied on the chain-of-custody record that accompanies the samples to the laboratory:

- Project name and client

- Sample ID
- Sample type/media
- Date and time sampled
- Number and type of containers
- Analysis requested
- Filtration/preservatives used
- Special handling or analysis information
- Signatures of sampler involved in handling the samples

Unless determined otherwise on an event-specific basis, the chain-of-custody record will indicate that the samples will be analyzed with standard turnaround time.

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5.0 LABORATORY PROTOCOLS

The biological sample analyses necessary to complete this assessment require additional QC procedures for sample collection, handling, preparation, and analysis. This section details the sample preparation and analytical methods that the laboratory will perform.

5.1 Laboratory Handling and Storage of Samples

Samples will be sent to a DuPont approved laboratory for chemical analysis and data reporting. Sample analysis will be conducted in accordance with Indiana RCRA Program requirements (*Hazardous Waste Management Permit Program and Related Hazardous Waste Management, 329 IAC 3.1*).

DuPont currently plans to send the soil and tissue samples to Test America Burlington, Vermont Laboratory, Vermont. The laboratory contact information is as follows:

Test America Burlington Vermont Laboratory
30 Community Drive
Suite 11
South Burlington, Vermont 05403-6834
Tel: 802-660-1990
Fax: 802-660-1919

The selected analytical laboratory will follow its standard sample receipt and handling protocol with the following modifications for the biological samples. Laboratory personnel will verify the samples received and note the temperature inside the cooler, the presence of ice, the condition of biological samples (e.g., frozen, mostly frozen, slushy, or soft), labeling, and the chain of custody information for logging the samples in. As quickly as possible, the laboratory will store the samples as follows:

- Biological samples will be stored in a freezer at -20º ± 5ºC until they are to be prepared and analyzed.
- Soil samples will be stored at temperatures ranging from 1º to 4ºC.

5.2 Laboratory Preparation of Biological Samples

Biota samples must be kept frozen from the time of receipt until the homogenization process begins. Unused samples (or portions of samples) should be returned to frozen storage immediately.

Laboratory preparation of biological samples will occur only on the samples that the laboratory can complete preparation on that day. The following outlines the sample preparation procedures:

- All equipment and apparatus must be thoroughly cleaned between samples to prevent cross-contamination.
- Determine appropriate blending apparatus. For samples with hard bones or a large volume, use a Robot-Coupe. Otherwise, a routine blender is adequate.

- Cut the samples initially into approximately 1-inch pieces.
- Add small pieces of dry ice and an appropriate amount of sample to the blending apparatus.
- Blend for one to two minutes.
- Stir the contents and blend for an additional minute.
- Ensure the sample reaches a powdery consistency. Additional dry ice and blending may be required.
- Place the sample into a labeled glass jar with the lid loose to allow the dry ice to sublime.
- After 16 hours, tighten the lid.
- Record the weights for all samples either before or after processing, depending on client specifications.
- Alternatively, if the sample is not amenable to blending, cut the sample into small pieces with a knife or shears.

5.3 Analytical Testing

Table 2 lists the compounds to be analyzed and the analytical methods, expected analytical method detection limits (MDLs) and reporting limits (RLs) provided by Test America, Inc.

Table 2 Analytical Methods and Detection Limits

Compound	Units	Method	MDL	RL
Metals				
Arsenic	mg/kg	SW-3050B/6010C	0.21	1
Lead	mg/kg	SW-3050B/6010C	0.22	1
Zinc	mg/kg	SW-3050B/6010C	0.06	2
Other soil parameters				
pH	std units	SW-9045C	0.1	0.1
Moisture	%	ASTM- D2974-07a	0.25	0.25
Grain size	%	ASTM- D422	0.1	0.1
Cation exchange capacity	meq/100g	SW-9081	0.5	0.5
Organic matter content (% ash)	%	ASTM- D2974-07a	0.25	0.25
Total organic carbon	mg/kg	Lloyd Kahn Method	1,000	1,000

mg/kg = milligrams per kilogram.
Metals and TOC will be reported on a dry-weight basis.

Expected MDL and RL limits for analysis of COPCs in plant samples will be determined to the lowest bioaccumulation levels that can quantified with certainty. Table 4 illustrates the lowest BAF values (unitless) that could be determined on the

basis on background concentration. Medium BAF values for plants, as calculated by The U.S. Environmental Protection Agency (U.S. EPA, 2003) are provided as a reference. Analytical detection limits will allow determination of relatively low BAF values whose magnitude is consistent with reference BAF concentrations for plant and invertebrates (Table 3).

Table 3 Determination Limits of Bioaccumulation Factors

	Arsenic	Lead	Zinc
Method detection limit (mg/kg)	0.21	0.22	0.06
Soil background concentration (mg/kg)	30.7	19.0	95
Lowest BAF based on reporting limits and soil background concentration	>0.007	>0.012	>0.004
Median BAF for plants (U.S. EPA 2003)	0.038	0.039	0.37

5.4 Quality Assurance/Quality Control

The objective of establishing and defining QA/QC procedures is to obtain samples that yield data of consistent quality. Data quality is ensured by adhering to specified procedures described in this SAP for decontamination of sampling equipment, proper sample identification and field documentation, and well as sample handling, chain-of-custody record keeping, packaging, and transportation. This section provides a description of QA/QC field samples and laboratory requirements, which provide a means to measure, quantify, and evaluate the data quality from this investigation.

5.4.1 Field QA/QC Samples

Field QC samples will be collected during sampling to quantitatively measure and ensure the quality of the sampling effort and the analytical data. They will be used to evaluate precision of sampling and the potential for field contamination.

Two types of field QC samples will be collected to document the accuracy and representativeness of the confirmation samples: field duplicate samples and equipment blank samples. QC samples will be handled in the same manner as the environmental samples collected.

Equipment Blank Samples

Equipment blank samples are used to determine the efficiency of decontamination procedures for sampling equipment. Equipment blank samples are distilled or deionized water aliquots that are poured over sampling equipment after the equipment has been decontaminated using the planned decontamination procedures. Analytical results from these samples are used to evaluate the integrity of the decontamination process and to alert the field manager of possible cross-contamination of samples.

A minimum of one equipment blank will be collected per sample collection equipment type used. The sample ID and sample collection device description will be documented in the field logbook.

Field Duplicate Samples

A field duplicate (dup) is a second sample collected immediately following the original sample (parent) using identical sampling techniques performed immediately adjacent to the parent sample location. Field duplicates are used to monitor the variance of sampling and analysis. Field duplicate samples will be collected at a minimum frequency of one per 20 regular samples collected for the media that can facilitate duplicate sampling. These media include surface soil, deep soil, and vegetation samples.

Field duplicates will be analyzed for the same COPCs as the original samples. Sample IDs and times for field duplicates and their associated parent sample will be recorded and tracked in the field logbook.

5.4.2 Laboratory QA/QC Samples

Laboratory samples to be analyzed as part of the laboratory's standard QA/QC process include method blanks, laboratory control samples (LCSs), and MS/MSDs.

Method Blank Samples

A method blank sample is designed to detect contamination that exists in the laboratory or the analytical process. The concentration of target compounds in the method blank must be less than or equal to the laboratory RL.

LCS Samples

The LCS sample is also known as a blank spike. The LCS is designed to verify the accuracy of the analytical procedure by measuring the recovery of a known concentration for all analytes of interest. The laboratory may select any sample (from this project or another) to be spiked with the analytes of interest and then analyzed.

MS/MSD Samples

MS/MSD samples are designed to evaluate the effect that the sample matrix may have on the analytical data. One MS/MSD and/or MS/laboratory duplicate pair will be prepared and analyzed for every 20 or fewer investigative samples of the same matrix (only soil and decontamination water samples will have MS/MSD analyses for

this project). MS/MSD/laboratory duplicate analyses are to be performed on investigative samples. To account for the additional volume needed by the laboratory to perform the analyses, extra sample volume will be collected from the designated sample locations and media.

5.4.3 Laboratory Data Review

A laboratory data review will be conducted by the laboratory generating the data to ensure the technical defensibility of the data and to ensure method and laboratory requirements were met. This review will be documented in the laboratory review checklist(s) and associated exception reports that accompany the reportable data.

Data Usability Review

A data usability review will be conducted by the DuPont Analytical Data Quality Management (ADQM) Team to assess the usability of the field and laboratory data and to document that all decisions are supported by data of appropriate quality. The data usability review recognizes that even though a laboratory completes all analyses in accordance with appropriate methods, the resulting data may still require qualification with respect to the intended use, given matrix interferences, method limitations, or other considerations.

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FIGURES

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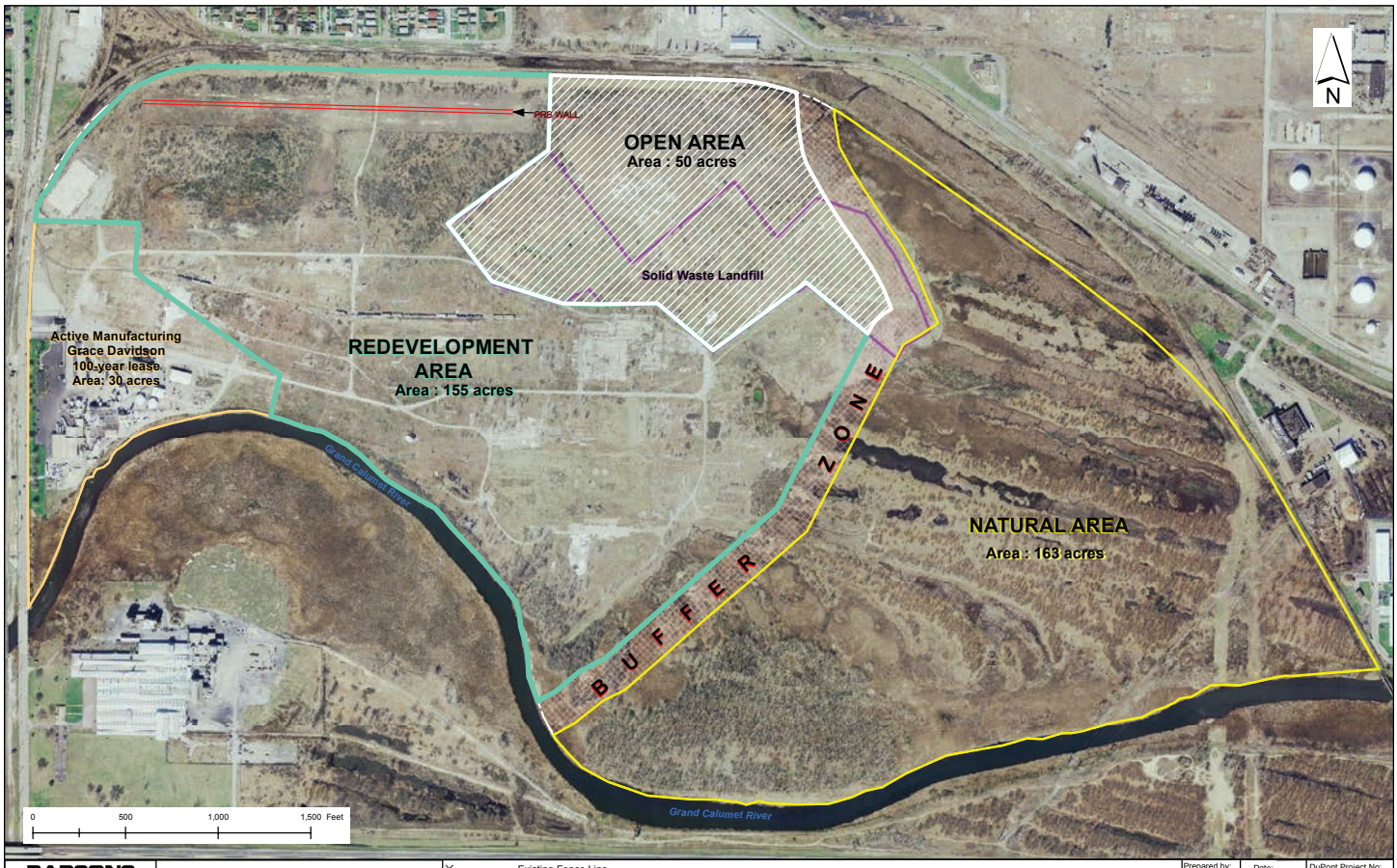


PARSONS
Parsons Commercial Technology Group
10 S. Riverside Plaza
Chicago, IL

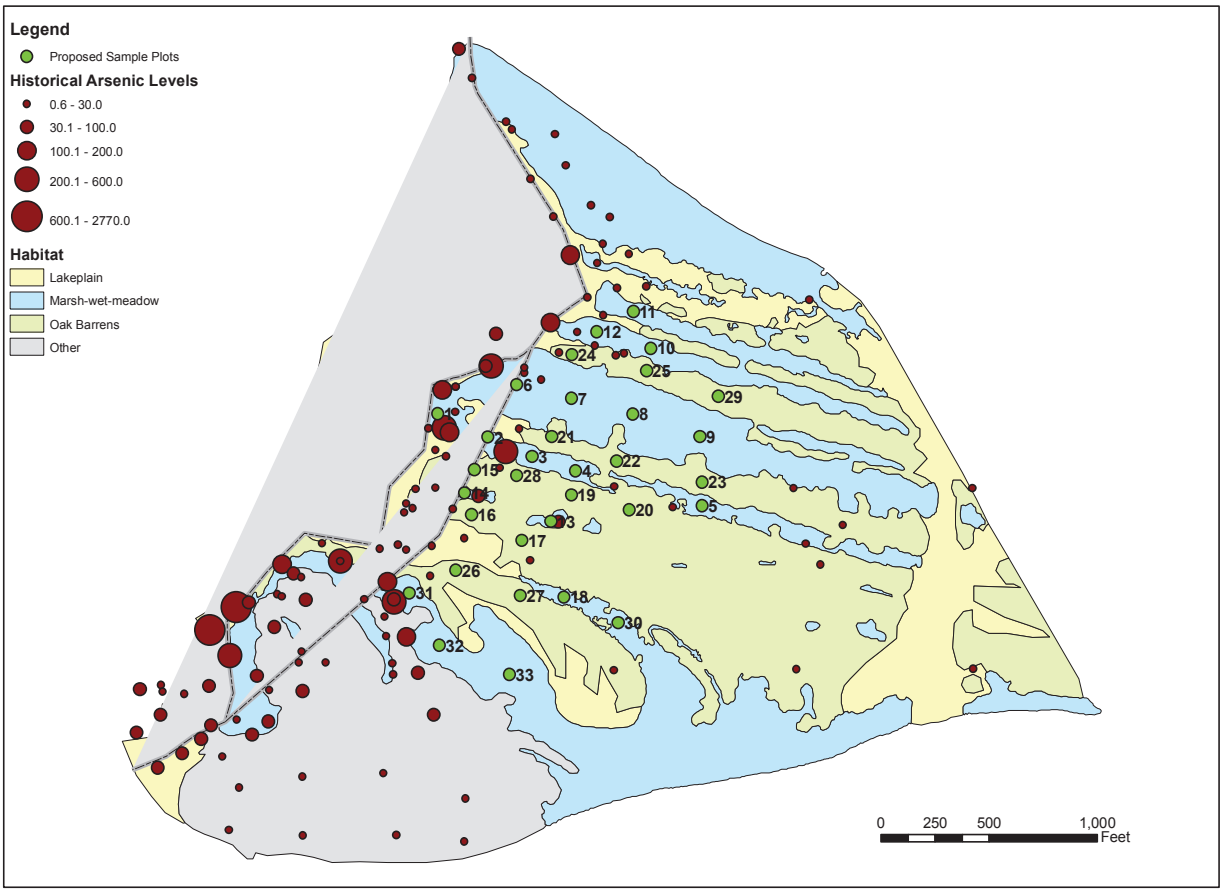
DUPONT

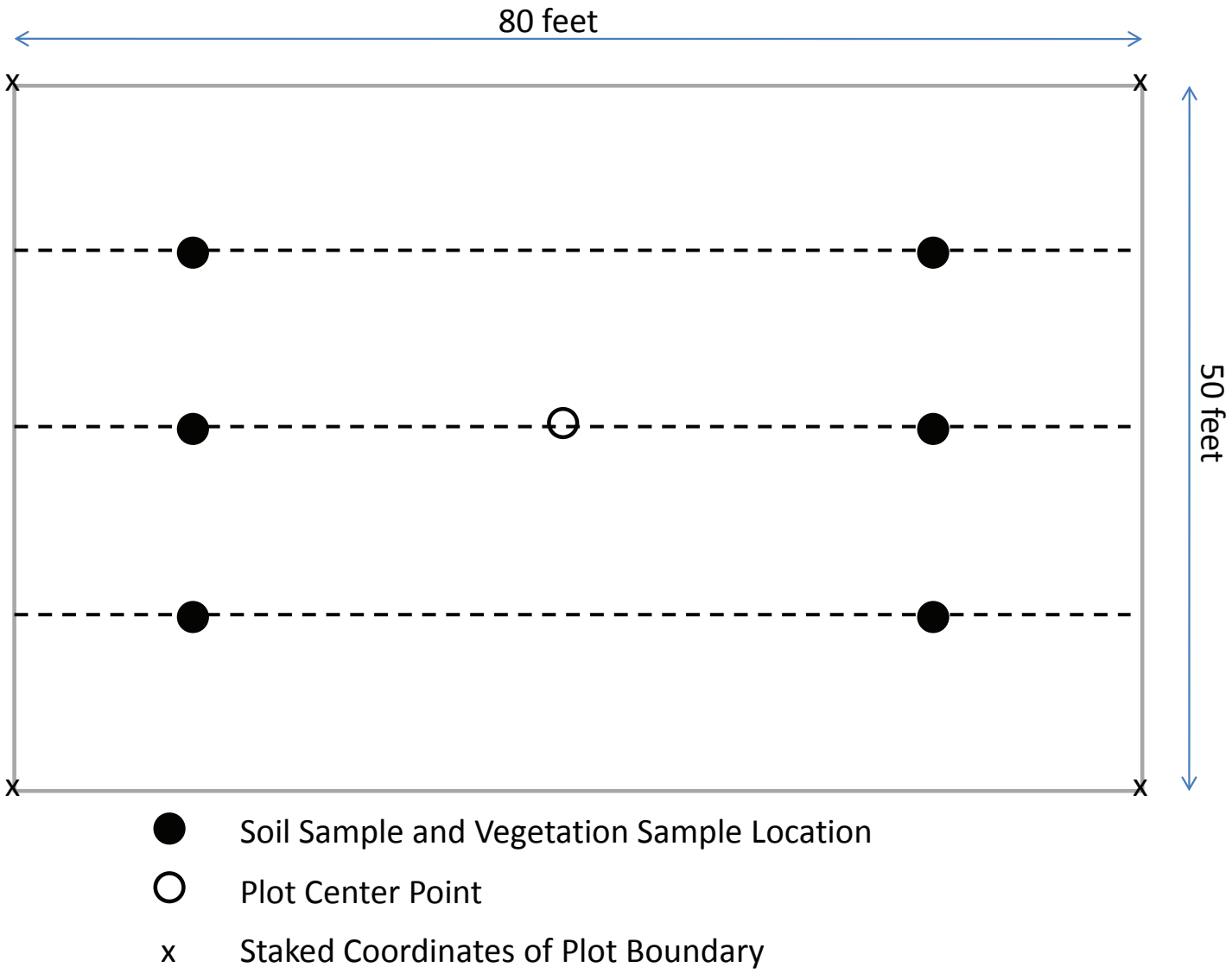
Title: **Risk Assessment Areas**
Revised Supplemental Corrective Measures Study Investigation
DuPont East Chicago Facility
East Chicago, Indiana

- Existing Fence Line
- Proposed Fence Line
- River Boundary
- Approximate Property Boundary

Prepared by: Erich Kulschke	Date: 03/01/2011	DuPont Project No: 507754
Reviewed by:	Figure No: 1	PARSONS Project No: 446225

Figure 2. Proposed Sample plot locations




80 feet
50 feet
x
x
x
x
Soil Sample and Vegetation Sample Location
Plot Center Point
x
Staked Coordinates of Plot Boundary

APPENDIX B
DUPONT NATURAL AREA VEGETATION SURVEYS – PLANT COMMUNITY ASSESSMENTS CONDUCTED FALL 2011 FOR SOIL SAMPLING SITES (THE NATURE CONSERVANCY 2011)

THE NATURE CONSERVANCY

DuPont Natural Area Vegetation Surveys

Plant Community Assessments Conducted Fall 2011 for Soil Sample Sites

Paul Labus, Northwest Indiana Region Director

5/29/2012

Introduction

The following vegetation study is part of a larger effort to implement a field investigation of the natural area adjacent to the former manufacturing site on the DuPont property in East Chicago, Indiana. The objective of the field investigation is to characterize and assess the relationships between potential soil contaminant levels and plant communities in two ecological settings (dune ridges and wetland swales), and evaluate potential ecological effects on these plant communities from the former manufacturing site. Soil sampling was conducted to provide additional surface soil data from the ridges and swales, and further delineate metals concentrations in soils and sediments east of the buffer zone (proposed fence line). The purpose of this vegetation study is to characterize the plant communities at the soil sampling sites, assess the condition of those plant communities, and compare the results with existing information from earlier vegetation studies conducted at the Natural Area.

Background

The Natural Area is a remnant of the dune and swale system that characterized the Toleston Strandplain prior to extensive habitat destruction from urban and industrial development. This unique landform developed over the past 2,500 years as the waters of Lake Michigan gradually receded, leaving a pattern of linear beach ridges and intervening swales. The dune and swale topography supports a fine scale mosaic of natural communities that range from oak barrens and dry sand prairie on the crest of the dune ridges, mesic prairie at lower elevations, and wet prairie, sedge meadow and emergent marsh in the swales. Initially the dune and swale covered about 70 square miles, but currently occupies approximately 1400 acres of fragmented remnants. The DuPont Natural Area is one of the few undisturbed tracts of the dune and swale system that has survived the development along Lake Michigan. This area is home to many rare, threatened, and endangered plant and wildlife species and serves as core habitat for the federally endangered Karner Blue Butterfly. The Nature Conservancy (TNC) has managed this tract since 1999, focusing on restoring the structural, compositional, and functional components of the dune and swale complex thru the natural plant communities (TNC 2006).

The Natural Area is a component of a highly fragmented natural system that has been severely impacted by the surrounding urban and industrial development. Disruptions in natural fire regimes, alterations to the hydrologic setting and the introduction of nonnative species have, no doubt, caused shifts in community structure and composition. The assumption here is that the natural communities have degraded in varying degrees with impacts to the ecological processes that shape and sustain them. However, there is no quantitative data to document the changes that have occurred in the Natural Area over the past century or to link those changes to specific causes.

Soil samples were taken at 37 predetermined plots located in roughly the western third of the Natural Area, which will be referred to as the sample area. The approach taken here is to first assess the overall condition of natural communities in the sample area, then compare those results with existing floristic data from the Natural Area, and finally discuss how individual sample plots or subsets of sample plots contribute to the assessments. Site conditions that impact the natural communities and ecological management information will also be provided.

Combining the plot data can give some insight into the condition of plant communities in the sample area.

However, it should be remembered that the sample design is based on collecting representative soil samples near the old manufacturing site and characterizing the plant communities around those samples, not to assess the overall condition of plant communities in the sample area. To achieve the latter would require a more thorough sampling based specifically on plant community distribution. The assessments of the broader sample area are meant to give at least some context for the sample plots, but not as a definitive description.

Methods

Vegetation studies were performed on 37 predetermined plots at the Natural Area. The 50 foot wide by 80 foot long rectangular plots were distributed to sample both upland and wetland habitats. Six sampling sites were located within each plot. A 3-foot square quadrat was established at each sampling site; plant species within the quadrat were recorded and assigned a cover class using the standard Daubenmier method. Bare ground, standing water and invasive species coverage were also documented using the same method. At upland sites, canopy cover was measured at the center of each sampling site using a standard spherical crown densitometer.

The vegetation data was analyzed via standard Floristic Quality Assessment techniques for coefficient of conservatism (Mean C), species richness, and Floristic Quality Index (FQI). Analysis was performed with the Floristic Quality Assessment (FQA) Computer Applications developed by Wilhelm & Masters (2004).

Floristic Quality Assessments

Individual species vary in their ability to persist in ecological settings outside of their natural range. C-Values are designed to gauge the degree to which species are restricted to natural habitat conditions. In this system individual species are assigned a coefficient of conservatism (C-Value) on a scale of 0 – 10. Species with 0 C-Value are highly tolerant of disturbed habitats; while species with a 10 C-Value are almost never encountered outside of intact natural areas. Nonnative species are assigned a C-Value of 0. (Note – Adventive species is a term coined by Swink & Wilhelm to describe species that were nonnative to the Chicago Region prior to European settlement and is used in reports generated by the FQA computer applications. I use the term nonnative in the text of this report, but if the term adventive is encountered it can be read as nonnative.)

The Mean C-Value is calculated to assess the cumulative C-Values of species encountered in any given sampling unit or site inventory. Because the Mean C-Value does not take species richness into account it has limitations as a standalone measure. For example, Plots 10 and 24 both have Native Mean C-Values of 5. Plot 10 covers a section of wetland that was recently treated for invasive species, leaving *Lemna minor* (C-Value 5) as the only species present in the entire plot. Plot 24 covers a mix of oak barrens and mesic prairie and had the highest native species total of all the plots at 31(C-Values ranged from 1 – 9). Despite having equal Native Mean C-Values, the quality of the plants communities are obviously very different.

The Floristic Quality Index (FQI) is designed to assess the combined Mean C-Value and species richness within a sampling unit or site inventory. Adding species richness makes FQI a more robust measure than Mean C-Values when it is used in the proper context. Because total number of species is a factor, the size of the sampling unit can have a significant effect on the FQI. Generally, smaller areas tend to support fewer total species than larger

areas, which makes it important to consider the size of the sampling unit in using FQI as an assessment tool. It should also be noted that percent cover of individual species is not considered in calculating the FQI or Mean C.

Mean C-Values and FQI scores are useful in identifying how closely a sampling unit resembles an intact natural area. Mean C-Values of 0 – 3.5 and FQI scores between 0 and 35 have been documented for highly altered habitats and *de novo* restorations and are therefore unreliable in identifying intact natural area; Mean C-Values above 3.5 and FQI scores above 35 indicate at least marginal natural area qualities; and Mean C-Values above 4.5 and FQI scores above 45 indicate the potential that a site is an intact natural area. These values are based on the experience of the authors of the FQA system and represent the relative scoring of assessments across a broad range of altered habitats, restorations and natural community types throughout the Chicago Region (Swink and Wilhelm 2004).

Cover Estimates

The Daubenmire method was used to estimate the percent cover for individual species, invasive species, bare ground, and standing water (where appropriate) at each of the sampling sites. In this method the quadrat is observed from directly above and a cover class is assigned based on an ocular estimate of the total percent cover of all individuals of a species (see table below). The quadrats were carefully searched to identify low stature species and seedlings. In many cases this resulted in multiple vertical layers of cover that can potentially exceed 100% total coverage. Where multiple invasive species where encountered in a single quadrat, their coverage was combined and assigned the appropriate cover class. Bare ground cover is an ocular estimate of the percent of open ground observed through the total vegetative cover. Standing water is based on an estimate of total cover regardless of vegetative cover.

Cover Class	Range of Cover	Midpoint of Range
0	0	0
1	0 – 5%	2.5%
2	5 – 25%	15%
3	25 – 50%	37.5%
4	50 – 75%	62.5%
5	75 – 95%	85%
6	95 – 100%	97.5%

The midpoint of the range in cover classes was used to calculate the average percent cover of the six sampling sites in each of the plots for invasive species, bare ground and standing water.

Invasive vs. Nonnative Species

Species that are introduced into regions outside of their natural range are considered as nonnative. There have been 22 nonnative species recorded at the Natural Area, of which 6 were encountered in the sample plots. Some nonnative species, such as *Poa pratenses* and *Asparagus officinalis*, occur sporadically, having little impact on the ecological functions of the habitats they occupy. Others, such as *Lythrum salacaris* and *Rhamnus frangula*, spread aggressively, forming dense stands that displace native species.

The native status of some species is not always clear. *Typha latifolia* occurs in marshes throughout the Chicago Region and is considered a native species. There is debate as to whether *Typha angustifolia* is native to the Chicago Region or migrated to the southern end of Lake Michigan with European settlement in the late 19th Century (Swink and Wilhelm 2004). *Typha x glauca* is a hybrid between *T. latifolia* and *T. angustifolia,* so its status as native depends on how *T. angustifolia* is viewed. Swink and Wilhelm consider all three species native to the Chicago Region and are treated that way in the Floristic Quality Assessment Computer Applications.

The natural range of *Phragmites australis* covers portions of North America, Europe and Asia, including the Chicago Region. Plant material from Europe was introduced to the United States sometime in the 18th or 19th Century, and is more robust and aggressive than the native strain. As a result, it has spread from the East Coast to all 48 lower states, and is a common weed in drainage ditches, marshes, and lake borders throughout the Great Lakes region. Genetic research has identified halotypes with distinct morphological differences for the native and nonnative lineages. (Swearingen and Saltonstall) The taxonomic status of *Phragmites australis* is currently under review but is treated as native in Swink and Wilhelm with no distinction between the native and nonnative strains.

For the purpose of this study, species (native or nonnative) that spread aggressively to the exclusion of native plant communities are considered as invasive. An exception is made for native woody species which will be discussed further in the upland section below.

Results

Assessment of the Sample Area

The combined inventory from the 37 sample plots includes 99 native species and 6 nonnative species. Species diversity varied greatly between the upland and wetland plots. As separate groups, the upland plots included 79 native species; wetland plots totaled 25 native species, with 5 species occurring in both. The impact of invasive species on wetlands in the Natural Area is probably the single biggest factor in the difference between the two. All of the wetland plots occur in areas that, until recently, were dominated by a combination of *Phragmites australis,Typha spp.,* and *Lythrum salacaria*, to the exclusion of diverse native communities. Management efforts have greatly reduced invasive species coverage in 10 of the 23 wetland plots and native species have started to reestablish in those areas, but they are in the early successional stages of recovery.

The following table summarizes species diversity, Mean C-Values and FQI scores for the combined 37 plots.

	Native Species	Nonnative Species	Native Mean C	Mean C with Nonnatives	Native FQI	FQI with Nonnatives
Total Combined Plots	99	6	4.8	4.6	48.2	46.8
Upland Plots	79	5	4.9	4.6	43.4	42.1
Managed Wetland Plots	22	23	4.3	4.1	20	19.6
Unmanaged Wetland Plots	5	1	4	3.3	8.9	8.2

Taylor University is currently conducting a restoration monitoring program at several dune and swale sites including the DuPont Natural Area (Rothrock and Evans unpublished data). Sampling for the Taylor University study was conducted using 100-meter transects with 15 meter-square quadrats per transect. Plant species within the quadrat were recorded and assigned a cover class using the standard Daubenmier method. FQA analysis was conducted using scoring based on a system developed by Rothrock for the State of Indiana. Canopy cover at the upland sites was measured using wide angle photography. Bare ground and standing water were not measured.

Four upland and four wetland habitats were sampled at the Natural Area totaling eight transects with 120 quadrats. Transects were distributed across the middle and eastern portions of the Natural Area and were oriented on a roughly east-west axis, running the length of the ridges and swales. For comparison, the Parsons study included 37 plots with 220 total quadrats, and was focused on the western portion of the Natural Area. The following table compares the findings from the Parsons study to the Taylor University study. FQA scores have been converted from the Taylor University study to Swink and Wilhelm scores for direct comparison.

	Native Species	Nonnative Species	Native Mean C	Mean C with Nonnatives	Native FQI	FQI with Nonnatives
Parsons Study Combined Plots	99	6	4.8	4.6	48.2	46.8
Taylor University Combined Transects	116	15	4.7	4.2	51	48

Both studies show sample areas with Mean C-Values and FQI scores that indicate at least a moderately intact natural areas. The Taylor University study was richer in overall species diversity and had a slightly higher FQI score than the Parsons study. This may be explained in part by the difference in sample area size. The Taylor University study covered a larger portion of the Natural Area, potentially sampling a wider range of microhabitats. Also, the wetland transects were all located in areas that have received invasive species management, meaning none of the untreated dense stands of invasive species were sampled by Taylor University. Thirteen of the wetland plots in the Parsons study were located in dense untreated stands of *Phragmites australis* and as a group totaled only five native species and one nonnative.

The Taylor University study showed a similar difference in the quality of plant communities between upland and wetland habitats. The following table summarizes the FQA scores of upland and wetland habitats in the Taylor University study.

	Native Species	Total Species	Native Mean C	Mean C with Nonnatives	Native FQI	FQI with Nonnatives
Taylor University Wetland Transects	34	36	5	4.7	29.2	28.3
Taylor University Upland Transects	84	98	4.5	3.9	41.6	38.5

Upland Plots

Oak Barrens Community Description

Oak barrens were once a common feature of the landscape in the north central United States. Habitat destruction has severely reduced the range of this natural community and it is currently considered Globally Rare. Oak barrens are an open treed system with a mix of graminoids, forbs and shrubs in the ground layer. Canopy structure varies from open (5 – 30%), through oak scrub, to a more closed canopy (30 - 80%). The canopy is dominated by *Quercus velutina* with scattered occurrences of other tree species. Species composition varies across the natural range of oak barrens with adaptation to local conditions. Regular fires are an important factor in maintaining the structure and species composition (NatureServe 2003).

The ridges at the Natural Area support a local variation of oak barrens that includes elements of mesic and wet-mesic prairie at lower elevations. The canopy is dominated by *Quercus velutina* with scattered *Quercus alba*, *Prunus serotina* and *Sassafras albidum.* The herbaceous layer in the dune and swale is generally a diverse mix of graminiods and forbs with scattered fire adapted shrubs such as *Rosa carolina, Amorpha canescens,* and *Ceanothus amercanus.* The scrub element normally associated with oak barrens, which is the result of oaks re-sprouting from fire damage, is all but missing in the dune and swale system due to lack of intense fires. The mesic and wet-mesic prairie component has taller (1m – 2m) and denser vegetation.

Plot Distribution

There are 14 upland plots included in the study, located on four of the six intact ridges in the Natural Area. Ten of the plots cover exclusively xeric settings. Plot 22 includes a mix of both xeric and mesic elements, while Plots 24 and 29 are at relatively lower elevations with a strong mesic prairie component in the herbaceous layer.

Plot 25 is located on the only known area of fill in the sample area. The fill material appears to be slag and construction debris. A surprisingly diverse mix of native species has colonized the fill, but cannot be characterized as oak barrens or mesic prairie. Plot 25 will not be included in the results and discussion of oak barrens, but will be addressed as an individual plot below.

A large area near the central western gate has seen moderate to intensive physical disturbance of the topography from sand mining. The wetlands in this area have re-vegetated with a suite of conservative species such as *Aster ptarmicoides, Gentiana crinita,* and *Solidago riddellii.* The upland portion of the sand mined area is dominated by less conservative grasses and sedges with scattered forbs, occasional small oaks, and large patches of bare ground. Plot 16 is located in an area where sand was removed; even though it has re-vegetated with predominantly native species, it has not had the same history of ecological development as the surrounding oak barrens community. The surface topography of Plot 26 is intact but immediately adjacent to a sand mined area. The three sampling sites (26A, 26C and 26E) closest to the disturbance had sparse vegetation with large patches of bare ground.

An active two-track runs through Plots 19 and 20, sampling sites in these plots were adjusted to avoid the ruts. A two-track, that is occasionally used, runs through Plots 15 and 28, one sampling site in Plot 28 was adjusted to avoid a fence that protects Karner blue butterfly habitat.

Floristic Quality Assessment

The cumulative inventory of oak barrens plots includes 76 native species with a Mean C value of 5 and FQI of 43.2. Five nonnative species were encountered; the Mean C and FQI including nonnatives are 4.7 and 41.9 respectively. These scores indicate that the broader oak barrens sample area represents a moderately intact natural area. A more thorough sampling based on vegetation would give a clearer picture of the overall condition of oak barrens in this portion of the Natural Area. The following table summarizes the floristic data for the oak barrens plots.

Oak Barrens Plot	Native Species	Nonnative species	Native Mean C	Mean C with Nonnatives	Native FQI	FQI with Nonnatives
15	14	0	4.4	4.4	16.3	16.3
16	18	1	4.6	4.3	19.3	18.8
17	15	1	4.5	4.2	17.3	16.8
19	19	1	4.7	4.4	20.4	19.9
20	21	1	4.6	4.4	21.2	20.7
21	21	1	4.5	4.3	20.7	20.3
22	29	1	4.6	4.4	24.5	24.1
23	25	3	5	4.5	25	23.6
24	31	3	5	4.5	27.7	26.4
26	19	2	4.5	4.1	19.7	18.8
27	12	2	3.5	3	12.1	11.2
28	15	2	4.5	3.9	17.3	16.2
29	27	2	4.8	4.4	24.8	24
Average per Plot	20	2	4.6	4.2	20.5	19.8
Combined Plots	76	5	5	4.7	43.8	42.4

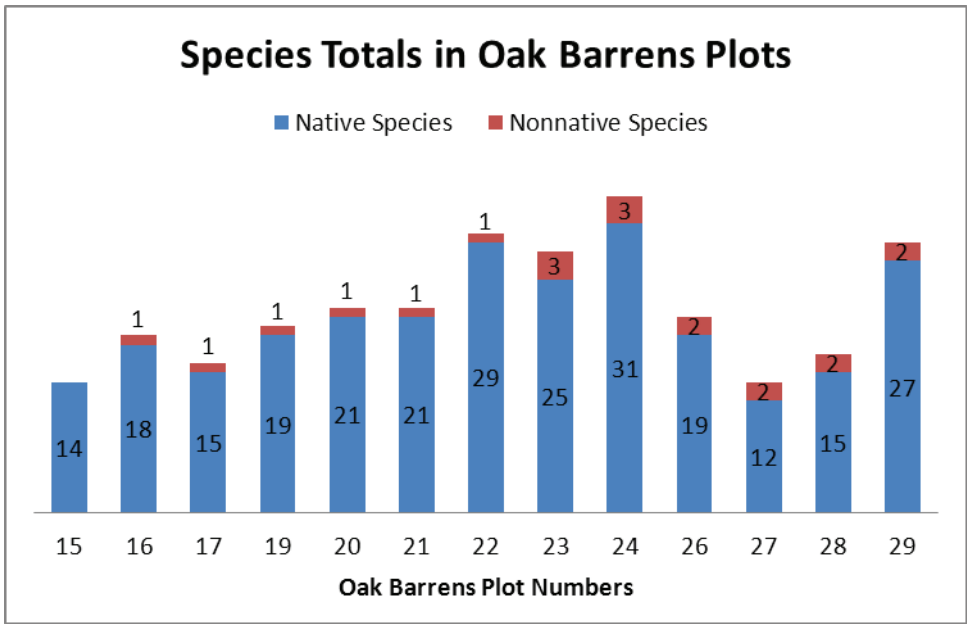
Species distribution in oak barrens is the result of the complex interaction of factors such as canopy cover, hydrologic setting and fire history. The resulting microhabitat patches vary in size and floristic quality based on local conditions. Given the sample unit size (50ft.X80ft.) in this study, it is unlikely that individual plots can capture the complexity of an intact oak barrens community, making the natural area assessment thresholds an inappropriate standard of measure at the plot level. However, FQA scores can be used to discern the relative differences between individual plots.

Native species diversity in individual plots ranged from 31 to 12 species, with an average of 20 species per plot. Plots 22 (29 species), 24 (31 species) and 29 (27 species) included mesic elements and had the highest species totals. Plot 23 had the highest diversity of the xeric plots with 25 native species. Plots 19, 20, 21, and 26 were all within one of the average. The lowest totals occurred in Plot 15 (14 species), Plot 17 (15 species), Plot 27 (12 species) and Plot 28 (15 species).

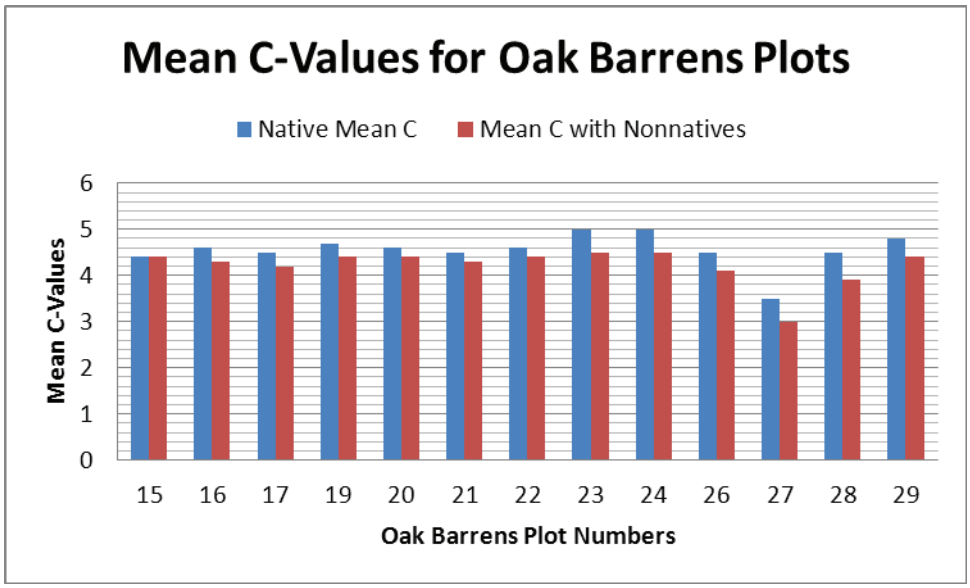
Five nonnatives species were encountered in the upland plots; *Achellea millefolium, Asparagus officinalis, Epipactis helleborine, Poa pratensis* and *Rhamnus frangula.* The most common nonnative was *Rhamnus frangula*, appearing in 12 of the 13 oak barrens plots with an average cover ranging from 0 – 3%. The other four

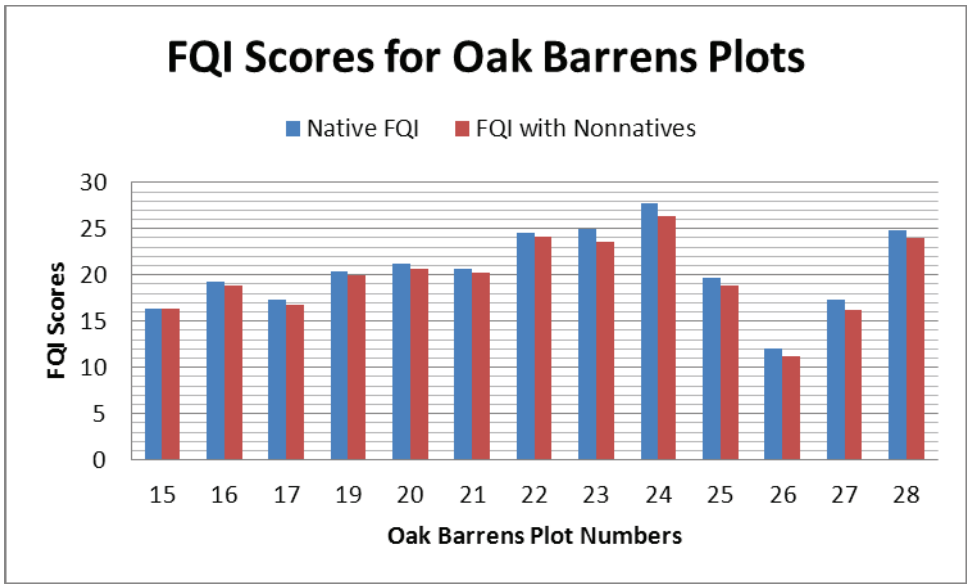
nonnatives species appeared in six plots and ranged from <1 – 2% cover. The nonnative species will be discussed further in the section on invasive species below.

The following chart summarizes species diversity in the oak barrens plots.



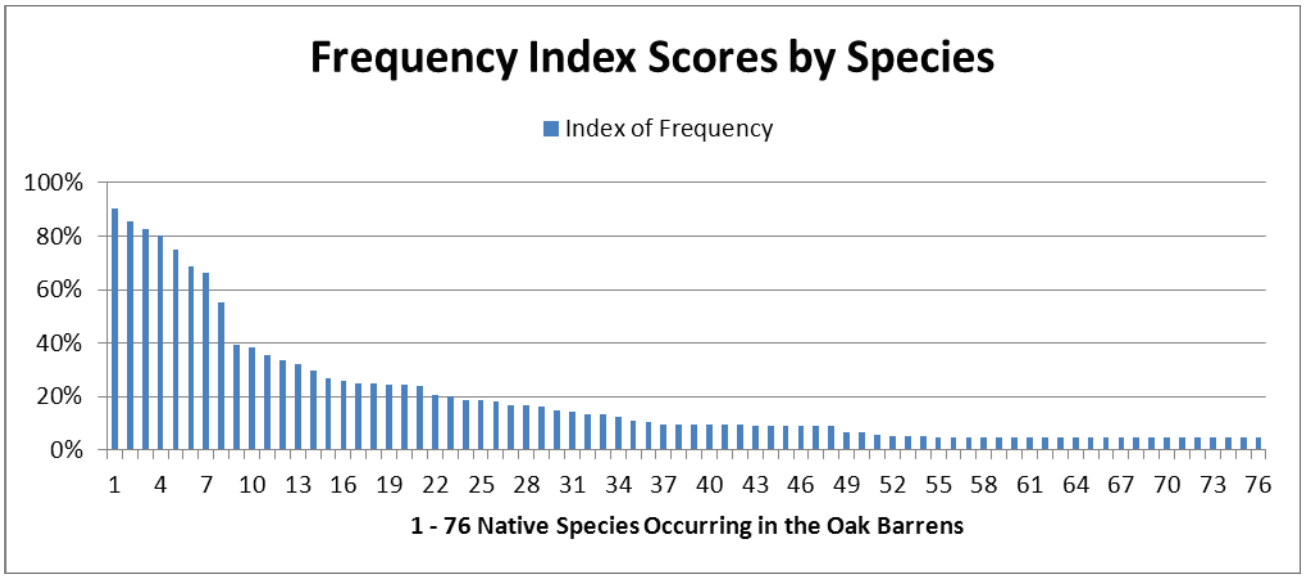
Individual plot native Mean C-Values ranged from 3.5 to 5 with an average Mean C of 4.6. Native FQI scores ranged from 12.1 to 27.7, with average score of 20.5. Plot 27 stands out with the lowest score, which is consistent with the species totals. The charts below summarize FQA scores in the individual plots.





Native Species Distribution

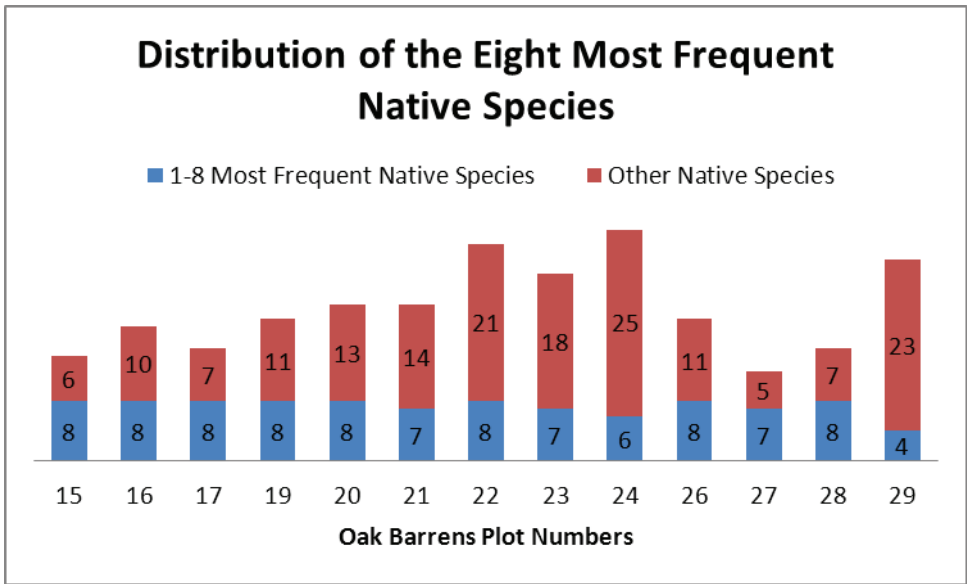
The distribution of individual native species varied greatly across the sample area. *Equisetum hyemale*, *Smilacina stellate,* and *Sorghastrum* nutans were the only species that appeared in all 13 plots; while 21 species were encountered in only a single quadrat. The Frequency Index is an average of two measures, the percent of quadrats and percent of plots occupied by an individual species, giving equal weight to each. The following chart summarizes Frequency Index scores. In order to make the chart more legible species were assigned a number from 1 -76 based on highest to lowest scores, see Appendix A for a complete species list.



The eight most frequent native species appeared in at least 40% of the quadrats and over 60% of the plots, with Frequency Index scores ranging from 55 to 90. The remaining 68 species scored below 39, with 53 of those scoring below 20. The following chart summarizes the eight most common native species; they have a Mean C-Value of 4.2 and represent 11% of the total oak barrens native species.

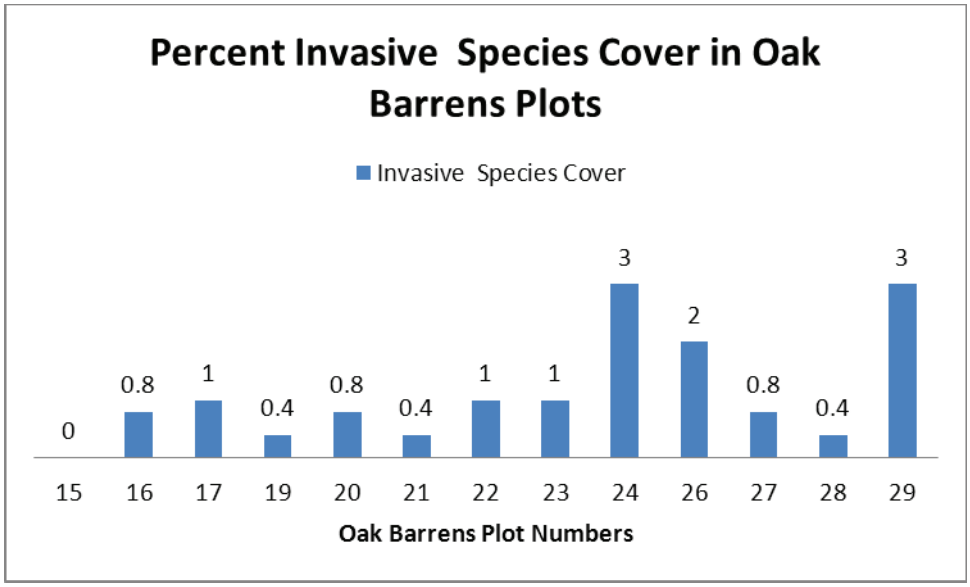
SCIENTIFIC NAME	C Value	Quad Occurrences	Percent of Upland Quads	Plots Occupied	Index of Frequency Scores
Equisetum hyemale	3	64	82%	13	90
Andropogon scoparius	5	57	73%	12	85
Smilacina stellata	5	55	71%	13	83
Rhus radicans	2	51	65%	12	80
Sorghastrum nutans	5	47	60%	13	75
Panicum oligosanthes scribnerianum	4	35	45%	12	69
Koeleria cristata	7	32	41%	9	66
Euphorbia corollata	2	31	40%	12	55

The distribution of these eight most frequent species was fairly consistent, occurring as a group in 8 of the 13 plots. Plot 29 (4 of the 8) and 24 (6 of the 8) had strong mesic components, limiting the presences of xeric species. The important point is that the eight most frequent species were evenly distributed in most of the plots but represented a relatively low percentage (11%)of all the species encountered, making the presence of less frequent species the most significant factor in variations in plot diversity. The following chart summarizes the distribution of the eight most common native species in the oak barrens plots. The bars on the graph are divided into two classes, the Eight Most Frequent Native Species and Other Native Species; the totals represent the number of species from that class that occurs in the individual plot.



Invasive Species

Five nonnative species were encountered in the oak barrens plots, of which four occur sporadically throughout the Natural Area and do not pose a significant threat to ecological functions in the oak barrens community. *Rhamnus frangula* was the only invasive species encountered in the upland sampling. The individual *Rhamnus frangula* plants encountered were seedlings or less than 12 inches in height with an average cover ranging from 0 – 3%. TNC management efforts have greatly reduced the cover of *Rhamnus frangula* throughout the sample area with the exception of the area covered by plot 25, which has not received treatment. Management includes mowing mature plants and herbicide treatment of re-sprouts and seedlings. The fact that no mature plants were encountered is a direct result of these efforts. The seedlings and low stature plants that occurred regularly in the quadrats represent the continuing regeneration from the existing seed bank.

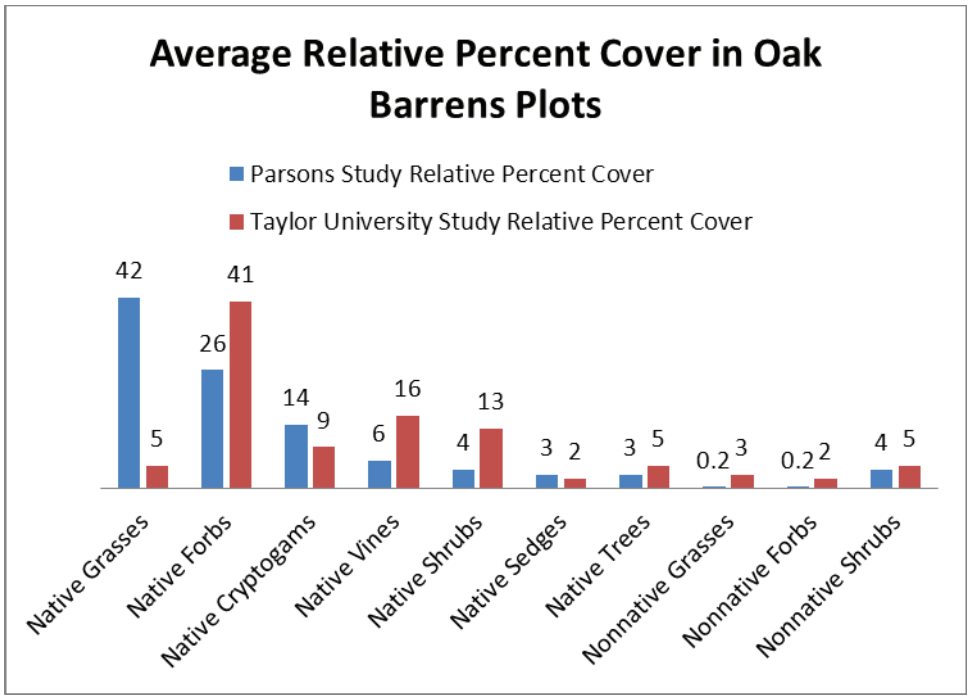


Physiognomic Classes

The ground layer plant community of oak barrens is a mix of graminoides and forbs with scattered occurrences of other physiognomic classes. Relative cover is an expression of the percent coverage of each physiognomic class in relation to total vegetative cover (excluding bare ground). Native grasses had the highest relative cover in the sample area at roughly 42%, followed by native forbs at roughly 25% and cryptogams at 14%. The Taylor University study showed a significant difference in relative cover values with native forbs at 41% and native grasses at 5%. Standards for measuring the quality of ground layer vegetation are often expressed in terms of relative cover of native forbs and will be addressed below.

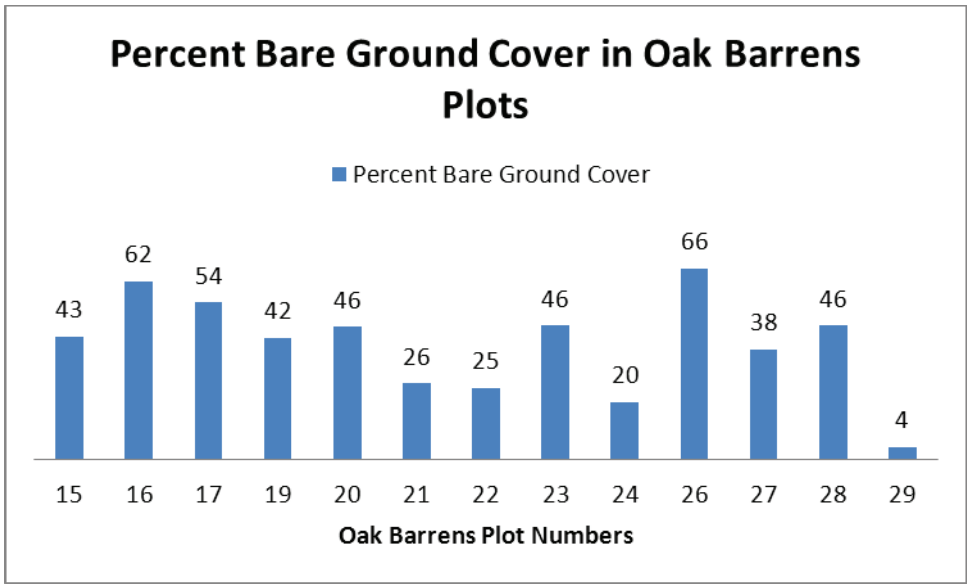
Relative cover values vary at each plot with local conditions of the microsite sampled. These variations may be natural or the result of human disturbances. Therefore, individual plot values are not expected to correlate with standards for the overall sample area.

The following chart summarizes the average relative percent cover for the two sample areas.



Bare Ground

The percent cover of bare ground varied greatly between individual plots, ranging from 4 – 66%, with an average cover of 40%. The plots with mesic components (Plots 22, 24 and 26) supported dense vegetation with lower percentages of bare ground. Plots 16 and 26 had the highest percent of bare ground with 62% and 66% respectively. These two plots were impacted by sand mining which may account for the sparse vegetation. The following chart summarizes bare ground cover in the oak barrens plots.

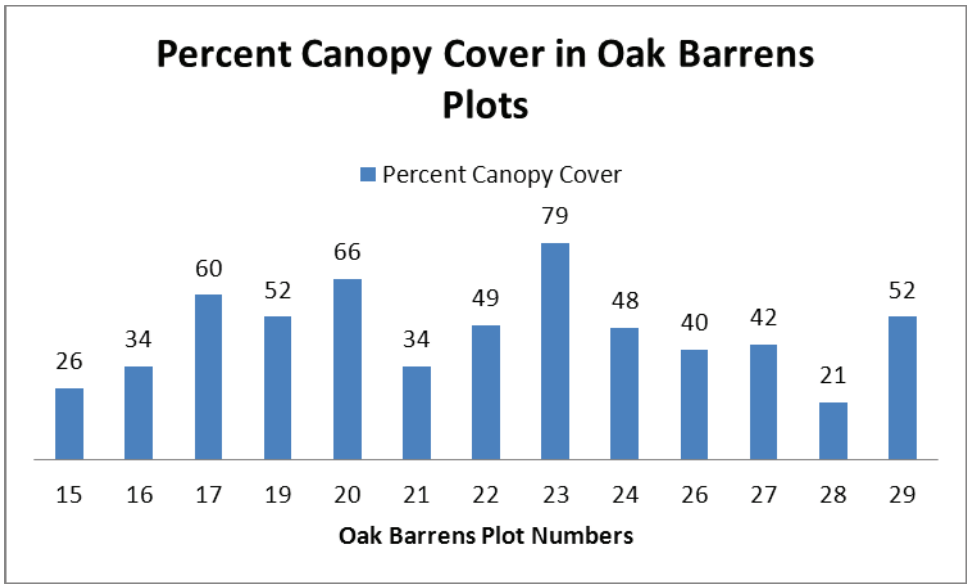


Canopy Cover

Oak barrens are a patchy community with great variability in canopy cover. Intact systems include open patches with few trees (5 – 30% canopy cover) as well as areas with a more closed canopy (30 – 80%). Canopy structure and associated habitat patch dynamics are driven primarily by fire; with hydrologic setting, climate and soil conditions as contributing factors. The open canopy and diverse herbaceous layer of the oak barrens are dependent on frequent fires. In the absence of fire, woody species spread rapidly to the exclusion of native herbaceous species.

Urban and industrial development on the Toleston strandplain has greatly reduced the frequency, spread and intensity of wildfires, resulting in a general shift in the oak barrens to a more closed canopy system with a dense understory of saplings and shrubs. A goal of TNC management efforts is to restore appropriate oak barrens structure by removing targeted shrubs, saplings and mature trees. Prescribed fires will in turn be used to maintain the restored structure. Restoration is a two-stage process; first, understory cover is significantly reduced across broad areas, and second, mature trees are removed to create large canopy gaps or reduce the percent canopy cover in targeted areas. All of the oak barrens plots have received understory treatment, but Plot 22 is the only plot where canopy thinning has occurred.

Canopy cover was measured at each of the six sampling locations within individual plots. The percent cover for individual plots is an average of these six readings and ranged from 21% to 79%. The average canopy cover for all 13 plots is 46%. The canopy was composed almost entirely of *Quercus velutina* with scattered *Quercus alba* occurring in plots with a mesic component. Overall, the canopy structure and composition of the sample area is in excellent condition. The following chart summarizes the percent canopy cover for individual upland plots.



Indiana Heritage Program Assessment Method

The Indiana Natural Heritage Program has developed a system for assessing the condition of remnant oak barrens communities as part of their efforts to track the status of biodiversity at a statewide level. Ranking criteria are based on landscape context and biotic indicators, sites are scored as Excellent, Good, Fair or Poor based on specific criteria for each attribute. The biotic indicator scores are based on the overall condition of the oak barrens community and are an average of samples taken across the entire site. The scores are then weighted, summed and averaged to give an overall rating for the site (NatureServe 2006).

None of the landscape context attributes were measured as part of this study and will not be discussed here. The only biotic indicator that was not measured in this study is relative percent cover of *Quercus spp.* in the sapling layer, all trees over ten feet were measured as canopy without distinguishing between saplings and mature trees. The average score for the biotic indicators measured in this study is 4, indicating that the sample area supports a Good Quality oak barrens community. The following tables summarize scoring for the sample area.

Ecological Attribute	**Definition**	**Excellent (5)**	**Good (4)**	**Fair (3)**	**Poor (1)**	**Sample Area Scores**
Tree Canopy Cover	Percent cover of trees >4" dbh.	10-60%	>10-60%	>60-90%	>90%	46% (5)
Percent Cover of nonnative Plant Species	Percent cover of nonnative species	<1% cover of exotic plant species	1-15% cover of exotic plant species	>15-50% cover of exotic plant species	>50% cover of exotic plant species	4% (4)

Ecological Attribute	Definition	Excellent (5)	Good (4)	Fair (3)	Poor (1)	Sample Area Scores
Canopy Composition	Relative percent cover of *Quercus* spp. in the canopy.	Relative percent cover of *Quercus* spp. is >80%	Relative percent cover of *Quercus* spp. is >65-80%	Relative percent cover *Quercus* spp. is 40-65%	Relative percent cover *Quercus* spp. is <40%	93% (5)
Herbaceous Composition	Relative percent cover of native forbs in the herbaceous layer	Relative cover of native forbs is >40-50%	Relative cover of native forbs is >30-40 % or 50-60%	Relative cover of native forbs is 20-30% or 60-70%	Relative cover of native forbs is <20% or >70%.	25% (3)
Density of Native Vegetation	percentage cover of native herbaceous species (versus bare ground)	Bare Ground is <10%	Bare Ground is 40%-10%	Bare Ground is 40%-75%	Bare Ground is >75%	40% (3)
Biotic Condition Rating		4.5 – 5.0	3.5 – 4.4	2.5 – 3.4	1.0 – 3.3	4

Discussion

Oak barrens are a mosaic of habitat patches that vary in vegetation cover based on local conditions. Consistent sampling of microhabitats is critical in assessing the overall quality of the community. This study is designed around representative soil samples not the distribution of microhabitats or plant communities. Eight of the thirteen upland plots that support oak barrens are clustered around the extreme southwestern portion of the sample area, with five plots spread out more evenly on the north ridges and extending further east into the Natural Area. The overall assessments of the oak barrens in the sample area should not be viewed as definitive, but rather as a general description that gives context to the sample plots.

The combined FQA scores for the plots indicate that the upland portion of the sample area is at least a moderately intact natural area. This assessment is based on the relative degree that sites support assemblages of conservative species. The plot data indicates that the floristic quality of ground layer plants varies across the sample area. Plots with a mesic component had higher FQA scores, accounting for some of the variation. Plots that sampled primarily xeric settings, generally, had less diversity and a higher percent of common species.

The Taylor University study showed similar FQA scores in their sample area. There was greater native species richness in the Taylor University study but lower native Mean C-Values and FQI scores than the Parsons study. The Taylor University upland sample area was larger than the Parsons sample area but included 60 quadrats compared to 78 in the Parsons study. From this, it appears the Parson study sampled a smaller area more intensively. Based on the data collected in the two studies, the Parsons sample area appears to be somewhat less diverse but at least slightly higher in floristic quality than the area sampled by Taylor University.

	Native Species	Total Species	Native Mean C	Mean C with Nonnatives	Native FQI	FQI with Nonnatives
Parsons Combined Upland Plots	77	82	4.9	4.6	43	41.6
Taylor University Upland Transects	84	98	4.5	3.9	41.6	38.5

The Indiana Heritage Program assessment for biotic indicators ranks the sample area as a good quality example of oak barrens. The canopy structure and composition are both in excellent condition. The relative cover of nonnative species at 4% is ranked as good, and is fairly consistent across the sample area. Bare ground cover at 40% is ranked as fair condition. The relative cover of native forbs at 25% is also ranked as fair. Both bare ground and relative cover of native forbs varies greatly across the sample area. Again, some of the variation can be accounted for by the presence of a mesic component. However, the relative cover of native forbs was in excellent condition in xeric plots 21 and 23.

Variations in floristic quality between plots appear to be a combination of hydrologic setting and location in the sample area. Plots that included mesic elements had the highest FQA scores and are located on the north ridges. None of the plots in the central and south ridges included mesic elements. Although the xeric plots generally were poorer in floristic quality, the two xeric plots on the northern ridges were above average for species richness, Mean C-Value and FQI score; and with over 40% relative cover of native forbs were similar to the Taylor University study.

Plot Locations

The central ridge complex is composed of two ridges somewhat divided by a poorly formed swale. Generally the dune and swale topography consists of clearly defined alternating bands of ridges and swales; in this case the swale is a series of pocket wetlands on a roughly east-west axis, leading to periodic connections of upland habitat between the two ridges. Detailed topographic mapping for the Natural Area is not available, but personal observation is that the central ridge complex is noticeably higher than other ridges at the site. These factors have produced relatively large areas of upland habitat at the extreme dry end of the hydrologic gradient. Six upland Plots (15, 16, 17, 19, 20 and 28) are located on the central ridge complex.

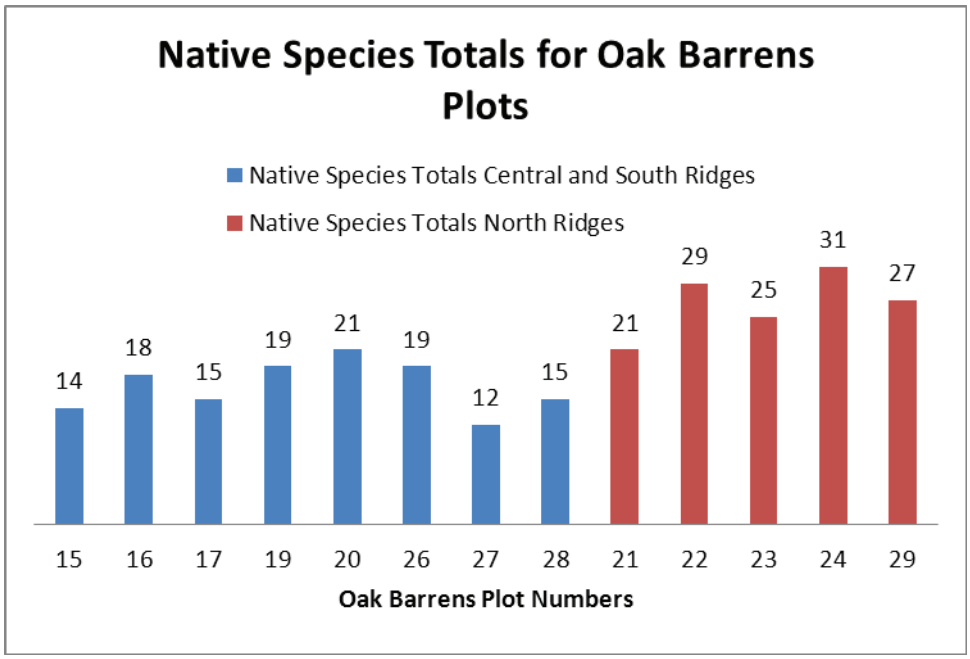
The extreme western portion of the central ridge complex was mined for sand at some point in the past. The sand mining operation created wetlands in the deeper scrapes and upland habitats where less sand was removed. The sand mined area was included in the Natural Area because there was no back-filling with nonnative material and the wetlands support a diverse mix of conservative native plants. Plot 16 is the only plot directly impacted by sand removal. Plots 15, 17, 19 and 28 are located within 100 meters of the sand mined area. Plot 20 is located furthest east on the central ridge complex, approximately 175 meters from the sand mined area. The impacts of this disturbance on current conditions are hard to assess, but plots located on the central ridge complex were among the poorest scores for species diversity, Mean C-Value, FQI, and relative cover of native forbs.

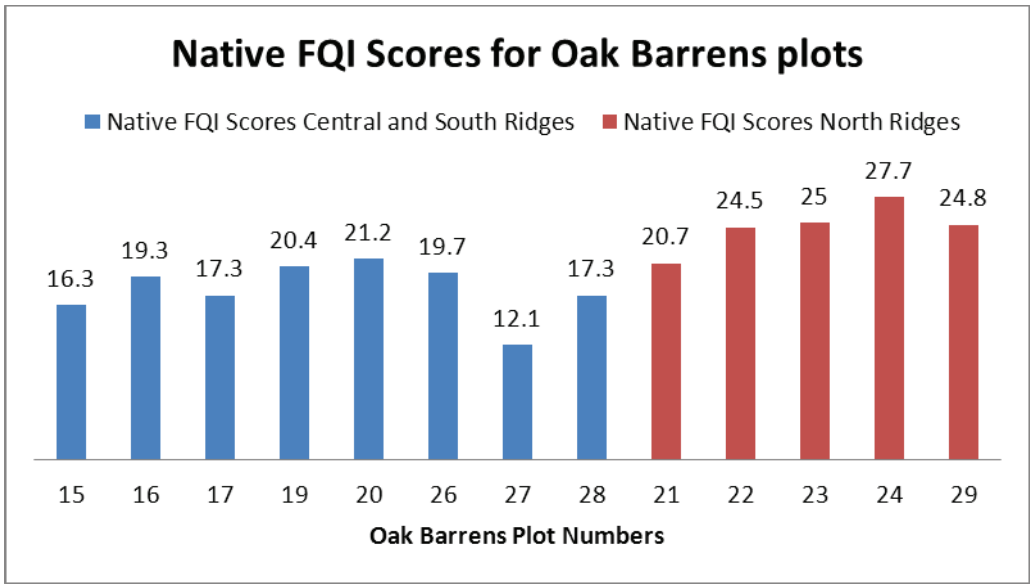
Sand was also removed from the ridge south of the central ridge complex. Plots 26 and 27 are located on the south ridge. Plot 26, adjacent to the sand mined area, had the highest percent cover of bare ground of all the upland plots. Plot 27, within 50 meters of the sand mined area, had the lowest native species total, Mean C-Value, and FQI score of all the upland plots.

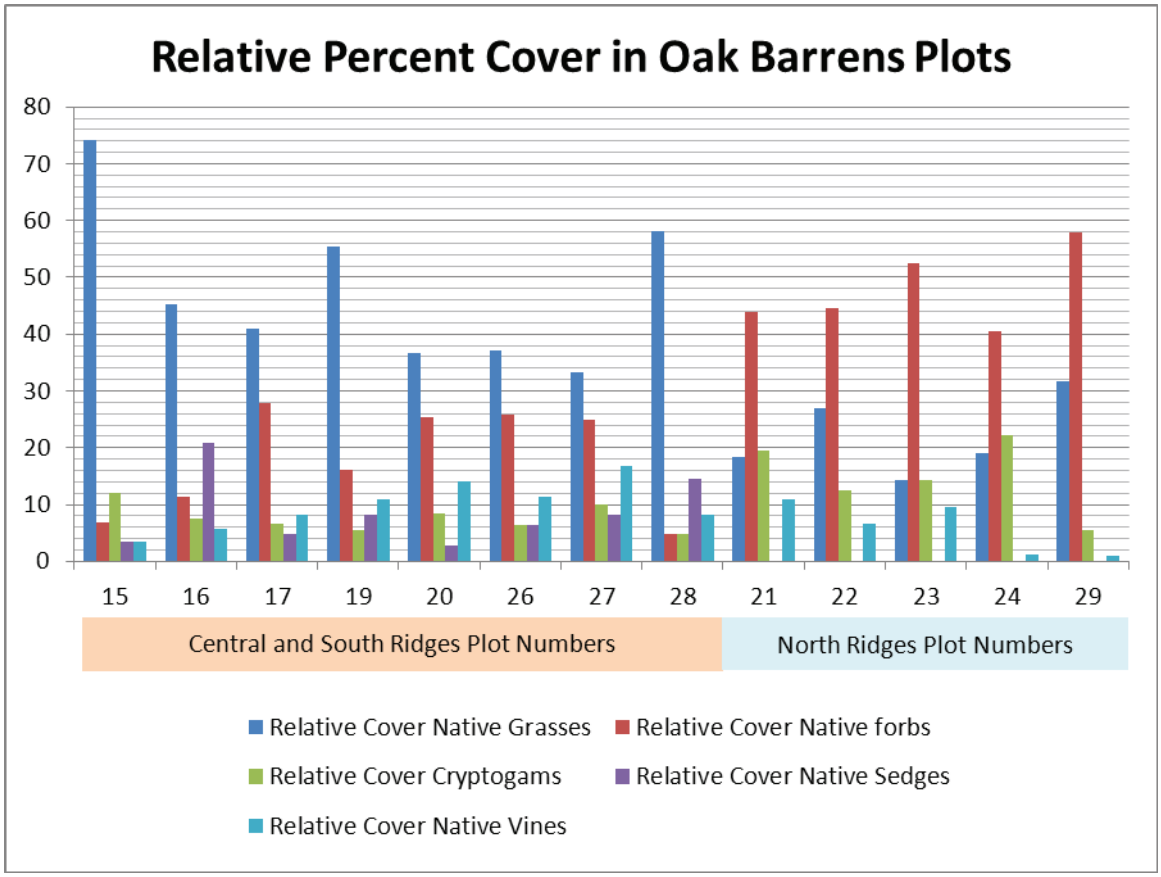
The eight plots located on the central ridge complex and south ridge were the poorest quality plant communities in the sample area. They included all seven of the upland plots at or below average in native species diversity, all seven of the plots below the average FQI, and were the only plots with a higher percent relative cover of grasses than forbs. Plot 20 at 21 native species was one above the average of 20, and had an FQI score of 21.2 which is above the average of 20.5. On average the eight most frequent native species made up 48% of the native species totals in these plots.

By contrast, the north ridges are relatively lower in elevation, leading to a larger percent cover of mesic habitats and lower percent cover of habitat at the extreme dry end of the of xeric setting. The plots on the north ridges were higher in floristic quality, with above average native species diversity and FQI scores; and all five plots had greater than 40% cover of native forbs. On average the eight most frequent species made up 24% of the native species totals in these plots.

The following charts illustrate the differences between the central and south ridges and north ridges.







The Taylor University study included four upland transects distributed across the middle and eastern portion of the Natural Area, with no overlap of the Parsons sample area. Transects #1 and #2 are located on the central

ridge complex, with #3 and #4 on the north ridges. The following tables summarize FQA scores and relative cover of nonnative species, native forbs and native grasses.

Taylor University Upland Transects	Transect 1	Transect 2	Transect 3	Transect 4
Native Species	38	49	46	50
Total Species	45	55	53	61
Native Mean C	4.2	4.9	3.7	4.5
Mean C with Nonnatives	3.5	4.3	3.2	3.7
Native FQI	25.8	34.1	25.4	32
FQI with Nonnatives	23.7	32.2	23.6	28.9
Nonnative Cover	14.4%	6.4%	8.4%	9.3%
Native Forbs Cover	28.4%	47.3%	47.1%	39.3%
Native Grasses Cover	9.7%	5.9%	2.7%	2.5%

Transect 1 is located at the extreme southeast section of the Natural Area approximately 670 meters east of Parsons plots. This portion of the Taylor University sample area had the lowest native species diversity and highest relative cover of nonnative species. When TNC initiated management of this area in 2001 it was in very poor condition, the understory was a dense thicket of *Rhamnus franguala* and *Lonicera spp.* with a closed canopy. Since then, the understory has been cleared and extensive canopy thinning has occurred. Current canopy cover from the Taylor University study was estimated at 66%.

Transect 1 is similar to the Parsons plots located on the central and south ridges in native diversity but has a higher relative cover of nonnative species and lower FQA scores. The degraded condition of the plant community at Transect 1 is probably due in part to the extensive cover of invasive species and poor understory and canopy conditions that existed prior to TNC management. It should also be noted that the level of invasive species cover in the Parsons sample area was much lower prior to TNC management.

Transect 2 is located approximately 160 meters east of the Parsons plots on the central ridge complex. It had the highest FQA scores of the four transects. Understory and canopy clearing took place in this section of the Natural area in 2000, but was in relatively good condition prior to TNC management efforts. Current canopy cover from the Taylor University study was estimated at 55%. The plant community represented by Transect 2 had roughly one-third more native species and higher FQA scores than Transect 1 and the Parsons plots.

Differences in sample design make direct comparisons between the two studies difficult. The central and south ridges, including the sand mined area, cover approximately 43 acres. The eight Parsons plots cover an area of approximately 8 acres and included 48 quadrats. The Taylor University transects were 100 meters long with 15 quadrats sampled for each, and were located approximately 410 meters apart. Comparisons between the two studies should be qualified with the following points. First, the Parsons study sampled a relatively small area at the extreme west end of the central and south ridges; while the Taylor University transects sampled two isolated habitat patches in the middle and eastern portions of the central ridges. Second, the combined FQA

scores for the Parsons Plots represent 48 quadrats, while the Taylor University transects represent 15 quadrats each.

The following table summarizes species totals and FQA scores for the Parsons plots located on the central and south ridges and Taylor University Transects 1 and 2.

Central and South Ridges	Native Species	Total Species	Native Mean C	Mean C with Nonnatives	Native FQI	FQI with Nonnatives	Average Native Species per Quadrat
Parsons Study	37	41	4.9	4.4	29.9	28.4	8
Taylor University Transect 1	38	45	4.2	3.5	25.8	23.7	8
Taylor University Transect 2	49	55	4.9	4.3	34.1	32.2	13

The relative cover of native grasses in the Parsons plots on the central and south ridges averages 63% with native forbs at 12%. Native forbs account for the highest percent of relative cover in Transects 1 and 2 with 28% and 44% respectively. Relative cover of native grasses in Transects 1 and 2 is significantly lower than the Parsons plots. Given the available data, it appears that the grass dominated herbaceous layer is restricted to the western portion of the central and south ridges.

Central and South Ridges	Relative Cover Native Grasses	Relative Cover Native Forbs
Parsons Study	63%	12%
Taylor University Transect 1	10%	28%
Taylor University Transect 2	15%	44%

Taylor University Upland Transect 3 is located on the same north ridge as Parsons Plots 21, 22 and 23. Upland Transect 4 is located on the same north ridge as Parsons Plots 24 and 29. Both transects were located at the eastern end of their respective ridges. The two studies sampled the same number of quadrats (30) on the north ridges. However, the Parsons plots were spread out across a larger sample area, potentially sampling a wider range of microhabitats. By contrast, the Taylor University transects sampled isolated habitat patches more intensively. The Parsons plots were lower in species diversity but slightly higher in FQA scores. The relative cover of native forbs in both studies is in excellent condition according to the Indiana Heritage assessment system.

North Ridges	Native Species	Total Species	Native Mean C	Mean C with Nonnatives	Native FQI	FQI with Nonnatives
Parsons Study	57	61	4.9	4.6	37.4	36.1
Taylor University Transect 3 & 4	65	78	4.2	3.5	33.6	30.7

North Ridges Relative Cover	Native Grasses	Native Forbs	Native Shrubs	Native Vines	Native Cryptogams
Parsons Study	23%	48%	3%	6%	14%
Taylor University Transect 3 & 4	3%	42%	16%	10%	10%

Conclusions on the Oak Barrens Plots

The FQA scores and Indiana Heritage Assessment Method indicate that the oak barrens community within the sample area is in moderately good condition. But there is significant variation in the floristic quality of the plots. Plots located on the central and south ridges had low species diversity and FQI scores and were dominated by grasses and common species. By comparison, the plots on the north ridges were of better quality, with higher species diversity and FQI scores, higher relative cover of native forbs, and less total percent cover of common species.

Overall the Parsons sample area compared favorably with the Taylor University sample area. But again the Parsons plots that were located on the central and south ridges were lower in species diversity and FQI scores than the Taylor University sample area. Transect 2 of the Taylor University study, located on the central ridge complex, had significantly higher species diversity and FQA scores than the Parsons plots located on the central and south ridges. Transect 1, also located on the central ridge complex, was slightly more diverse than the Parsons plots but had lower FQA scores and higher coverage of nonnative species. Samples from the north ridges indicate that the Parsons study was lower in overall diversity but had higher FQA scores and a lower number of nonnative species.

Plot 25

Plot 25 is located on the only known area of fill in the sample area. The fill area can be seen on the 1949 aerial photographs with no further fill activities on subsequent aerials. It appears to be an abandon slag dump just under an acre in size. The plant community can best be described as a mix of native species with a slightly mesic character and heavy infestation of *Rhamnus franguala*. The canopy is dominated by *Populus tremuloides* with a thick understory of native and nonnative shrubs. The above average native species total and relatively high FQA scores are reflective of the diverse mix of species that have colonized the area.

Wetlands

Back Ground

Prior to the introduction of invasive species, the swales at the Natural Area supported a mosaic of natural communities that ranged from wet prairie and sedge meadow in shallow areas to emergent marsh and submergent wetlands in the deeper portions . The zonation of these communities fluctuated over time with changes in the hydrologic setting associated with the levels of Lake Michigan.

All of the wetland plant communities at the Natural Area have been impacted to some degree by invasive species. The design of this study is based on collecting soil samples from the deeper portions of the swales

which historically supported emergent marshes with submergent zones. This is also the habitat for three of the most wide spread invasive species in the Natural Area; *Phragmites australis, Thypha spp.* and *Lythrum salacaris.* Based on personal observation, the distribution of these three species appears to be related to depth of water and period of inundation. *Phragmites australis* is generally densest in the shallower emergent marsh zones, while *Thypha spp.* occupies slightly deeper portions of the swales. *Lythrum salacaris* appears to have the widest range but does not compete well against the two other weeds and is generally densest along the margins of the swales. In recent years, high water levels in spring and early summer appear to have suppressed the growth of all three weeds in the deepest portions of the swales.

TNC began wetland weed control on targeted wetlands in 2002. The approach has been to use broadcast spraying to reduce the cover of large stands with follow up treatments in subsequent years to prevent re-infestation. TNC has tried to pace weed management to balance the expansion of treatment zones with the need to implement appropriate follow up based on available resources. As invasive species coverage has been reduced, native species have colonized the post treatment zones. No attempt has been made to enhance the process of re-vegetation through seeding or planting.

Current vegetative cover in the swales is either dense stands of weeds in untreated areas or a mix of native and nonnative species colonizing post herbicide treatment zones; neither of these settings supports plant communities that resemble an intact natural community. Areas in the swales that support wet prairie and sedge meadow are generally in better condition with higher native species diversity but were not sampled in this study.

Plot Locations

Wetland plots are located in the western portion of all seven intact swales at the Natural Area. In addition, two plots (13 and 14) are located in pocket wetlands on the central ridge complex.

Plots 34 - 37 are located in the large swale at the extreme north end of the Natural Area. Plots 34, 35, and 36 are located near the interface of the swale and the old manufacturing site's landfill and support dense stands of *Phragmites australis*. Plot 37 is located in a deeper portion of the swale with less dense vegetation. This swale has not received weed management.

Plots 6, 7, 8, and 9 are located in the large swale that runs through the middle of the Natural Area. Plots 6, 7, and 8 are dominated by dense stands of *Phragmites australis*. Plot 9 is located in a deeper portion of the swale with less dense vegetation. The eastern half of this swale has received herbicide treatment but the plots are all located in the unmanaged portion.

Plots 31, 32, and 33 are located in the large swale in the southern portion of the Natural Area. This swale has not received herbicide treatment and all three plots are covered by dense stands of *Phragmites australis*.

Plots 10, 11 and 12 are located in two narrow but relatively deep swales in the northern portion of the Natural Area. Prior to management these swales supported a mix of *Thypha spp*. and open water with *Phragmites australis* on the margins and western end. Initial herbicide treatment began in 2005 but there has been limited

follow up in the subsequent years. Plots 10 and 11 have very little vegetative cover. Plot 12 is located in an area that has not received herbicide treatment and supports a dense stand of *Phragmites australis*.

Plots 1 – 5 are located in the swale north of the central ridge complex. Prior to management this swale was covered by a dense stand of *Phragmites australis*. Herbicide treatment began in 2002 with consistent follow up since 2005. Plot 1 covers an area at the western end of the swale that has not received treatment and is covered by a moderately dense stand of *Phragmites australis*. Plots 2 – 5 are in managed areas and support a limited group of native and nonnative species that are re-colonizing the swale.

Plots 18 and 30 are located in the swale south of the central ridge complex. Prior to management this swale supported dense stands of *Thypha spp*. with intermixed smaller stands of *Phragmites australis* and scattered *Lythrum salacaris*. Herbicide treatment began in 2002 with consistent follow up since 2005. Currently the two plots support a limited group of native and nonnative species that are re-colonizing the swale.

Plots 13 and 14 are located in pocket wetlands at the western end of the central ridge complex. Prior to management these wetlands were dominated by *Thypha spp*. with small patches of *Phragmites australis* and scattered *Lythrum salacaris* intermixed. Herbicide treatment began in 2005 with consistent follow up in subsequent years. Currently the two plots support a limited group of native and nonnative species that are re-colonizing the wetlands.

Floristic Quality Assessments

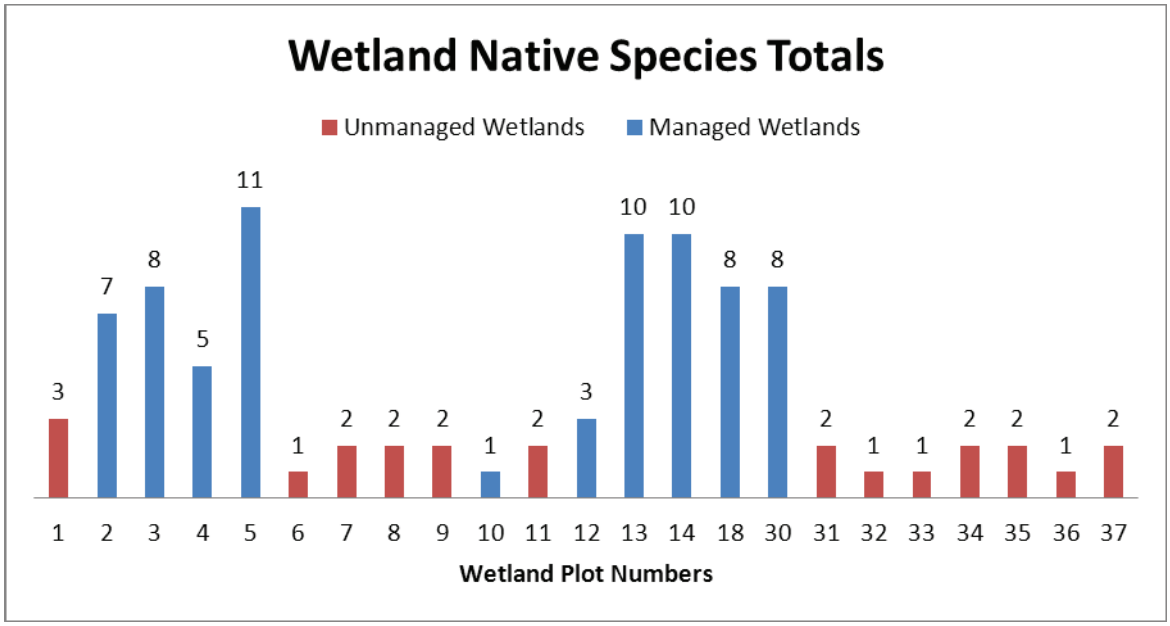
The combined FQA scores for managed plots were higher than the unmanaged plots, but neither approaches the thresholds for even a marginally intact natural area. The combined managed plots totaled 22 native species with an average of 7 per plot, and a native FQI of 19.6 with an average score of 10.3. The combined unmanaged plots totaled 5 native species with an average of 2 per plot, and a native FQI of 8.9 with an average score of 3. The following table summarizes the FQA score for the wetland plots with average scores per plot.

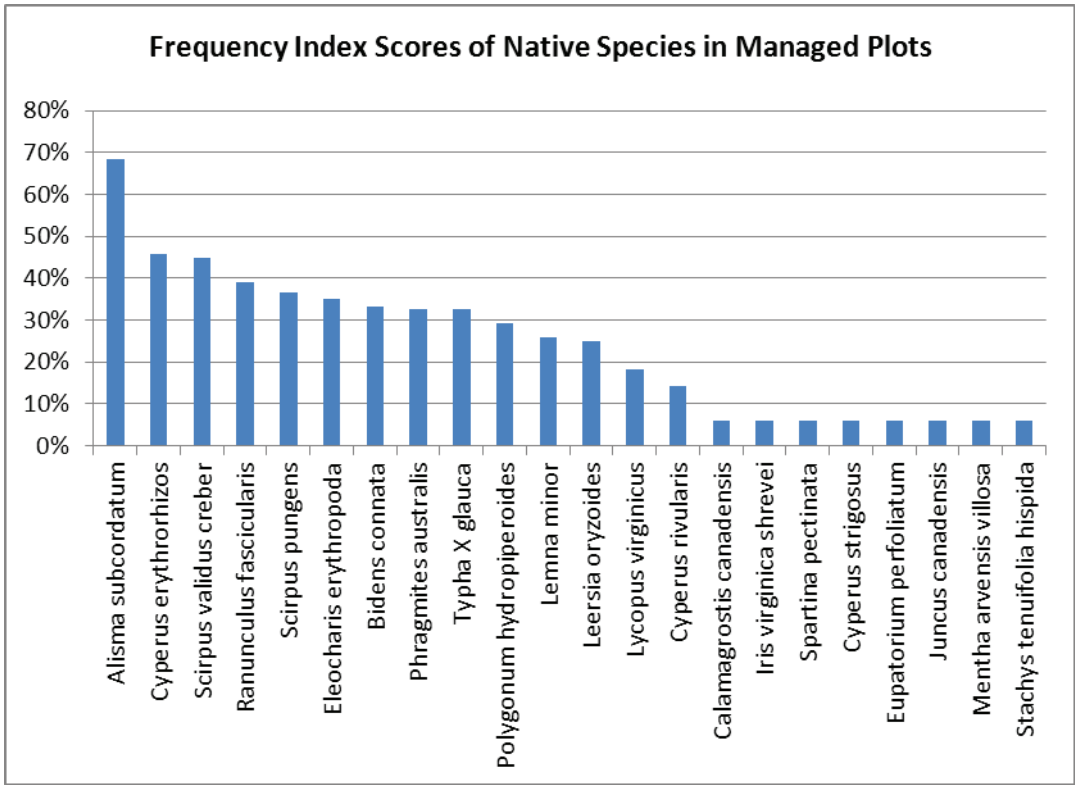
Wetland Plots	Native Species	Nonnative species	Native Mean C	Mean C with Nonnatives	Native FQI	FQI with Nonnatives
Managed Plots	22	1	4.3	4.1	20	19.6
Average per Plot	7	<1	4	3.7	10.3	9.9
Unmanaged Wetland Plots	5	1	4	3.3	8.9	8.2
Average per Plot	2	<1	2.2	2.1	3	3

Distribution of Native species

Five native species were encountered in the unmanaged plots, of these *Phragmites australis* was by far the most dominant, occurring in all of the plots and all of the quadrats. *Lemna minor* occurred in 35 quadrats and 6 plots. The other three species each occurred in single quadrats.

The managed plots totaled 22 native species, of these *Alisma subcordata* was the most common, occurring in 34 quadrats and 8 plots with a Frequency Index score of 68. The remaining 21 species occurred in less than half of the quadrats and plots with Frequency Index scores below 46. The following graphs summarize native species distribution and Frequency Index scores for native species in the managed plots.



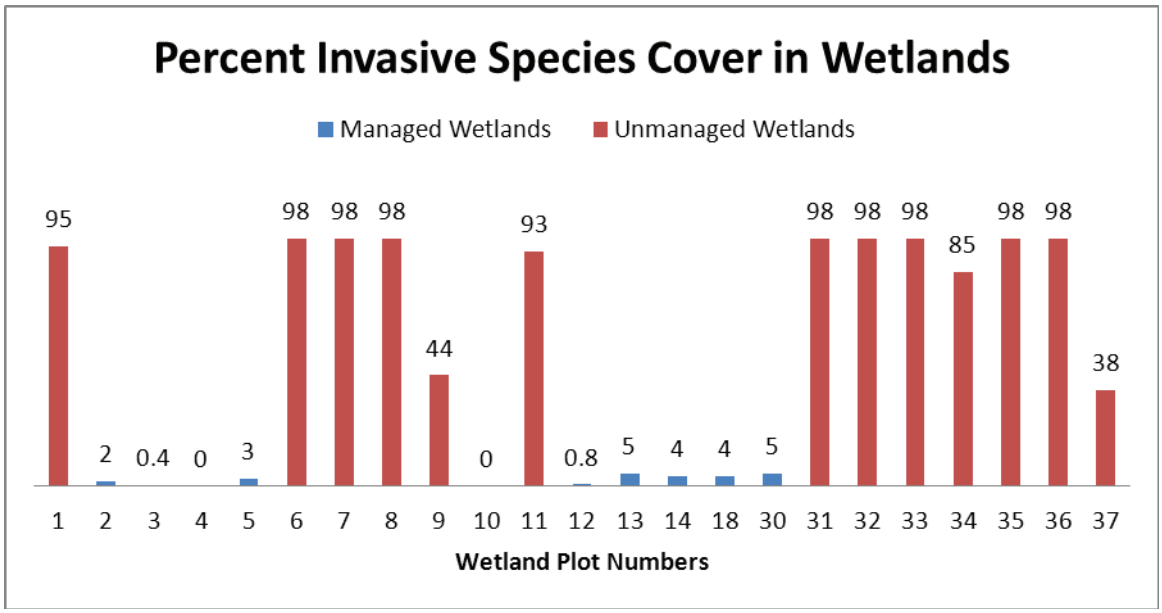


Invasive Species

Three Invasive species were encountered in the wetland plots, *Phragmites australis, Thypha x glauca* and *Lythrum salacaris,* of which only *Lythrum salacaris* is considered as nonnative in the Floristic Quality Assessment Computer Applications. Invasive species cover ranged from 38 – 98% in the unmanaged plots averaging 88% cover per plot. In the managed plots, invasive species cover ranged from 0 – 5% with an average cover of 2%.

Phragmites australis was the dominant invasive in the unmanaged plots, occurring in all 78 quadrats. *Lythrum salacaris* was encountered as scattered plants in only 1 of the plots. *Typha x glauca* was not encountered in the unmanaged plots. The relative cover of invasive species in the unmanaged plots was over 99% *Phragmites australis* and less than 1% Lythrum *salacaris.*

All three invasive species were present in the managed plots but occurred as scattered individuals on average accounting for 2% of the vegetative cover. *Lythrum salacaris* was the most common appearing in 7 of the 10 plots. *Phragmites australis* occurred in 5 plots, while *Typha x glauca* occurred in 3 plots. The following chart summarizes invasive species cover in the wetland plots.



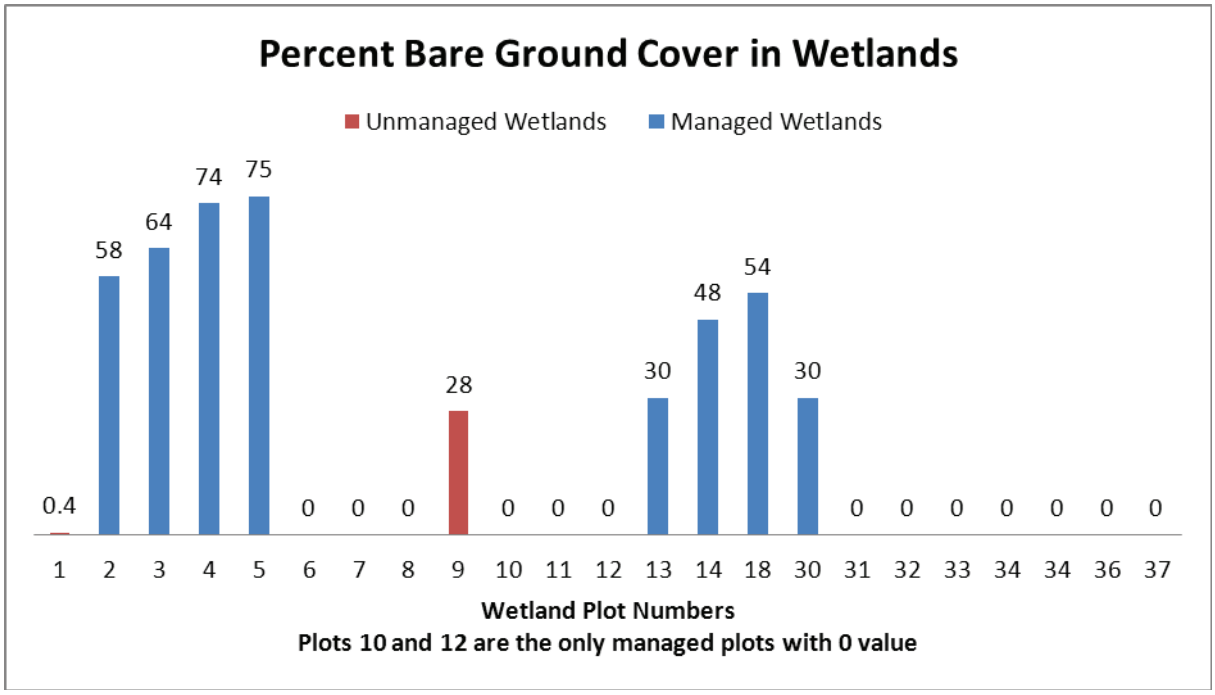
Standing Water and Bare ground in Wetlands

The percent cover of standing water in the wetlands varies dramatically with seasonal fluctuations and rainfall. The swales at the Natural Area typically hold standing water through midsummer. The draw down that follows in late summer exposes mud flats in non-vegetated areas, which were recorded as bare ground. The vegetation surveys were done in September 2011, as a result standing water was observed in only 5 of the 23 wetland plots, while 8 plots had significant measures of bare ground. During a site visit in October that followed a heavy rain, standing water was observed in plots 18 and 30 which were dry at the time of sampling. Had sampling

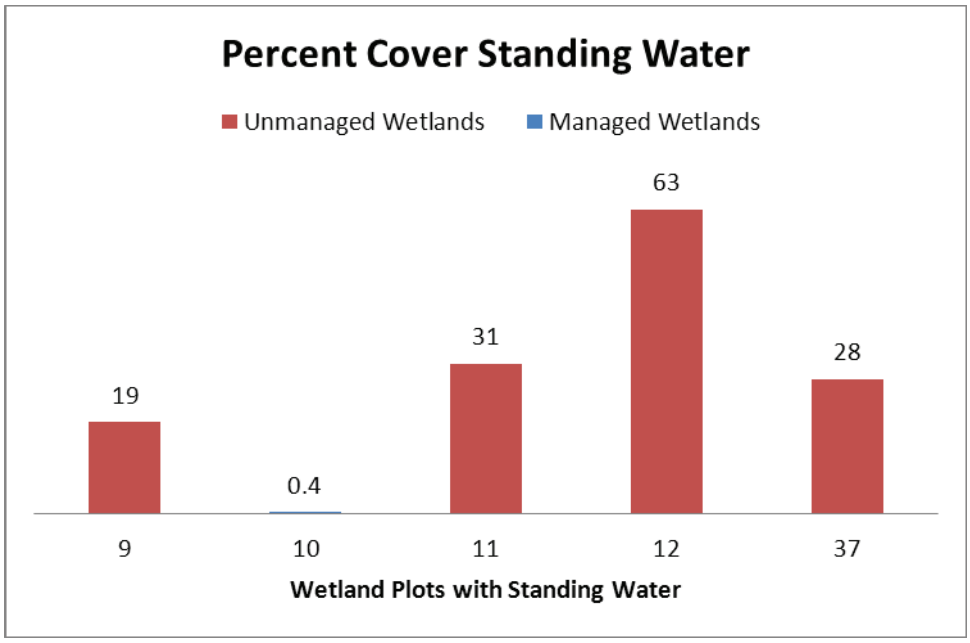
occurred after a heavy rainfall or earlier in the growing season, the bare ground (Plot 18=54%, Plot 30=30%) would have been recorded as standing water. When looking at the data compiled in this study, it should be remembered that it is a snapshot of a dynamic hydrologic regime.

Eleven of the thirteen unmanaged plots had no bare ground cover, for most of the plots this was due to the dense stands of *Phragmites australis*. Plots 37 had relatively low coverage of *Phragmites australis* but the ground surface was thickly covered with *Lemna minor*. Plot 9 was a mix of *Phragmites australis, Lemna minor* bare ground and standing water.

The managed plots had higher percentages of bare ground, ranging from 0 – 75%. Plots 10 and 12 had no exposed bare ground because of the thick cover of *Lemna minor*. The high percentage of bare ground in the remaining eight plots (30 – 75%) is most likely due to seasonal draw down of surface water exposing mud flats. In some cases *Cyperus spp.* and *Ranunculus fiscicularis* were colonizing the exposed ground. The following chart summarizes bare ground cover in the wetland plots



Standing water was documented in only five of the thirteen plots and ranged from less than 1% to 63% cover. The following chart summarizes standing water in the five wetland plots.



Taylor University Study

The Taylor University study included four wetland transects located in the middle and eastern portions of the Natural Area. The study was designed to sample only portions of the swales that have a history of management. The transects are all located in swales that were sampled in the Parsons study, the only overlap of sample areas is between Transect 4 and Parsons Plot 30.

The combined Taylor University transects were higher in native species diversity and FQA scores than Parsons managed wetland plots. Comparisons between the two studies should be qualified with the following points. Unlike the Parsons plots, the Taylor University samples were not restricted to the deeper portions of the swales, allowing for the inclusion of wet prairie and sedge meadow in some cases. The Taylor University study sampled the same number of quadrats as the Parsons managed plots, but along 100-meter transects that potentially covered a wider variety of microhabitats.

	Native Species	Nonnative species	Native Mean C	Mean C with Nonnatives	Native FQI	FQI with Nonnatives
Transect 1	5	1	4.6	3.8	10.3	9.4
Transect 2	15	1	5.4	5.1	20.9	20.3
Transect 3	13	2	4.3	3.7	15.5	14.5
Transect 4	18	1	4.1	3.8	17.2	16.7
Taylor University Study	34	2	5	4.7	29.2	28.3
Parsons Combined Managed Plots	22	1	4.3	4.1	20	19.6

Transect 1 had the lowest species diversity and FQA scores in the Taylor University study area, with only 5 native species and a native FQI of 10.3. It is located in the same swale as unmanaged Parsons Plot 12. This is a relatively deep swale that was dominated by *Thypha spp.* prior to treatment and has been slow to re-vegetate.

Transect 2 totaled 15 native species and had the highest native Mean C-Value and FQI score. It is located in the same swale as unmanaged Parsons Plots 6 – 9 but at the eastern end where management has greatly reduced the cover of invasive species. This transect covered a wide range of microhabitats including sedge meadow and open water.

Transect 3 was located in the same swale as managed Parsons Plots 2 – 5. The Parsons plots had slightly higher species diversity and FQA scores.

Managed Wetland Plots	Native Species	Nonnative species	Native Mean C	Mean C with Nonnatives	Native FQI	FQI with Nonnatives
Parsons Plots 2 - 5	15	1	4.4	4.1	17	16.5
Taylor University Transect 3	13	2	4.3	3.7	15.5	14.5

Transect 4 was located in the same swale as Parsons plots 18 and 30, overlapping the later. It had significantly higher species diversity and FQA scores than the Parsons plots. The 100-meter transect included three more quadrats than the combined Parsons plots and covered patches of sedge meadow which probably account for the differences.

Managed Wetland Plots	Native Species	Nonnative species	Native Mean C	Mean C with Nonnatives	Native FQI	FQI with Nonnatives
Parsons Plots 18 & 30	10	1	2.9	2.6	9.2	8.7
Taylor University Transect 4	18	1	4.1	3.8	17.2	16.7

Discussion

The introduction and spread of invasive species in the dune and swale system is not well documented. *Typha latifolia* is native to the area, but there is debate as to whether or not *Typha angustifolia* and *Typha x glauca* are introduced species. Pepoon mentions “marshes of cat-tail (*Typha*), bur-reed, sedges and similar species” in his 1927 descriptions of the flora of the dune and swale east of the Natural Area (Pepoon 1927). Personal communications with local residents indicate the marshes along the Grand Calumet were solid stands of *Typha spp.* as early as the 1950s.

Discussions with local land managers indicate that the nonnative strain of *Phragmites australis* began to appear and spread through the dune and swale sites beginning in the mid-1980s. This correlates with a steady drop in Lake Michigan water levels that lowered the ground water table and changed the hydrologic setting of the swales. A similar pattern of invasion was documented in Lake Erie coastal wetlands during the 1990s (Whyte 2008). Currently it is the dominant weed in most of the unmanaged marshes in the dune and swale system.

Invasive species have had a significant impact on the wetland plant communities in this study. The existing stands of invasives in unmanaged areas give a picture of the general condition of the emergent marsh communities prior to TNC management efforts. The group of species colonizing the managed emergent zone is primarily composed of native species but does not approach the thresholds for even a marginally intact natural area. The current community is probably best described as an early successional stage in the process of restoring native species to the site.

TNC management efforts have focused on reducing the cover of invasive species but there have not been attempts to enhance the post-treatment plant communities through seeding or planting. The current communities are a result of the existing seed bank and the ability of species to disperse into the treatment zones.

The long-term presence of *Typha* is known to suppress the native seed bank (Mason personal communication), making it an unreliable source for establishing diverse native communities in the post- herbicide areas. The extensive spread of invasive species over the past several decades has severely reduced the cover of native marsh community types in the Natural Area and surrounding dune and swale sites. As a result there are limited areas of natural marsh to serve as refugia for native plant species. These two factors place limitations on the quality of the plant communities that are colonizing the managed wetlands at the Natural Area.

Variations in the quality of plant communities in the managed plots are probably a result of differences in local settings combined with the history of management efforts. It is useful to look at the plots in groups as they occur in individual swales.

Plots 2 – 5 are located in the swale immediately north of the central ridge complex. Weed management began in 2002, prior to that this swale was dominated by dense stands of *Phragmites australis*. As a group these plots scored the highest of the managed swales and slightly higher than the Taylor University transect located in the same swale.

Plots 10 and 12 are located in a swale in the northern portion of the Natural Area. This swale is relatively narrow and deep. Prior to management it supported dense stands of *Typha spp.* with stands of *Phragmites australis* along the margins. This swale has received limited herbicide treatment since 2005 and has been slow to re-vegetate. There was only one non-invasive native species in the plots, leading to the lowest FQA scores of all the managed swales.

Plots 18 and 30 are located in the swale immediately south of the central ridge complex. Weed management began in 2002, prior to that this swale was dominated by dense stands of *Typha spp.* with large intermixed patches of *Phragmites australis*. The FQA scores are relatively low when compared to other wetlands with a similar management history. The Taylor University Transect 4 overlapped sampled areas with these plots but scored much higher. This was probably a result of Transect 4 having sampled in part the sedge meadow component of the swale which is in much better condition.

Plots 13 and 14 are located in pocket wetlands on the central ridge complex. Weed management began in 2005, prior to that these wetlands were dominated by dense stands of *Typha spp.* with small intermixed patches of *Phragmites australis* and scattered *Lythrum salacaris*. The FQA scores are similar to Plots 2 – 5.

The following table summarizes species diversity and FQA scores of plots grouped by the wetlands they occur in.

Managed Wetland Plots	Native Species	Nonnative species	Native Mean C	Mean C with Nonnatives	Native FQI	FQI with Nonnatives
Parsons Plots 2 - 5	15	1	4.4	4.1	17	16.5
Parsons Plots 10 & 12	3	0	2.3	2.3	4	4
Parsons Plots 18 & 30	10	1	2.9	2.6	9.2	8.7
Parsons Plots 13 & 14	13	1	4.7	4.4	16.9	16.3

Conclusions on the Wetlands

Thirteen of the plots are located in unmanaged sections of the swales. The plant communities in these areas are in very poor condition because of the extensive cover of *Phragmites australis*. The only apparent control of density is the depth of water and period of inundation.

Plant communities in the managed plots were occupied by a limited group of native and nonnative species that have colonized the post-herbicide treatment zones. The FQA scores for these plots do not approach the thresholds for even a marginally intact natural area. Historic infestations of invasive species have degraded the native seed bank and greatly reduced the range of other nearby seed sources, limiting the potential for recovery of native plant communities in the managed swales.

Variations in the quality of plant communities in the managed plots are probably the result of differences in local setting and the history of management efforts. The wetlands represented by Plots 2, 3, 4, 5, 13 and 14 support plant communities that are typical for post- herbicide treatment zones. Plot s 18 and 30 are of lesser quality than other plots with a similar management history. Plots 10 and 12 were the lowest quality of all the managed plots with only one non-invasive native species present. They are located in a swale that is relatively deep and received less consistent herbicide treatment than the other managed plots.

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Appendix A

Frequency Index for Upland Plots

The Index of Frequency is an average of two measures, the percentages of quadrats and plots occupied by an individual species, giving equal weight to each. The following table summarizes Index of Frequency scores for the 76 species encountered in the upland plots.

FREQUENCY INDEX for Upland Plots

	Quads Occupied	Percent of Quads Occupied	Plots Occupied	Percent of Plots Occupied	Frequency Index
Equisetum hyemale	63	81%	13	100%	90%
Andropogon scoparius	57	73%	12	92%	83%
Smilacina stellata	55	71%	13	100%	85%
Rhus radicans	51	65%	11	85%	75%
Sorghastrum nutans	47	60%	13	100%	80%
Panicum oligosanthes scribnerianum	35	45%	12	92%	69%
Koeleria cristata	32	41%	9	69%	55%
Euphorbia corollata	31	40%	12	92%	66%
Carex brevior	19	24%	7	54%	39%
Andropogon gerardii	18	23%	7	54%	38%
Solidago gigantea	16	21%	4	31%	26%
Aster azureus	14	18%	4	31%	24%
Calamovilfa longifolia magna	14	18%	6	46%	32%
Vitis riparia	13	17%	7	54%	35%
Comandra umbellata	12	15%	5	38%	27%
Solidago altissima	11	14%	3	23%	19%
Helianthus divaricatus	10	13%	3	23%	18%
Panicum virgatum	10	13%	6	46%	29%
Prunus serotina	10	13%	7	54%	33%
Rosa carolina	9	12%	5	38%	25%
Solidago missouriensis fasciculata	9	12%	5	38%	25%
Lithospermum croceum	8	10%	3	23%	17%
Maianthemum canadense interius	8	10%	5	38%	24%
Pedicularis canadensis	8	10%	4	31%	21%
Solidago canadensis	8	10%	3	23%	17%
Apios americana	7	9%	2	15%	12%
Cyperus filiculmis	7	9%	4	31%	20%
Desmodium canadense	7	9%	5	38%	24%
Fragaria virginiana	7	9%	3	23%	16%
Calamagrostis canadensis	5	6%	2	15%	11%
Cyperus schweinitzii	5	6%	4	31%	19%
Juncus balticus littoralis	5	6%	3	23%	15%
Carex pensylvanica	4	5%	3	23%	14%
Coreopsis tripteris	4	5%	1	8%	6%
Muhlenbergia glomerata	4	5%	1	8%	6%
Phlox pilosa	4	5%	2	15%	10%
Baptisia leucantha	3	4%	2	15%	10%

Elymus canadensis	3	4%	3	23%	13%
Helianthus grosseserratus	3	4%	1	8%	6%
Lathyrus palustris	3	4%	2	15%	10%
Liatris spicata	3	4%	2	15%	10%
Muhlenbergia mexicana	3	4%	3	23%	13%
Pteridium aquilinum latiusculum	3	4%	2	15%	10%
Rubus pensilvanicus	3	4%	2	15%	10%
Salix amygdaloides	3	4%	2	15%	10%
Corallorhiza odontorhiza	2	3%	2	15%	9%
Cornus stolonifera	2	3%	1	8%	5%
Eragrostis spectabilis	2	3%	1	8%	5%
Hieracium canadense fasciculatum	2	3%	2	15%	9%
Monarda fistulosa	2	3%	2	15%	9%
Onoclea sensibilis	2	3%	1	8%	5%
Populus tremuloides	2	3%	2	15%	9%
Rudbeckia hirta	2	3%	2	15%	9%
Solidago graminifolia nuttallii	2	3%	2	15%	9%
Allium cernuum	1	1%	1	8%	4%
Amorpha canescens	1	1%	1	8%	4%
Arabis lyrata	1	1%	1	8%	4%
Asclepias tuberosa	1	1%	1	8%	4%
Lespedeza capitata	1	1%	1	8%	4%
Oenothera biennis	1	1%	1	8%	4%
Panicum depauperatum	1	1%	1	8%	4%
Panicum villosissimum	1	1%	1	8%	4%
Parthenocissus quinquefolia	1	1%	1	8%	4%
Phragmites australis	1	1%	1	8%	4%
Quercus velutina	1	1%	1	8%	4%
Rubus occidentalis	1	1%	1	8%	4%
Sassafras albidum	1	1%	1	8%	4%
Sium suave	1	1%	1	8%	4%
Solidago nemoralis	1	1%	1	8%	4%
Solidago riddellii	1	1%	1	8%	4%
Solidago speciosa	1	1%	1	8%	4%
Spartina pectinata	1	1%	1	8%	4%
Spiranthes cernua	1	1%	1	8%	4%
Stipa spartea	1	1%	1	8%	4%
Tephrosia virginiana	1	1%	1	8%	4%
Verbena hastata	1	1%	1	8%	4%

APPENDIX C
INTERIM REMEDIAL MEASURES TECHNICAL MEMORANDUM ON SOIL MANAGEMENT DUPONT EAST CHICAGO SITE (PARSONS 2012)

TECHNICAL MEMORANDUM

Subject: Buffer Zone Interim Remedial Measures
Soil Excavation and Management
DuPont East Chicago Site
East Chicago, Indiana

E.I. du Pont de Nemours and Company (DuPont) is implementing Interim Remedial Measures (IRMs) at the East Chicago Site as part of the corrective action program under the Resource Conservation and Recovery Act (RCRA). The IRM activities when completed will be part of the overall corrective action for the site to address the potential impacts from the presence of chemical constituents of concern (COC) in the soil. This memorandum describes:

- The extent and location of IRM activities;
- Management of excavated soil, including determination of threshold concentrations indicative of areas where excavated soil may require management as a potentially hazardous solid waste;
- Soil storage location and engineering measures to prevent soil dispersal and contaminant migration; and
- Post-excavation sampling and monitoring.

1. INTERIM REMEDIAL MEASURES DESCRIPTION

The approximately 410-acre DuPont East Chicago Site discontinued operations in 1986. The western developed area was used mainly for manufacturing purposes, while the northwest and central sections were used as waste management areas. Currently, most of the previously active manufacturing areas have been decommissioned and the production facilities have been removed. The eastern portion of the East Chicago Site, approximately 163 acres, was not developed and retained its original dune/swale geomorphology and associated plant communities. Commonly referred to as the Natural Area, this section of the East Chicago Site is currently managed by The Nature Conservancy for habitat preservation.

IRM measures were developed for implementation in and adjacent to a Buffer Zone that separates the former manufacturing and waste disposal areas from the Natural Area. The IRM objective is to minimize potential contaminant migration into sensitive habitat, and extend coverage of existing high-quality habitat. The IRM entails excavation for removal of soil containing lead, arsenic, cadmium and zinc. Finished grades at the excavation sites will be approximately two feet lower than existing grades and will be contoured to follow natural grade and existing drainage patterns. Clean offsite backfill may be installed to fill to finished grade, as needed. Erosion protection engineering controls will be installed to protect the Natural Area, stockpile areas and excavation areas. This will be an ongoing process during construction; long term erosion protection will be left in place upgradient of the excavation areas.

During construction activities, silt fence or strawbales will be placed both upgradient and downgradient of the excavation area to aid in prevention of soil eroding out of the excavation area and into the Natural Area.

Figure 1 shows excavation site locations. Ten IRM sites were initially proposed covering approximately 20.6 acres of the East Chicago Site (Sites A, B, C, D, E, F, G, G' and H). Subsequently, a data review was conducted on soil samples collected during a field survey of the Natural Area conducted in the fall 2011. The investigation characterized soil and site vegetation conditions in a total of 37 sampling plots. Based on results of this investigation, four additional IRM areas in the vicinity of the Buffer Zone were identified for excavation to reduce the potential soil contaminant migration into the Natural Area from the former manufacturing and waste disposal areas.

The proposed extension of the IRM excavation boundaries was discussed with EPA Region 5 representatives during a site visit conducted on June 5, 2012 to the East Chicago Site. Figure 1 indicates location of a new proposed IRM location (Site I), and three IRM sites where excavation boundaries would be extended (Sites C', D' and H'). Also discussed with the agency was the need to avoid excavation of an approximately 0.5 acre section of Site G' for protection of existing high quality, sensitive habitat. The combined acreage of IRM excavation sites is 22.4 acres, as listed below.

IRM Site	Total (acres)
A	1.37
B	1.99
C	2.37
C' (new)	1.1
D	4.63
D' (new)	0.39
E	2.03
F	4.74
G	1.26
G'	1.1
H	0.75
H' (new)	0.99
I (new)	0.67
Total	**22.4**

2. EXCAVATED SOIL MANAGEMENT

The excavated soil (two foot initial planned excavation depth) will be stockpiled onsite at a central storage location south of the existing solid waste landfill (Figure 1). Existing soil areas have been classified as a potentially hazardous waste or non-hazardous waste for the purpose of storage, based their metals concentration. Potentially hazardous soil will be segregated from non-hazardous on the storage area. Ultimate disposal of the soil will be described in the Corrective Measures Study (CMS).

Characteristic Hazardous Waste Determination

In order to determine the potential for a solid waste to be considered a characteristic hazardous waste, EPA developed the analytical procedure *Toxicity Characteristic Leaching Procedure* (TCLP). Test results are the basis to establish maximum acceptable TCLP concentrations for management of soil as a non-hazardous solid waste. EPA specifies TCLP threshold values of 5 mg/L for arsenic, 1 mg/L for cadmium and 5 mg/L for lead. A fact sheet of TCLP methodology and maximum acceptable TCLP concentrations based on analytical results is available at *http://www.ehso.com/cssepa/TCLP.htm*.

Results from previous soil sampling and analysis throughout the East Chicago Site were used to derive empirical threshold concentrations indicative of areas where excavated soil may require management as a hazardous solid waste, based on constituent leachability using the TCLP. The relationships between total and leachable levels of arsenic, cadmium and lead in site soils, described below, were used as the basis for these determinations.

Soil Concentration – TCLP Regression Analysis

In order to determine the total soil concentrations that could result in a sample exceeding its respective TCLP criteria, empirical linear regression equations were developed from historical total metals sampling of soil concentrations vs. TCLP values at the East Chicago Site. Log-transformed data were used in the analysis.

Table 1 lists sampling data used in the regression analysis. Data distribution diagrams and regression equations are shown in Figure 2. Regression equations from the total concentration-to-TCLP concentration data set from 27 sampling locations (84 samples) at the East Chicago Site were used as the basis to estimate threshold total concentrations with the potential to exceed TCLP criteria, as follows:

<u>Cadmium TCLP Threshold</u>

The regression equation for cadmium soil concentration has a high correlation value (n=84, R^2=0.73):

Ln (TCLP, mg/L) = 0.9594 [Ln (soil concentration, mg/kg) – 5.238]*

@ 1 mg/L maximum TCLP concentration for cadmium:

Threshold soil concentration = 235 mg/kg

<u>Lead TCLP Threshold</u>

The regression equation for lead soil concentration has a high correlation value (n=84, R^2=0.74):

Ln (TCLP, mg/L) = 1.4341 [Ln (soil concentration, mg/kg) – 10.487]*

@ 5 mg/L maximum TCLP concentration for lead:

Threshold soil concentration = 4,606 mg/kg

Arsenic TCLP Threshold

The regression equation for arsenic total and TCLP soil concentration has a low correlation value (n=84, R^2=0.39):

Ln (TCLP, mg/L) = 0.7484 [Ln (soil concentration, mg/kg) – 7.3315]*

Applying this regression equation to a 5 mg/L maximum TCLP arsenic concentration results in an elevated threshold soil concentration (154,313 mg/kg). The low correlation value is principally due to the presence of over 70% of samples in the dataset with low TCLP values, in many cases at, or near, analytical detection limits. Because TCLP screening addresses the upper end of the data distribution, samples with arsenic TCLP values less than 0.1 mg/L were excluded from the calculation. This more conservative approach results in a substantially better correlation value (n=19, R^2=0.65), and a lower arsenic threshold soil concentration. Based on the recalculated regression equation, the threshold concentration estimate is as follows:

Recalculated Arsenic TCLP Threshold

Ln (TCLP, mg/L) = 0.891 [Ln (soil concentration, mg/kg) – 6.072]*

@ 5 mg/L maximum TCLP concentration for arsenic:

Threshold soil concentration = 5,548 mg/kg

Soil Excavation at Areas Exceeding TCLP Values

Figure 3 illustrates the location of historical surface soil samples collected within the IRM sites and adjacent areas, indicating their potential to exceed threshold TCLP values. Table 2 presents analytical data on arsenic, cadmium and lead concentrations at sampling locations located within the ten initially proposed IRM sites. Samples from 8 of those locations exceeded the threshold TCLP for cadmium (235 mg/kg), and one sample exceeded the threshold for arsenic (5,548 mg/kg). The potential threshold for lead (4,606 mg/kg) was exceeded at 20 sampling locations within the initial IRM sites. Two additional samples collected from a location within IRM Site D had lead concentrations approaching the TCLP threshold (co-located samples AOI-4-29 and SPLP-27). At this location, depicted in Figure 3 with a square around the dot, soil will also be considered as potentially hazardous for the purpose of disposal based on the June 5th meeting with EPA.

Table 3 presents analytical data for samples collected from the four additional IRM sites proposed. One sample collected from Site D' (NAPLOT-02) and three samples collected from Site H' (NAT-TRENCH-2, NAT-TRENCH-3, and NA-S08) had lead concentrations approaching or above the TCLP threshold value (4,606 mg/kg). Soil collected from those four locations will also be considered as potentially hazardous for the purpose of disposal.

During IRM excavation activities, soils removed from areas where the total constituent concentrations may exceed the TCLP threshold values characteristic of a potentially hazardous will be stockpiled separately from the soils whose total constituent concentrations are below threshold concentrations. Figure 3 depicts the soil storage area which includes a segregated western section for stockpiling of potentially hazardous soil.

Around each sample predicted to potentially exceed TCLP, a 25 by 25 foot square area will be excavated. Confirmation sampling will be conducted along each excavation bottom and sidewall to assess whether the excavation is compete or must be extended further. One confirmation composite sample consisting of five sub-samples will obtained from each of the 25 foot sidewalls and analyzed for total arsenic, lead, and cadmium to assess whether the excavation of potentially hazardous waste soil is complete for that area. DuPont will document in field daily logs and the final report that the area of excavation for hazardous waste soils was properly performed, and that hazardous soils were segregated from non-hazardous soils.

3. SOIL STORAGE AREA

The soil storage area will be located just west of IRM site D, on an old concrete building foundation and asphalt pavement (Figure 3). This area will be segregated and will contain appropriate run-on and run-off controls to prevent any soils from leaving the area.

The soil storage area for the non-hazardous soils will be prepared by clearing any vegetation which will interfere with the placement of the excavated soil. The perimeter of the paved area for stockpiles will have straw bales placed around it to provide erosion protection. The non-hazardous soil piles will be consolidated, and maintained in order to minimize erosion and provide a stable soil pile. This non-hazardous soil will not have a liner placed under it, nor will it be covered with liner material. After all of the non-hazardous soil has been placed, graded, and consolidated, seed and mulch will be applied to the pile with the specified native seed mix.

In addition to the storage area for the non-hazardous soils, another separate soil storage area will be prepared for storage of soils excavated from the areas designated for excavation of potentially hazardous soils. It is anticipated that there will be less than or equal to approximately 1,000 cubic yards of potentially hazardous soils.

All potentially hazardous soils placed on this storage area will have a liner placed underneath them and be kept covered with puncture-resistance plastic sheeting material suitable to last at least one year to prevent migration of the potentially contaminated soils from the pile. The liner over the potentially hazardous soil will be secured as necessary to avoid water intrusion and to prevent the liner from being dislodged by the wind. The potentially hazardous soil storage area will also have straw bales placed around the area.

The final disposition of soils will be considered in the Corrective Measures Study (CMS) as part of the overall remediation of the East Chicago Site. DuPont may render the hazardous waste soil stockpile non-hazardous using various available treatments performed wholly within the AOC. DuPont may propose treatment technologies for use and submit a plan to EPA to demonstrate that the hazardous waste soil stockpile no longer exhibits the toxicity characteristic for arsenic, cadmium, or lead.

Because of the contiguous nature of many contamination areas resulting from past site operations, all IRM excavation sites and adjacent areas will be addressed as a single overall area of contamination (AOC). Figure 4 depicts the overall site AOC as well as historical contamination areas identified within the East Chicago Site.

4. POST-EXCAVATION SAMPLING

Post-excavation sampling will be conducted at IRM sites to verify removal of soil contaminant sources. Soil composite samples will be collected from the bottom of the excavation footprint at a rate of four samples per acre, based on discussions with EPA. Figure 5 indicates the general location of sampling locations within each IRM site. Each soil composite sample will be prepared by combining five sub-samples to provide an area-weighted average concentration. A six-inch subsample depth will be used for the excavation floor. Characterization samples will also be collected in the Buffer Zone in areas where no IRM activities are taking place in order to confirm complete spatial coverage of the Buffer Zone area (Figure 6).

The results for metal concentrations from post excavation IRM sampling locations, Buffer Zone characterization samples, and sample locations outside the IRM areas, listed in Table 2, will be evaluated and compared to the final risk-based human health and ecological numbers in the CMS. Additional remediation may be required in the IRM remediation area, Buffer Zone, and/or former manufacturing and waste disposal areas as part of the final remedy for the East Chicago Site based on this risk evaluation.

5. AIR MONITORING AND SAMPLING PLAN

Excavation, transport, and storage of contaminated soils have the potential to generate airborne dust which could migrate from the active work areas. An air monitoring plan was developed to address site and worker protection associated with concentrations of dust and constituents of concern in the work area. Monitoring will entail sampling over an 8-10 hour period corresponding to a construction day for a representative number of days over the duration of the construction work. The detailed air monitoring plan, developed as part of the Health and Safety Plan (HASP), is provided in Attachment 1.

The target compounds to be sampled are dust (PM_{10}) and contaminant metals (arsenic, lead, and cadmium). The PM_{10} is the basis for State and National ambient air quality 24-hour particulate standards. To augment the work area sampling, as well as the real-time dust monitoring, meteorological data will be continuously recorded from the beginning to the end of the remediation work using an on-site meteorological monitoring station located in a central area of the Site.

The data collection method consists of time-integrated manual air sampling using an off-site laboratory analysis of PM_{10} and $PM_{10\text{-METALS}}$. Dust samples will be collected via a low-volume sampling method, coupled with pre- and post-sampling gravimetric analyses of the sample filters. PM_{10} sampling will be performed at a single downwind location on a frequency of once per week.

Trace metal concentrations will be determined by combining the low-volume sampling method with USEPA's IO-3 Method (Chemical Species Analysis of Collected Suspended Particulate Matter) for inorganic compounds. The exposed filters will be submitted to a laboratory for chemical analysis of lead, arsenic, and cadmium, and reported as 8 hour integrated averages.

5. DUST CONTROL

Monitoring for visible airborne dust emissions will be performed continuously during excavation activities. Real-time air monitoring will be performed by the contractor during excavation and material-

handling operations when potential lead, arsenic and cadmium-containing dust may be generated. Engineering controls and dust suppression measures such as spraying water will be implemented to minimize dust and potential exposure.

Real-time measurements for dust will be obtained using personal Data RAM (*p*-DR-1000) or equivalent personal data-logging designed to measure the concentration of airborne particulate matter. The device provides continuous visual readout, electronic recording of the information, and an audible alarm activated at a user-defined level.

Action levels have been established to assess the need for worker's personal protection and safety equipment, dust suppression, and/or temporary work suspension. The various action levels to be adhered to during the IRM are as follows:

- Work zone dust: 2.5 mg/m^3 total dust
- Lead: 0.05 mg/m^3
- Cadmium PEL: 0.005 mg/m^3
- Arsenic: 0.01 mg/m^3

Table 1
East Chicago Site - Buffer Zone Interim Remedial Measures
Historical Data on Arsenic, Cadmium and Lead Concentration in Soil vs. TCLP values

Sample Number	Date	Depth (ft)	SOIL (mg/kg)	TCLP * (mg/L)	x= Ln SOIL	y= Ln TCLP
ARSENIC					**Ln SOIL**	**Ln TCLP**
RFI2-S1J-4	11/11/2003	0 - 2	62000	160	11.035	5.075
RFI2-S1J-1	11/12/2003	0 - 2	9530	17.7	9.162	2.874
RFI2-S1J-3	11/11/2003	2 - 4	3190	10.4	8.068	2.342
RFI2-S4-4	11/11/2003	2 - 4	15200	7.22	9.629	1.977
RFI2-S1J-3	11/11/2003	4 - 6	3970	6.24	8.287	1.831
RFI2-A2E-3	11/11/2003	0 - 2	3520	3.7	8.166	1.308
RFI2-S1J-3	11/11/2003	0 - 2	985	3.16	6.893	1.151
RFI2-A2E-3	11/11/2003	2 - 4	2410	2.87	7.787	1.054
RFI2-S4-4	11/11/2003	0 - 2	9050	2.81	9.111	1.033
RFI2-S21-1	11/11/2003	6 - 8	102	0.928	4.625	-0.075
RFI2-A2E-1	11/11/2003	2 - 4	966	0.839	6.873	-0.176
RFI2-S1J-2	11/11/2003	4 - 6	629	0.668	6.444	-0.403
RFI2-S21-2	11/11/2003	2 - 4	243	0.544	5.493	-0.609
RFI2-S1J-2	11/11/2003	0 - 2	783	0.442	6.663	-0.816
RFI2-S1J-2	11/11/2003	2 - 4	825	0.366	6.715	-1.005
RFI2-S1J-4	11/11/2003	2 - 4	145	0.306	4.977	-1.184
RFI2-A2E-1	11/11/2003	4 - 6	651	0.271	6.479	-1.306
RFI2-S1J-1	11/12/2003	2 - 4	861	0.21	6.758	-1.561
RFI2-S4-2	11/11/2003	0 - 2	1600	0.191	7.378	-1.655
RFI2-S1J-4	11/11/2003	4 - 6	30.7	0.0966	3.424	-2.337
RFI2-S21-1	11/11/2003	4 - 6	14.8	0.0902	2.695	-2.406
RFI2-A13-1	11/12/2003	0 - 2	246	0.0828	5.505	-2.491
RFI2-A13-2	11/12/2003	0 - 2	1840	0.0599	7.518	-2.815
RFI2-S4-3	11/11/2003	0 - 2	531	0.0564	6.275	-2.875
RFI2-A13-3	11/12/2003	2 - 3	47.4	0.055	3.859	-2.900
RFI2-S21-2	11/11/2003	0 - 2	138	0.0507	4.927	-2.982
RFI2-S1J-1	11/12/2003	4 - 6	81.5	0.0475	4.401	-3.047
RFI2-A2E-2	11/11/2003	0 - 2	47.3	0.0375	3.857	-3.283
RFI2-S4-3	11/11/2003	2 - 4	147	0.0349	4.990	-3.355
RFI2-S21-3	11/11/2003	6 - 8	709	0.0309	6.564	-3.477
RFI2-S3-3	11/10/2003	4 - 6	165	0.0259	5.106	-3.654
RFI2-S3-3	11/10/2003	0 - 2	29.3	0.0243	3.378	-3.717
RFI2-S1J-3	11/11/2003	6 - 8	31.8	0.0223	3.459	-3.803
RFI2-S1J-1	11/12/2003	6 - 8	38.7	0.0207	3.656	-3.878
RFI2-S4-2	11/11/2003	6 - 8	93.1	0.0196	4.534	-3.932
RFI2-A2E-1	11/11/2003	0 - 2	116	0.0174	4.754	-4.051
RFI2-S3-3	11/10/2003	6 - 8	17.8	0.0171	2.879	-4.069
RFI2-A13-1	11/12/2003	2 - 4	4.53	0.0152	1.511	-4.186
RFI2-S21-1	11/11/2003	0 - 2	8.0	0.0145	2.079	-4.234

Sample Number	Date	Depth (ft)	SOIL (mg/kg)	TCLP * (mg/L)	x= Ln SOIL	y= Ln TCLP
ARSENIC (cont.)						
RFI2-A13-2	11/12/2003	2 - 4	400	0.0137	5.991	-4.290
RFI2-S7-4	11/12/2003	2 - 4	1180	0.0137	7.073	-4.290
RFI2-S1J-2	11/11/2003	6 - 8	48.7	0.0123	3.886	-4.398
RFI2-S7-1	11/12/2003	4 - 6	4620	0.0121	8.438	-4.415
RFI2-A13-1	11/12/2003	4 - 5	669	0.012	6.506	-4.423
RFI2-S3-3	11/10/2003	8 - 10	45.2	0.0107	3.811	-4.538
RFI2-S21-2	11/11/2003	8 - 9	162	0.0106	5.088	-4.547
RFI2-S21-2	11/11/2003	4 - 6	223	0.0097	5.407	-4.636
RFI2-S7-1	11/12/2003	0 - 2	1090	0.0088	6.994	-4.733
RFI2-S21-1	11/11/2003	2 - 4	2.36	0.0087	0.859	-4.744
RFI2-S7-2	11/12/2003	0 - 2.5	1510	0.0079	7.320	-4.841
RFI2-S21-3	11/11/2003	0 - 2	237	0.0078	5.468	-4.854
RFI2-S3-4	11/10/2003	2 - 4	92.7	0.0077	4.529	-4.867
RFI2-S4-1	11/11/2003	0 - 2	120	0.0077	4.787	-4.867
RFI2-S21-3	11/11/2003	2 - 4	2910	0.0071	7.976	-4.948
RFI2-S7-1	11/12/2003	2 - 4	473	0.0068	6.159	-4.991
RFI2-A13-3	11/12/2003	0 - 2	31.5	0.0063	3.450	-5.067
RFI2-S3-2	11/10/2003	0 - 2	23.7	0.0061	3.165	-5.099
RFI2-S3-3	11/10/2003	2 - 4	140	0.0058	4.942	-5.150
RFI2-S3-2	11/10/2003	4 - 6	75	0.0053	4.317	-5.240
RFI2-S3-4	11/10/2003	0 - 2	160	0.0052	5.075	-5.259
RFI2-A13-4	11/12/2003	0 - 2	380	0.0049	5.940	-5.319
RFI2-A2E-2	11/11/2003	2 - 4	72.5	0.0049	4.284	-5.319
RFI2-S21-2	11/11/2003	6 - 8	259	0.0049	5.557	-5.319
RFI2-S21-3	11/11/2003	4 - 6	460	0.0049	6.131	-5.319
RFI2-S21-4	11/11/2003	0 - 2	88.2	0.0049	4.480	-5.319
RFI2-S21-4	11/11/2003	2 - 4	43.9	0.0049	3.782	-5.319
RFI2-S21-4	11/11/2003	4 - 6	11.6	0.0049	2.451	-5.319
RFI2-S21-4	11/11/2003	6 - 8	70	0.0049	4.248	-5.319
RFI2-S21-4	11/11/2003	8 - 9	27.5	0.0049	3.314	-5.319
RFI2-S3-1	11/10/2003	0 - 2	48.9	0.0049	3.890	-5.319
RFI2-S3-1	11/10/2003	2 - 4	67.8	0.0049	4.217	-5.319
RFI2-S3-1	11/10/2003	4 - 6	37.6	0.0049	3.627	-5.319
RFI2-S3-2	11/10/2003	2 - 4	160	0.0049	5.075	-5.319
RFI2-S3-4	11/10/2003	4 - 6	105	0.0049	4.654	-5.319
RFI2-S3-4	11/10/2003	6 - 8	3.69	0.0049	1.306	-5.319
RFI2-S4-1	11/11/2003	2 - 4	1600	0.0049	7.378	-5.319
RFI2-S4-1	11/11/2003	4 - 6	192	0.0049	5.257	-5.319
RFI2-S4-1	11/11/2003	6 - 8	23.6	0.0049	3.161	-5.319
RFI2-S4-1	11/11/2003	8 - 10	7.33	0.0049	1.992	-5.319
RFI2-S4-2	11/11/2003	2 - 4	15.2	0.0049	2.721	-5.319
RFI2-S4-2	11/11/2003	4 - 6	19.9	0.0049	2.991	-5.319
RFI2-S7-3	11/12/2003	0 - 2	84.1	0.0049	4.432	-5.319
RFI2-S7-4	11/12/2003	0 - 2	827	0.0049	6.718	-5.319
RFI2-S7-4	11/12/2003	4 - 6	805	0.0049	6.691	-5.319

Sample Number	Date	Depth (ft)	SOIL (mg/kg)	TCLP * (mg/L)	x= Ln SOIL	y= Ln TCLP
CADMIUM						
RFI2-S7-4	11/12/2003	0 - 2	518	5.26	6.250	1.660
RFI2-S3-3	11/10/2003	4 - 6	687	2.66	6.532	0.978
RFI2-S7-3	11/12/2003	0 - 2	38.9	2.55	3.661	0.936
RFI2-S3-4	11/10/2003	6 - 8	88	2.17	4.477	0.775
RFI2-S1J-1	11/12/2003	0 - 2	213	2.11	5.361	0.747
RFI2-S1J-2	11/11/2003	0 - 2	142	1.64	4.956	0.495
RFI2-S3-4	11/10/2003	4 - 6	172	1.64	5.147	0.495
RFI2-A13-2	11/12/2003	2 - 4	568	1.61	6.342	0.476
RFI2-S7-1	11/12/2003	2 - 4	286	1.45	5.656	0.372
RFI2-S7-1	11/12/2003	0 - 2	392	1.42	5.971	0.351
RFI2-S7-4	11/12/2003	4 - 6	75.1	1.41	4.319	0.344
RFI2-S1J-1	11/12/2003	2 - 4	91	1.19	4.511	0.174
RFI2-S1J-2	11/11/2003	2 - 4	107	1.14	4.673	0.131
RFI2-S7-4	11/12/2003	2 - 4	76.4	1.1	4.336	0.095
RFI2-S21-2	11/11/2003	6 - 8	81.4	0.885	4.399	-0.122
RFI2-A13-1	11/12/2003	4 - 5	279	0.788	5.631	-0.238
RFI2-A13-2	11/12/2003	0 - 2	519	0.755	6.252	-0.281
RFI2-S7-2	11/12/2003	0 - 2.5	227	0.728	5.425	-0.317
RFI2-S1J-3	11/11/2003	2 - 4	46.6	0.715	3.842	-0.335
RFI2-S1J-4	11/11/2003	0 - 2	97.6	0.667	4.581	-0.405
RFI2-S21-4	11/11/2003	2 - 4	204	0.627	5.318	-0.467
RFI2-S1J-2	11/11/2003	4 - 6	50	0.61	3.912	-0.494
RFI2-S1J-3	11/11/2003	0 - 2	38.1	0.591	3.640	-0.526
RFI2-S7-1	11/12/2003	4 - 6	305	0.574	5.720	-0.555
RFI2-S21-2	11/11/2003	8 - 9	65.5	0.461	4.182	-0.774
RFI2-A13-1	11/12/2003	0 - 2	39.5	0.412	3.676	-0.887
RFI2-A13-4	11/12/2003	0 - 2	45.3	0.337	3.813	-1.088
RFI2-S1J-1	11/12/2003	6 - 8	14	0.321	2.639	-1.136
RFI2-S21-4	11/11/2003	6 - 8	72.2	0.314	4.279	-1.158
RFI2-S21-1	11/11/2003	6 - 8	26	0.309	3.258	-1.174
RFI2-S3-1	11/10/2003	4 - 6	19.1	0.308	2.950	-1.178
RFI2-S1J-1	11/12/2003	4 - 6	16.7	0.271	2.815	-1.306
RFI2-S21-4	11/11/2003	8 - 9	23.1	0.263	3.140	-1.336
RFI2-S1J-4	11/11/2003	4 - 6	15.6	0.241	2.747	-1.423
RFI2-S3-4	11/10/2003	0 - 2	246	0.215	5.505	-1.537
RFI2-S3-1	11/10/2003	2 - 4	38.5	0.193	3.651	-1.645
RFI2-S3-3	11/10/2003	6 - 8	326	0.191	5.787	-1.655
RFI2-S1J-3	11/11/2003	4 - 6	26.5	0.184	3.277	-1.693
RFI2-S1J-4	11/11/2003	2 - 4	23.7	0.173	3.165	-1.754
RFI2-S21-2	11/11/2003	2 - 4	40.1	0.169	3.691	-1.778
RFI2-S3-4	11/10/2003	2 - 4	21	0.167	3.045	-1.790
RFI2-S3-3	11/10/2003	8 - 10	302	0.163	5.710	-1.814
RFI2-S1J-2	11/11/2003	6 - 8	17.1	0.155	2.839	-1.864

Sample Number	Date	Depth (ft)	SOIL (mg/kg)	TCLP * (mg/L)	x= Ln SOIL	y= Ln TCLP
CADMIUM (cont.)						
RFI2-S21-2	11/11/2003	4 - 6	57.3	0.132	4.048	-2.025
RFI2-A13-1	11/12/2003	2 - 4	7.77	0.117	2.050	-2.146
RFI2-S21-4	11/11/2003	0 - 2	2.97	0.11	1.089	-2.207
RFI2-S1J-3	11/11/2003	6 - 8	6.23	0.081	1.829	-2.513
RFI2-S21-4	11/11/2003	4 - 6	212	0.0743	5.357	-2.600
RFI2-S3-3	11/10/2003	0 - 2	5.67	0.0727	1.735	-2.621
RFI2-S3-2	11/10/2003	4 - 6	7.23	0.0687	1.978	-2.678
RFI2-A2E-3	11/11/2003	0 - 2	1.68	0.0604	0.519	-2.807
RFI2-S21-2	11/11/2003	0 - 2	21.9	0.0561	3.086	-2.881
RFI2-S3-3	11/10/2003	2 - 4	17.6	0.0445	2.868	-3.112
RFI2-S4-2	11/11/2003	4 - 6	49.8	0.0362	3.908	-3.319
RFI2-S3-1	11/10/2003	0 - 2	7.26	0.0321	1.982	-3.439
RFI2-A13-3	11/12/2003	2 - 3	8.15	0.0316	2.098	-3.455
RFI2-S4-4	11/11/2003	2 - 4	13.4	0.0308	2.595	-3.480
RFI2-S4-2	11/11/2003	2 - 4	9.37	0.0297	2.238	-3.517
RFI2-S3-2	11/10/2003	0 - 2	20.3	0.0245	3.011	-3.709
RFI2-S21-3	11/11/2003	6 - 8	57.9	0.0222	4.059	-3.808
RFI2-A2E-1	11/11/2003	2 - 4	2.74	0.0186	1.008	-3.985
RFI2-S4-4	11/11/2003	0 - 2	6.71	0.0181	1.904	-4.012
RFI2-S21-1	11/11/2003	0 - 2	5.68	0.0141	1.737	-4.262
RFI2-S21-3	11/11/2003	4 - 6	13.6	0.014	2.610	-4.269
RFI2-A13-3	11/12/2003	0 - 2	4.66	0.0136	1.539	-4.298
RFI2-S4-3	11/11/2003	0 - 2	2.29	0.0132	0.829	-4.328
RFI2-S4-1	11/11/2003	8 - 10	7.21	0.0131	1.975	-4.335
RFI2-S21-1	11/11/2003	2 - 4	6.94	0.013	1.937	-4.343
RFI2-S3-2	11/10/2003	2 - 4	1.98	0.0127	0.683	-4.366
RFI2-S21-1	11/11/2003	4 - 6	2.3	0.0117	0.833	-4.448
RFI2-A2E-2	11/11/2003	0 - 2	5.39	0.0106	1.685	-4.547
RFI2-A2E-3	11/11/2003	2 - 4	1.31	0.0101	0.270	-4.595
RFI2-S21-3	11/11/2003	2 - 4	4.61	0.0097	1.528	-4.636
RFI2-S4-2	11/11/2003	0 - 2	2.74	0.0097	1.008	-4.636
RFI2-S4-1	11/11/2003	0 - 2	0.979	0.0082	-0.021	-4.804
RFI2-S4-2	11/11/2003	6 - 8	7.65	0.0074	2.035	-4.906
RFI2-A2E-1	11/11/2003	4 - 6	0.976	0.0072	-0.024	-4.934
RFI2-S21-3	11/11/2003	0 - 2	3.47	0.0064	1.244	-5.051
RFI2-A2E-1	11/11/2003	0 - 2	1.56	0.0046	0.445	-5.382
RFI2-S4-1	11/11/2003	2 - 4	1.55	0.0034	0.438	-5.684
RFI2-A2E-2	11/11/2003	2 - 4	0.659	0.00087	-0.417	-7.047
RFI2-S4-1	11/11/2003	4 - 6	1.97	0.00087	0.678	-7.047
RFI2-S4-1	11/11/2003	6 - 8	1.97	0.00087	0.678	-7.047
RFI2-S4-3	11/11/2003	2 - 4	0.0667	0.00087	-2.708	-7.047

Sample Number	Date	Depth (ft)	SOIL (mg/kg)	TCLP * (mg/L)	x= Ln SOIL	y= Ln TCLP
LEAD						
RFI2-S1J-3	11/11/2003	6 - 8	75300	665	11.229	6.500
RFI2-S7-4	11/12/2003	4 - 6	42400	480	10.655	6.174
RFI2-S7-1	11/12/2003	4 - 6	178000	432	12.090	6.068
RFI2-S7-1	11/12/2003	0 - 2	62000	416	11.035	6.031
RFI2-S7-4	11/12/2003	0 - 2	43000	260	10.669	5.561
RFI2-S7-4	11/12/2003	2 - 4	45600	244	10.728	5.497
RFI2-S7-2	11/12/2003	0 - 2.5	138000	182	11.835	5.204
RFI2-A13-4	11/12/2003	0 - 2	25100	159	10.131	5.069
RFI2-A13-2	11/12/2003	2 - 4	36600	122	10.508	4.804
RFI2-S1J-1	11/12/2003	0 - 2	58300	107	10.973	4.673
RFI2-S1J-2	11/11/2003	6 - 8	9540	98.1	9.163	4.586
RFI2-A13-1	11/12/2003	4 - 5	30300	71.7	10.319	4.272
RFI2-S7-1	11/12/2003	2 - 4	35500	53.6	10.477	3.982
RFI2-S1J-1	11/12/2003	4 - 6	4980	40.3	8.513	3.696
RFI2-S1J-1	11/12/2003	6 - 8	2490	39.4	7.820	3.674
RFI2-S3-1	11/10/2003	4 - 6	9890	34.7	9.199	3.547
RFI2-S1J-4	11/11/2003	2 - 4	6010	27.3	8.701	3.307
RFI2-S3-3	11/10/2003	4 - 6	3730	27.2	8.224	3.303
RFI2-S3-1	11/10/2003	0 - 2	5000	26	8.517	3.258
RFI2-S1J-4	11/11/2003	4 - 6	2280	23	7.732	3.135
RFI2-S21-2	11/11/2003	8 - 9	1460	22.6	7.286	3.118
RFI2-S3-1	11/10/2003	2 - 4	28500	22.2	10.258	3.100
RFI2-A13-2	11/12/2003	0 - 2	54800	21.1	10.911	3.049
RFI2-S1J-3	11/11/2003	0 - 2	5240	20.6	8.564	3.025
RFI2-S1J-2	11/11/2003	4 - 6	8240	20.2	9.017	3.006
RFI2-S1J-3	11/11/2003	2 - 4	14600	19.9	9.589	2.991
RFI2-S21-2	11/11/2003	6 - 8	2000	19.9	7.601	2.991
RFI2-S1J-2	11/11/2003	2 - 4	21500	19.8	9.976	2.986
RFI2-S1J-1	11/12/2003	2 - 4	22600	19.3	10.026	2.960
RFI2-S1J-2	11/11/2003	0 - 2	13000	18.9	9.473	2.939
RFI2-S7-3	11/12/2003	0 - 2	6760	18.6	8.819	2.923
RFI2-S21-2	11/11/2003	4 - 6	2770	17.2	7.927	2.845
RFI2-S21-3	11/11/2003	6 - 8	2390	17	7.779	2.833
RFI2-S3-2	11/10/2003	4 - 6	1590	15	7.371	2.708
RFI2-S1J-3	11/11/2003	4 - 6	10200	9.92	9.230	2.295
RFI2-S3-4	11/10/2003	0 - 2	13700	9.39	9.525	2.240
RFI2-S3-4	11/10/2003	4 - 6	2940	9.23	7.986	2.222
RFI2-A13-1	11/12/2003	0 - 2	3160	8.84	8.058	2.179
RFI2-S3-3	11/10/2003	6 - 8	973	7.22	6.880	1.977
RFI2-S21-3	11/11/2003	0 - 2	2630	6.47	7.875	1.867
RFI2-S3-3	11/10/2003	8 - 10	1590	5.49	7.371	1.703

Sample Number	Date	Depth (ft)	SOIL (mg/kg)	TCLP * (mg/L)	x= Ln SOIL	y= Ln TCLP
LEAD (cont.)						
RFI2-S1J-4	11/11/2003	0 - 2	13300	4.3	9.496	1.459
RFI2-S4-4	11/11/2003	0 - 2	3300	4.06	8.102	1.401
RFI2-A2E-1	11/11/2003	2 - 4	2910	2.59	7.976	0.952
RFI2-S21-4	11/11/2003	4 - 6	1320	2.52	7.185	0.924
RFI2-S21-3	11/11/2003	2 - 4	7000	1.96	8.854	0.673
RFI2-S3-4	11/10/2003	2 - 4	1390	1.81	7.237	0.593
RFI2-A2E-3	11/11/2003	0 - 2	5670	1.2	8.643	0.182
RFI2-S21-1	11/11/2003	6 - 8	496	0.939	6.207	-0.063
RFI2-A2E-3	11/11/2003	2 - 4	268	0.85	5.591	-0.163
RFI2-A2E-1	11/11/2003	4 - 6	714	0.83	6.571	-0.186
RFI2-S21-2	11/11/2003	0 - 2	4500	0.77	8.412	-0.261
RFI2-S4-2	11/11/2003	0 - 2	6750	0.459	8.817	-0.779
RFI2-S21-2	11/11/2003	2 - 4	2760	0.435	7.923	-0.832
RFI2-A2E-2	11/11/2003	0 - 2	425	0.423	6.052	-0.860
RFI2-A13-1	11/12/2003	2 - 4	171	0.397	5.142	-0.924
RFI2-S3-3	11/10/2003	0 - 2	389	0.356	5.964	-1.033
RFI2-S21-3	11/11/2003	4 - 6	1490	0.336	7.307	-1.091
RFI2-S21-4	11/11/2003	8 - 9	353	0.291	5.866	-1.234
RFI2-S21-1	11/11/2003	4 - 6	331	0.224	5.802	-1.496
RFI2-S3-2	11/10/2003	0 - 2	1050	0.191	6.957	-1.655
RFI2-S4-4	11/11/2003	2 - 4	4320	0.188	8.371	-1.671
RFI2-S21-4	11/11/2003	6 - 8	968	0.127	6.875	-2.064
RFI2-S21-1	11/11/2003	0 - 2	156	0.125	5.050	-2.079
RFI2-A13-3	11/12/2003	2 - 3	614	0.12	6.420	-2.120
RFI2-S21-1	11/11/2003	2 - 4	218	0.111	5.384	-2.198
RFI2-S21-4	11/11/2003	0 - 2	1330	0.0999	7.193	-2.304
RFI2-S4-1	11/11/2003	0 - 2	312	0.0838	5.743	-2.479
RFI2-S4-1	11/11/2003	2 - 4	546	0.0651	6.303	-2.732
RFI2-S21-4	11/11/2003	2 - 4	483	0.0635	6.180	-2.757
RFI2-A2E-2	11/11/2003	2 - 4	367	0.0577	5.905	-2.852
RFI2-S4-3	11/11/2003	0 - 2	826	0.0558	6.717	-2.886
RFI2-S3-3	11/10/2003	2 - 4	1480	0.0538	7.300	-2.922
RFI2-A13-3	11/12/2003	0 - 2	456	0.0404	6.122	-3.209
RFI2-S4-1	11/11/2003	8 - 10	391	0.0196	5.969	-3.932
RFI2-S3-4	11/10/2003	6 - 8	45.2	0.0181	3.811	-4.012
RFI2-S4-2	11/11/2003	2 - 4	186	0.0167	5.226	-4.092
RFI2-S3-2	11/10/2003	2 - 4	217	0.0162	5.380	-4.123
RFI2-A2E-1	11/11/2003	0 - 2	277	0.0093	5.624	-4.678
RFI2-S4-1	11/11/2003	4 - 6	529	0.0093	6.271	-4.678
RFI2-S4-1	11/11/2003	6 - 8	460	0.0093	6.131	-4.678
RFI2-S4-2	11/11/2003	4 - 6	548	0.0093	6.306	-4.678
RFI2-S4-2	11/11/2003	6 - 8	47.9	0.0093	3.869	-4.678
RFI2-S4-3	11/11/2003	2 - 4	144	0.0093	4.970	-4.678

* Highlighted samples exceed EPA's Toxicity Characteristic Leaching Procedure (TCLP) limits of 5 mg/L for arsenic and lead, and 1 mg/L for cadmium.

Table 2
Buffer Zone Interim Remedial Measures (IRM)
Historical Soil Samples and Potential TCLP Exceedance

IRM Area	Sample	Depth (ft)	Soil Concentration (mg/kg) * Arsenic	Cadmium	Lead	Risk Assessment Area	Sampling Phase
A	BFZ-SS-3	0 - 0.5	33.2	43.7	2640	Buffer Zone	CMS FOLLOW-UP SOILS 2010
A	GRD-SS-2	0 - 0.5	14.2	21.3	1260	Buffer Zone	CMS FOLLOW-UP SOILS 2010
B	BFZ-28	0 - 0.5	6.6	0.31	443	Buffer Zone	CMS SOILS SAMPLING 2009
B	BFZ-28	0.5 - 1	18.9	3.9	55.4	Buffer Zone	CMS SOILS SAMPLING 2009
B	BFZ-29	0 - 0.5	157	111	11300	Buffer Zone	CMS SOILS SAMPLING 2009
B	BFZ-29	1 - 1.5	44.4	34	4880	Buffer Zone	CMS SOILS SAMPLING 2009
B	BFZ-30	0 - 0.5	12.2	16	841	Buffer Zone	CMS SOILS SAMPLING 2009
B	BFZ-30	0.5 - 1	30.1	20.2	1680	Buffer Zone	CMS SOILS SAMPLING 2009
B	BFZ-31	0.5 - 1	833	295	57600	Buffer Zone	CMS SOILS SAMPLING 2009
B	BFZ-31	0 - 0.5	25.2	6.6	1230	Buffer Zone	CMS SOILS SAMPLING 2009
B	NA-36	0 - 0.5	3.1	1.9	61.5	IRM outside BZ	EI DATA GATHERING
B	NAGRD-25	0 - 0.5	4.2	0.1	3	Buffer Zone Extended	CMS FOLLOW-UP SOILS 2010
B	S1C-04S	0 - 2	107	8.88	1190	Buffer Zone	PHASE I RFI
C	AOI-4-32	0 - 0.5	31.4	8.3	657	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-32	1 - 1.5	12.2	4.1	93	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-33	0 - 0.5	240	23.8	1110	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-33	1 - 2	61.3	39.4	2190	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-34	0 - 0.5	107	7.4	3260	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-34	1 - 2	123	14.4	8780	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-35	0 - 0.5	127	33.5	2070	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-36	0 - 0.5	17	40.3	405	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-36	1 - 2	71.4	1.4	2490	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-38	0 - 0.5	96.1	83.1	2120	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-38	1 - 1.5	432	486	24500	IRM outside BZ	CMS SOILS SAMPLING 2009
C	BERA-RNOF06-01	0 - 1	5.8	5.44	154	Buffer Zone	BERA SOIL SAMPLING 1/06
C	BERA-RNOF06-01	1 - 2	7.5	9.28	77	Buffer Zone	BERA SOIL SAMPLING 1/06
C	BERA-RNOF06-02	0 - 1	18	21.5	850	Buffer Zone Extended	BERA SOIL SAMPLING 1/06
C	BERA-RNOF06-02	1 - 2	13.9	45.5	364	Buffer Zone Extended	BERA SOIL SAMPLING 1/06
C	BFZ-26	0 - 0.5	58.9	7.8	1830	Buffer Zone	CMS SOILS SAMPLING 2009
C	BFZ-27	0 - 0.5	51.3	19.2	1980	Buffer Zone	CMS SOILS SAMPLING 2009
C	BFZ-27	1 - 1.5	45.9	26.8	935	Buffer Zone	CMS SOILS SAMPLING 2009
C	NA-24	0 - 0.5	145	17.9	380	IRM outside BZ	EI DATA GATHERING
C	S1C-01S	0 - 2	0.65	0.96	50	IRM outside BZ	PHASE I RFI
C	S1C-02S	0 - 2	7.9	39.7	149	IRM outside BZ	PHASE I RFI
C	S1C-02U	2 - 3	0.6	1.73	688	IRM outside BZ	PHASE I RFI
C	S1C-03S	0 - 2	268	15.6	3390	Buffer Zone	PHASE I RFI
D	AOI-4-13	0 - 0.5	45.1	32.9	5870	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-16	0 - 0.3	280	25.1	1690	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-18	0.5 - 1	9.4	0.65	181	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-18	0.5 - 1	13.2	0.5	136	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-18	0 - 0.5	32.6	1.7	421	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-21	0 - 0.5	44.6	33.2	1280	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-23	0 - 0.5	4.7	0.02	6	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-23	0.5 - 1	112	0.02	0.99	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-24	0 - 0.5	278	8.5	47400	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-24	0.5 - 1	38.7	16.1	1140	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-25	0 - 0.5	206	13.1	20800	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-25	0.5 - 1	479	5.4	62000	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-26	0.5 - 1	6.9	2	51.2	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-26	0 - 0.5	10.3	5.2	145	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-27	0 - 0.5	49.5	48.1	1260	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-27	0.5 - 1	22.5	20.5	1050	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-29	1 - 2	79	22	4040 **	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-29	0 - 0.5	28.3	9	1060	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-30	0 - 0.5	78.7	7.9	2030	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-30	0.5 - 1	54.9	5.5	684	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-31	0 - 0.5	66.8	4.9	3180	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-31	0.5 - 1	35.1	8.2	1770	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-40	0 - 0.5	106	9.7	1080	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
D	AOI-4-40	1 - 2	111	7	773	IRM outside BZ	CMS FOLLOW-UP SOILS 2010

Table 2 (cont.)

IRM Area	Sample	Depth (ft)	Soil Concentration (mg/kg) * Arsenic	Cadmium	Lead	Risk Assessment Area	Sampling Phase
D	AOI-4-40	1 - 2	155	5.3	908	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
D	AOI-4-7	1 - 1.5	55400	146	129000	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-7	0 - 0.5	144	12.8	1340	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-8	0 - 0.5	290	16.3	3880	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-8	1 - 1.5	56.4	3.5	1190	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-9	0 - 0.5	335	10	3080	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-9	1 - 2	124	18.2	2030	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-SS-1	0 - 0.5	740	19.4	759	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
D	BERA-A12-01	0 - 1	33.5	14.4	648	IRM outside BZ	BERA SOIL SAMPLING 1/06
D	BERA-A12-01	1 - 2	13.3	7.5	249	IRM outside BZ	BERA SOIL SAMPLING 1/06
D	BERA-A12-02	0 - 1	38.4	16.1	598	IRM outside BZ	BERA SOIL SAMPLING 1/06
D	BERA-A12-02	1 - 2	26.1	32.7	799	IRM outside BZ	BERA SOIL SAMPLING 1/06
D	BERA-RNOF05-01	0 - 1	433	3660	124000	IRM outside BZ	BERA SOIL SAMPLING 1/06
D	BERA-RNOF05-01	1 - 2	117	1560	33200	IRM outside BZ	BERA SOIL SAMPLING 1/06
D	BERA-RNOF05-02	0 - 1	163	322	5720	Buffer Zone	BERA SOIL SAMPLING 1/06
D	BERA-RNOF05-02	1 - 2	34.7	47.6	1270	Buffer Zone	BERA SOIL SAMPLING 1/06
D	BFZ-23	0 - 0.5	15.1	21.4	701	Buffer Zone	CMS SOILS SAMPLING 2009
D	BFZ-23	1 - 2	2.1	0.02	2.3	Buffer Zone	CMS SOILS SAMPLING 2009
D	BFZ-24	0.5 - 1	2	0.35	8.1	IRM outside BZ	CMS SOILS SAMPLING 2009
D	BFZ-24	0 - 0.5	6.3	1	112	IRM outside BZ	CMS SOILS SAMPLING 2009
D	BFZ-25	0 - 0.5	21.7	13.5	103	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
D	J20SA	2 - 3	0	0.0	0	IRM outside BZ	92 CPT GRID SAMPLING ECHICAGO
D	NA-22	0 - 0.5	12.1	9.1	489	Buffer Zone	EI DATA GATHERING
D	NAPLOT-01	0 - 0.5	1050	--	10300	IRM outside BZ	NATURAL AREA SAMPLING 8/11
D	NAPLOT-01	0.5 - 1.5	608	--	25800	IRM outside BZ	NATURAL AREA SAMPLING 8/11
D	NAPLOT-15	0 - 0.5	7.6	--	327	Buffer Zone	NATURAL AREA SAMPLING 8/11
D	RFI2-S10A-1	0 - 2	91.1	5.28	288	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S10A-2	0 - 1.5	933	5.02	331	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S10A-3	0 - 1	39.3	17.3	2160	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S10A-4	0 - 1	7.69	0.08	90.6	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S10D-1	0 - 1	49	46.8	3270	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S10D-2	0 - 1	56.3	54.8	2050	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S10D-3	0 - 1	16.3	69.5	2480	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S10D-4	0 - 2	374	5930	144000	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S12A-1	0 - 2	1870	17.2	669	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S12A-2	0 - 1.8	26.5	1.3	397	IRM outside BZ	PHASE II RFI SCREENING
D	S10D-01U	2 - 3.5	3.4	--	--	IRM outside BZ	PHASE I RFI
D	S10D-02U	0 - 2	19.7	--	--	IRM outside BZ	PHASE I RFI
D	S12A-01U	2 - 4	28.3	--	--	IRM outside BZ	PHASE I RFI
D	SPLP-27	0 - 0.5	35.1	--	1530	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
D	SPLP-27	1 - 2	68.8	--	4580 **	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
D	SPLP-27	2 - 2.5	63.9	--	3230	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
E	AOI-4-11	0 - 0.5	18.3	19.7	10300	IRM outside BZ	CMS SOILS SAMPLING 2009
E	AOI-4-19	0 - 0.5	20.9	6.3	751	IRM outside BZ	CMS SOILS SAMPLING 2009
E	AOI-4-2	0 - 0.5	255	781	110000	IRM outside BZ	CMS SOILS SAMPLING 2009
E	AOI-4-2	1 - 2	32.8	51.6	4830	IRM outside BZ	CMS SOILS SAMPLING 2009
E	AOI-4-3	1 - 1.5	12.3	0.91	988	IRM outside BZ	CMS SOILS SAMPLING 2009
E	AOI-4-3	0 - 0.5	7.3	2.2	6070	IRM outside BZ	CMS SOILS SAMPLING 2009
E	BERA-RNOF04-01	0 - 1	4.56	3.16	291	IRM outside BZ	BERA SOIL SAMPLING 1/06
E	BERA-RNOF04-01	1 - 2	3.18	0.38	45.7	IRM outside BZ	BERA SOIL SAMPLING 1/06
E	BERA-RNOF04-02	0 - 1	5.51	2.3	236	Buffer Zone	BERA SOIL SAMPLING 1/06
E	BERA-RNOF04-02	1 - 2	4.43	0.21	59.6	Buffer Zone	BERA SOIL SAMPLING 1/06
E	BERA-S10B-01	0 - 1	161	310	147000	IRM outside BZ	BERA SOIL SAMPLING 1/06
E	BERA-S10B-01	1 - 2	255	671	140000	IRM outside BZ	BERA SOIL SAMPLING 1/06
E	BERA-S10C-01	1 - 2	4.12	--	227	IRM outside BZ	BERA SOIL SAMPLING 1/06
E	BERA-S10C-01	0 - 1	4.77	--	87.7	IRM outside BZ	BERA SOIL SAMPLING 1/06
E	BFZ-20	0 - 0.5	4.2	1.4	430	Buffer Zone	CMS FOLLOW-UP SOILS 2010
E	BFZ-20	0 - 0.5	4	0.56	498	Buffer Zone	CMS FOLLOW-UP SOILS 2010
E	BFZ-21	1 - 1.5	6.3	5.7	245	Buffer Zone	CMS SOILS SAMPLING 2009
E	BFZ-21	0 - 0.5	9.9	9.3	203	Buffer Zone	CMS SOILS SAMPLING 2009

Table 2 (cont.)

IRM Area	Sample	Depth (ft)	Soil Concentration (mg/kg) * Arsenic	Cadmium	Lead	Risk Assessment Area	Sampling Phase
E	BFZ-22	0 - 0.5	9.4	5.6	520	IRM outside BZ	CMS SOILS SAMPLING 2009
E	NA-20	0 - 0.5	13.2	4.1	339	IRM outside BZ	EI DATA GATHERING
E	NAS03	0 - 0.5	10.2	9.79	857	Buffer Zone	NATURAL AREA SAMPLING 9/08
E	NAS03	0.5 - 1	3.57	7.49	--	Buffer Zone	NATURAL AREA SAMPLING 9/08
E	NAS03	1 - 2	31.6	66.5	--	Buffer Zone	NATURAL AREA SAMPLING 9/08
E	S10C-01S	0.5 - 1.5	10.9	--	--	IRM outside BZ	PHASE I RFI
E	S10C-01U	0.5 - 1.5	17.3	--	--	IRM outside BZ	PHASE I RFI
E	S10C-02U	0.25 - 1.75	7.7	--	--	Buffer Zone	PHASE I RFI
F	AOI-3-41	0 - 0.5	44.6	7.4	889	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-42	0 - 0.5	2750	2.8	237	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-49	0 - 0.5	29.4	7.2	791	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-49	1 - 2	22.9	7	933	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-50	0 - 0.5	38.1	17	1310	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-50	1 - 2	22.3	16.7	821	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-55	0 - 0.5	51	24.5	1190	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-56	0 - 0.5	200	15	2950	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-56	1 - 1.5	78.6	282	8860	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-60	0 - 0.5	8.4	4.5	250	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-61	0 - 0.5	186	24.6	1720	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-66	0 - 0.5	2.9	2.1	110	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-68	0 - 0.5	14	24.6	835	IRM outside BZ	CMS SOILS SAMPLING 2009
F	BERA-RNOF01-01	0 - 1	19.6	38.7	1100	IRM outside BZ	BERA SOIL SAMPLING 1/06
F	BERA-RNOF02-01	0 - 1	31.7	72.5	2270	IRM outside BZ	BERA SOIL SAMPLING 1/06
F	BERA-RNOF02-01	1 - 2	77.6	9.66	2900	IRM outside BZ	BERA SOIL SAMPLING 1/06
F	BERA-RNOF02-02	0 - 1	13.4	2.79	91.9	IRM outside BZ	BERA SOIL SAMPLING 1/06
F	BERA-RNOF02-02	1 - 2	27.7	92.2	943	IRM outside BZ	BERA SOIL SAMPLING 1/06
F	BERA-RNOF03-01	0 - 1	3.29	4.85	195	Buffer Zone	BERA SOIL SAMPLING 1/06
F	BERA-RNOF03-01	1 - 2	2.83	0.60	7.68	Buffer Zone	BERA SOIL SAMPLING 1/06
F	BERA-RNOF03-02	0 - 1	2.1	3.84	5.49	Buffer Zone	BERA SOIL SAMPLING 1/06
F	BERA-RNOF03-02	1 - 2	1.52	0.61	3.53	Buffer Zone	BERA SOIL SAMPLING 1/06
F	BERA-S14-01	0 - 1	2770	22.7	--	IRM outside BZ	BERA SOIL SAMPLING 1/06
F	BERA-S14-01	1 - 2	270	25.5	--	IRM outside BZ	BERA SOIL SAMPLING 1/06
F	BERA-S14-02	0 - 1	2360	22.2	--	IRM outside BZ	BERA SOIL SAMPLING 1/06
F	BFZ-10	0 - 0.5	265	52.4	3430	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
F	BFZ-14	0 - 0.5	32.1	56.2	1510	Buffer Zone	CMS SOILS SAMPLING 2009
F	BFZ-16	0 - 0.5	503	20.8	1300	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
F	BFZ-18	0 - 0.5	5.7	3.5	172	Buffer Zone	CMS SOILS SAMPLING 2009
F	BFZ-18	1 - 2	1.8	0.74	2.4	Buffer Zone	CMS SOILS SAMPLING 2009
F	BFZ-19	0 - 0.5	3.5	5.4	49.3	Buffer Zone	CMS FOLLOW-UP SOILS 2010
F	NA-08	0 - 0.5	34.4	81.4	477	IRM outside BZ	EI DATA GATHERING
F	NA-11	0 - 0.5	107	49.4	8650	IRM outside BZ	EI DATA GATHERING
F	NA-13	0 - 0.5	26.8	10.7	925	IRM outside BZ	EI DATA GATHERING
F	NA-16	0 - 0.5	6.4	3.6	127	Buffer Zone	EI DATA GATHERING
F	S14-02U	1 - 3	49	27.9	--	IRM outside BZ	PHASE I RFI
F	S14-03U	0 - 2	64.2	42.2	--	IRM outside BZ	PHASE I RFI
G	BERA-S2D-01	0 - 1	12.5	17.4	208	IRM outside BZ	BERA SOIL SAMPLING 1/06
G	BERA-S2D-01	1 - 2	5.4	5.25	42	IRM outside BZ	BERA SOIL SAMPLING 1/06
G	BERA-S2D-02	0 - 1	8.39	6.19	127	IRM outside BZ	BERA SOIL SAMPLING 1/06
G	BERA-S2D-02	1 - 2	5.93	1.93	40.6	IRM outside BZ	BERA SOIL SAMPLING 1/06
G	BFZ-04	0 - 0.5	40.9	20.4	657	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
G	BFZ-06	0 - 0.5	16.1	17.1	636	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
G	BFZ-08	0 - 0.5	43.2	39.8	1980	Buffer Zone	CMS FOLLOW-UP SOILS 2010
G	GRD-42	0 - 0.5	89.1	83.9	128	IRM outside BZ	CMS SOILS SAMPLING 2009
G	GRD-42	1 - 1.5	6.6	2.8	4290	IRM outside BZ	CMS SOILS SAMPLING 2009
G	S2D-02U	2 - 4	22.4	17.6	194	IRM outside BZ	PHASE I RFI
G1	BFZ-03	0 - 0.5	58.4	37.4	778	Buffer Zone	CMS FOLLOW-UP SOILS 2010
G1	BFZ-11	0 - 0.5	6.5	1.6	37.6	Buffer Zone	CMS SOILS SAMPLING 2009
G1	BFZ-5	0 - 0.5	44.7	13.7	487	Buffer Zone	CMS SOILS SAMPLING 2009
G1	BFZ-7	0 - 0.5	2.6	13	87.5	Buffer Zone Extended	CMS SOILS SAMPLING 2009
G1	BFZ-9	0 - 0.5	17	21.7	604	Buffer Zone	CMS SOILS SAMPLING 2009
G1	BFZ-SS-1	0 - 0.5	66.2	32.6	709	Buffer Zone	CMS FOLLOW-UP SOILS 2010
G1	BFZ-SS-2	0 - 0.5	19.4	71.6	183	Buffer Zone	CMS FOLLOW-UP SOILS 2010
G1	NAS07	0 - 0.5	57.7	29.8	51	Buffer Zone	NATURAL AREA SAMPLING 9/08
G1	NAS07	0.5 - 1	40.6	26.6	1040	Buffer Zone	NATURAL AREA SAMPLING 9/08
G1	NAS07	1 - 2	0.635	1.05	554	Buffer Zone	NATURAL AREA SAMPLING 9/08

Table 2 (cont.)

IRM Area	Sample	Depth (ft)	Soil Concentration (mg/kg) * Arsenic	Cadmium	Lead	Risk Assessment Area	Sampling Phase
H	A11-01S	0 - 2	1.9	--	2.4	Buffer Zone Extended	PHASE I RFI
H	A11-01U	2 - 4	2.3	--	2.4	Buffer Zone Extended	PHASE I RFI
H	A11-02S	0 - 2	2.8	--	6.2	Buffer Zone Extended	PHASE I RFI
H	A11-02U	2 - 2.5	0.6	--	2.8	Buffer Zone Extended	PHASE I RFI
H	BFZ-13	0 - 0.5	17.7	22.5	25.1	Buffer Zone Extended	CMS FOLLOW-UP SOILS 2010
H	BFZ-15	0 - 0.5	14.8	13.9	261	Buffer Zone	CMS SOILS SAMPLING 2009
H	BFZ-17	0 - 0.5	158	6.6	391	Buffer Zone	CMS FOLLOW-UP SOILS 2010
H	NAGRD-06	0 - 0.5	14.2	38	91.5	Buffer Zone Extended	CMS FOLLOW-UP SOILS 2010
H	NAGRD-07	0 - 0.5	33.6	4.1	5770	Buffer Zone Extended	CMS FOLLOW-UP SOILS 2010
H	NAT-TRENCH-1	0 - 0.5	342	17.5	11.7	Buffer Zone Extended	CMS FOLLOW-UP SOILS 2010
H	NAT-TRENCH-1	1.5 - 2	2.9	0.22	5600	Buffer Zone Extended	CMS FOLLOW-UP SOILS 2010
H	NAT-TRENCH-1	2.5 - 3	5.9	0.12	46	Buffer Zone Extended	CMS FOLLOW-UP SOILS 2010
Outside IRM	NAPLOT-02	0 - 0.5	223	--	3100	Buffer Zone	NATURAL AREA SAMPLING 8/11
Outside IRM	NAPLOT-02	0.5 - 1.5	211	--	4790	Buffer Zone	NATURAL AREA SAMPLING 8/11
Outside IRM	BFZ-01	0 - 0.5	78.3	15.8	1290	Buffer Zone	CMS FOLLOW-UP SOILS 2010
Outside IRM	NA-38	0 - 0.5	2.1	0.19	15.4	Buffer Zone	EI DATA GATHERING
Outside IRM	S14-04U	2 - 4	33.5	0.42	--	Buffer Zone	PHASE I RFI
Outside IRM	S1B-03U	0 - 1	2.6	1.46	63.3	Buffer Zone	PHASE I RFI
Outside IRM	AOI-3-34	0.5 - 1	514	3.7	2380	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-3-34	0 - 0.5	120	3.3	677	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-3-62	0 - 0.5	126	14	1120	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-3-62	1 - 2	31.1	63	913	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-1	0 - 0.5	15.3	7.1	714	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-1	1 - 1.5	13.4	3	204	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-10	1 - 2	11.6	0.21	421	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-10	0 - 0.5	1.7	0.2	89.5	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-12	0 - 0.5	58.8	26	2240	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-12	0.5 - 1	23.8	1.8	865	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-14	0 - 0.5	92.6	40.5	1350	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-20	0 - 0.5	67.2	2.4	1070	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-39	0 - 0.5	89.8	20.8	2320	Redevelopment Area	CMS FOLLOW-UP SOILS 2010
Outside IRM	AOI-4-39	1 - 2	93.4	29.5	2990	Redevelopment Area	CMS FOLLOW-UP SOILS 2010
Outside IRM	AOI-4-39	2 - 3	42.8	29.9	229	Redevelopment Area	CMS FOLLOW-UP SOILS 2010
Outside IRM	AOI-4-4	0.5 - 1	390	0.69	81.2	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-4	0 - 0.5	101	1.5	144	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-5	1 - 1.5	23.9	4.3	546	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-5	0 - 0.5	113	8.8	345	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-6	0 - 0.5	79.2	24.1	1400	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	BERA-RNOF01-02	1 - 2	1.19	0.27	2.07	Redevelopment Area	BERA SOIL SAMPLING 1/06
Outside IRM	BERA-RNOF01-02	0 - 1	2.08	0.40	7.23	Redevelopment Area	BERA SOIL SAMPLING 1/06
Outside IRM	BFZ-2	0 - 0.5	67.7	32.5	828	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	BFZ-2	1 - 2	65.1	40.5	1470	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	GRD-66	1 - 2	14	125	480	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	GRD-66	0 - 0.5	23.9	8.4	837	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	GRD-68	0 - 0.5	19.3	1.6	292	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	GRD-68	1 - 2	419	39	7370	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	GRD-68	1 - 2	183	19.2	29700	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	GRD-69	0 - 0.5	34.6	5.3	666	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	GRD-69	1 - 2	572	13.6	4140	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	J19SA	2 - 3	0	1.94	126.7	Redevelopment Area	92 CPT GRID SAMPLING ECHICAGO
Outside IRM	NAPLOT-06	0 - 0.5	247	--	2850	Buffer Zone Extended	NATURAL AREA SAMPLING 8/11
Outside IRM	NAPLOT-06	0.5 - 1.5	226	--	3230	Buffer Zone Extended	NATURAL AREA SAMPLING 8/11
Outside IRM	NAPLOT-14	0 - 0.5	17.1	--	1020	Buffer Zone Extended	NATURAL AREA SAMPLING 8/11
Outside IRM	NAPLOT-14	0.5 - 1.5	16.2	--	971	Buffer Zone Extended	NATURAL AREA SAMPLING 8/11
Outside IRM	S10A-01U	2 - 4	5.5	--	--	Redevelopment Area	PHASE I RFI
Outside IRM	S14-01U	2 - 4	175	4.02	--	Redevelopment Area	PHASE I RFI

* Highlighted data indicates soil concentrations that would potentially exceed TCLP threshold values of:

Arsenic: 5,548 mg/kg soil concentration

Cadmium: 235 mg/kg soil concentration

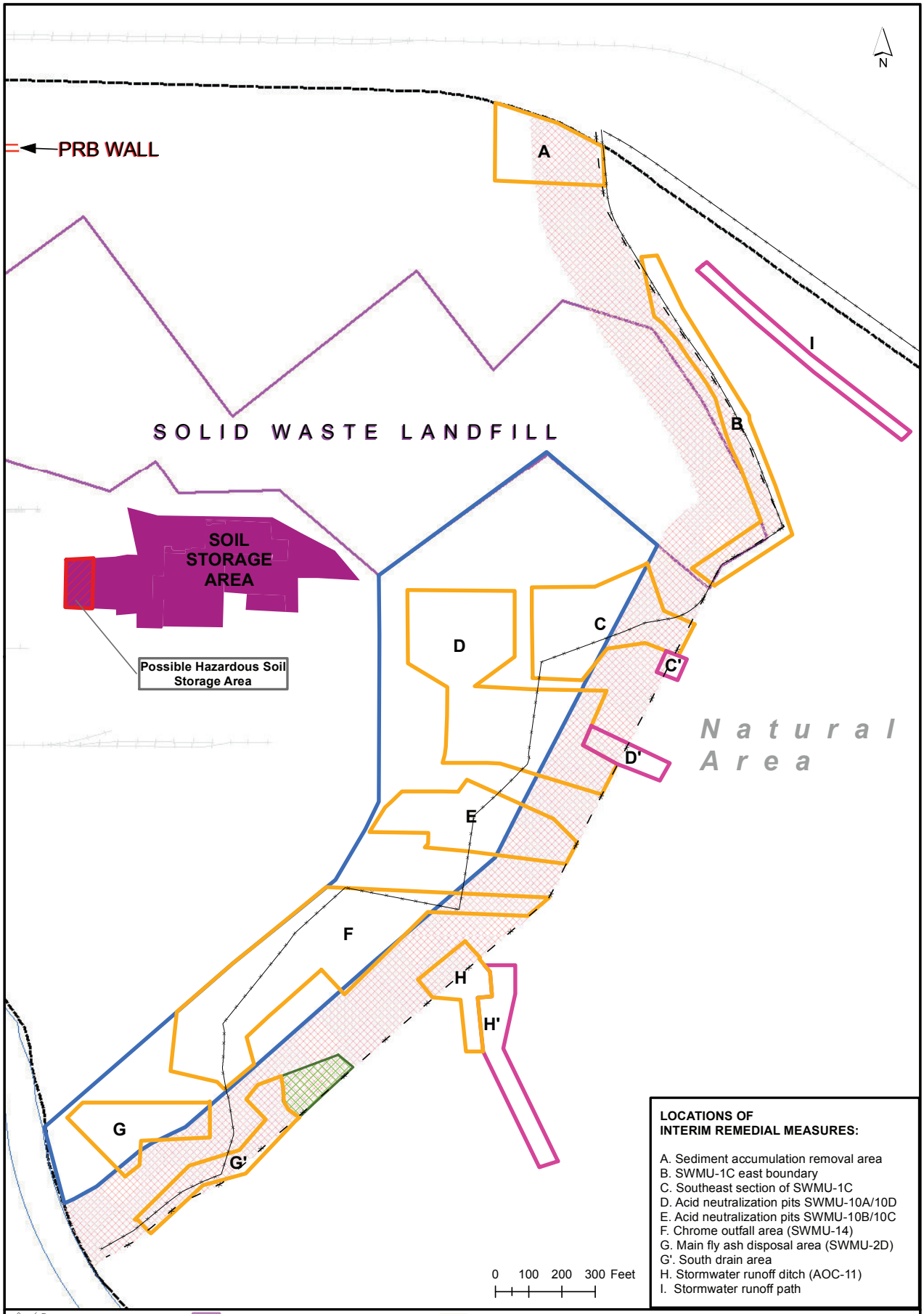
Lead: 4,606 mg/kg soil concentration

** Soil samples with concentration approaching TCLP threshold for lead that will also be evaluated as potentially hazardous

Table 3
Buffer Zone Interim Remedial Measures (IRM)
Historical Soil Samples from Additional Areas Within Extended IRM Boundaries

Extended IRM Area	Sample	Depth (ft)	Soil Concentration (mg/kg) Arsenic	Lead	Zinc	Sampling Phase
C'	NAPLOT-06	0 - 0.5	247	2,850	12,400	NATURAL AREA SAMPLING 2011
C'	NAPLOT-06	0.5 - 1.5	226	3,230	15,100	NATURAL AREA SAMPLING 2011
D'	NAPLOT-02	0 - 0.5	223	3,100	5,520	NATURAL AREA SAMPLING 2011
D'	NAPLOT-02	0.5 - 1.5	211	4790*	12,500	NATURAL AREA SAMPLING 2011
D'	NA-SS-2	0 - 0.5	344	2,610	14,000	CMS FOLLOW-UP SOILS 2010
H'	NAPLOT-31	0 - 0.5	277	1,500	11,900	NATURAL AREA SAMPLING 2011
H'	NAPLOT-31	0.5 - 1.5	278	658	9,711	NATURAL AREA SAMPLING 2011
H'	NAT-TRENCH-2	0 - 0.5	193	5640*	3,090	CMS FOLLOW-UP SOILS 2010
H'	NAT-TRENCH-3	0 - 0.5	109	4460*	4,590	CMS FOLLOW-UP SOILS 2010
H'	NA-S08	0 - 0.5	54.5	1,110	9,360	NATURAL AREA SAMPLING 2008
H'	NA-S08	0.5 - 1.0	322	4720*	5,270	NATURAL AREA SAMPLING 2008
H'	NA-S08	1.0 - 2.0	95.5	1,770	2,170	NATURAL AREA SAMPLING 2008
I	NAPLOT-35	0 - 0.5	42.1	516	71,700	NATURAL AREA SAMPLING 2011
I	NAPLOT-35	0.5 - 1.5	62.6	982	65,900	NATURAL AREA SAMPLING 2011
I	NAPLOT-36	0 - 0.5	34.7	1,930	86,300	NATURAL AREA SAMPLING 2011
I	NAPLOT-36	0.5 - 1.5	26.9	1,090	65,600	NATURAL AREA SAMPLING 2011
I	NAPLOT-37	0 - 0.5	27.6	848	6,020	NATURAL AREA SAMPLING 2011
I	NAPLOT-37	0.5 - 1.5	38.4	770	3,990	NATURAL AREA SAMPLING 2011

* Soil concentrations near or above a 4,606 mg/kg TCLP threshold concentration for lead.



LOCATIONS OF INTERIM REMEDIAL MEASURES:

A. Sediment accumulation removal area
B. SWMU-1C east boundary
C. Southeast section of SWMU-1C
D. Acid neutralization pits SWMU-10A/10D
E. Acid neutralization pits SWMU-10B/10C
F. Chrome outfall area (SWMU-14)
G. Main fly ash disposal area (SWMU-2D)
G'. South drain area
H. Stormwater runoff ditch (AOC-11)
I. Stormwater runoff path

Basemap
Existing Fence Line
River
Approximate Property Boundary
Solid Waste Landfill
Proposed Approximate Realignment of Fence
PRB Wall Location (approximate)
Buffer Zone
Target Remediation Area
Redevelopment Area
Additional IRM
Sensitive Habitat- No excavation

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Title:

INTERIM REMEDIAL MEASURES LOCATION

Revised Supplemental Corrective Measures Study Investigation
DuPont East Chicago Facility
East Chicago, Indiana

Prepared by: Muyiwa Sami	Date: 8/21/2012	DuPont Project No: 507942
Reviewed by:	Figure No: 1	PARSONS Project No: 446650

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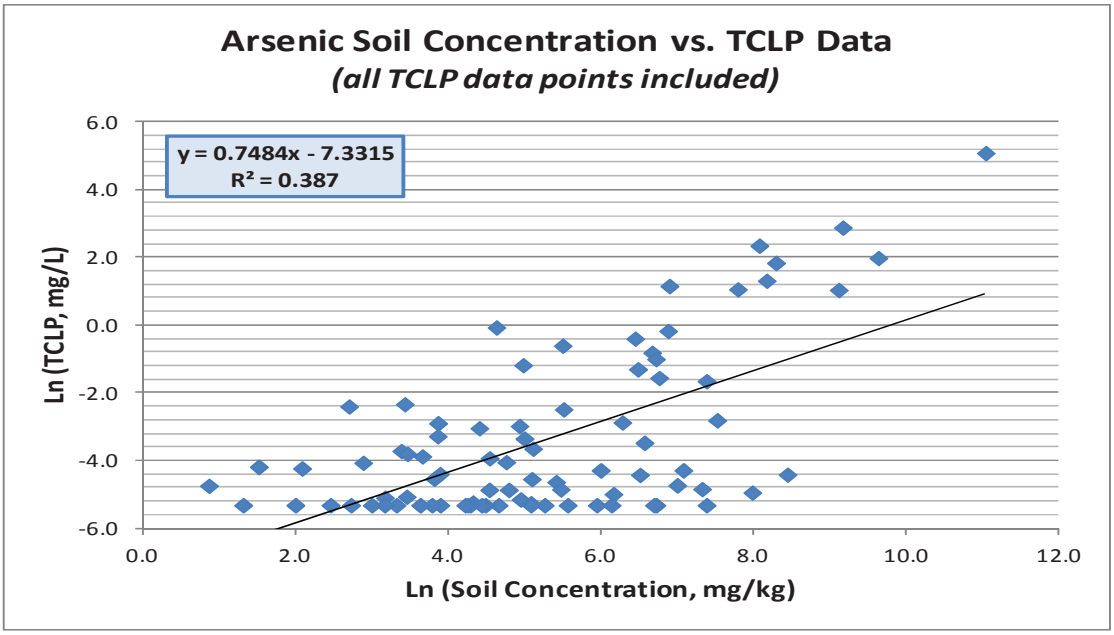
Figure 2. Soil Concentration vs. TCLP Regression - East Chicago Site Data

All TCLP Data Included

Arsenic TCLP Limit =	5 mg/L
ln(SOIL)	11.947
Soil Threshold (mg/kg)	154,313



Excluding TCLP <0.1 mg/L Data

Arsenic TCLP Limit =	5 mg/L
ln(SOIL)	8.621
Soil Threshold (mg/kg)	5,548

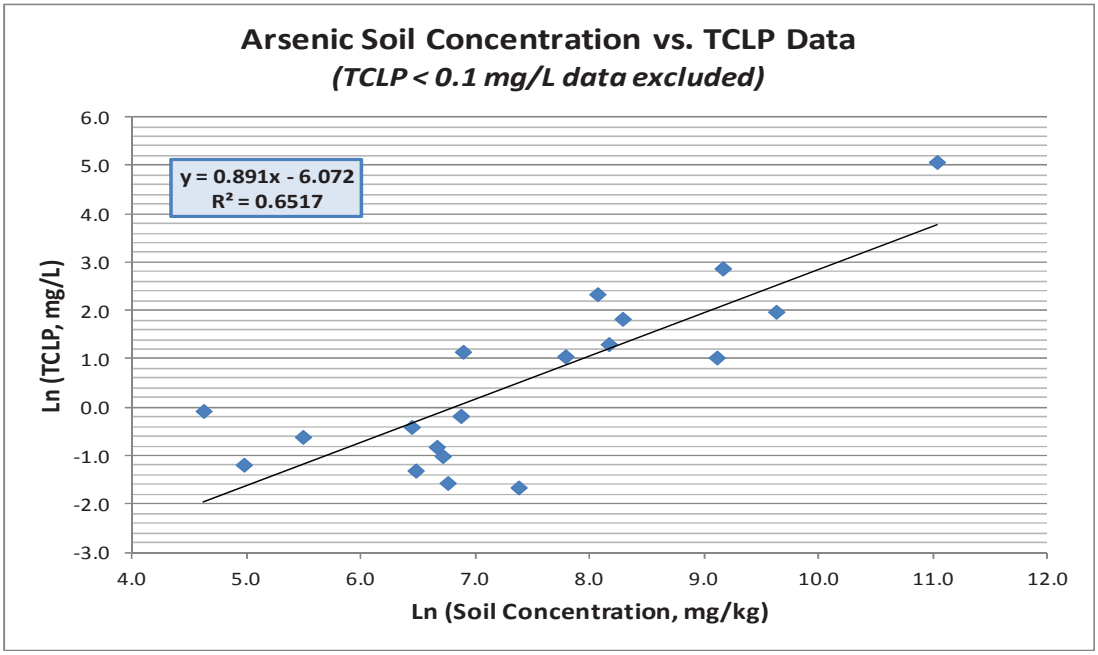
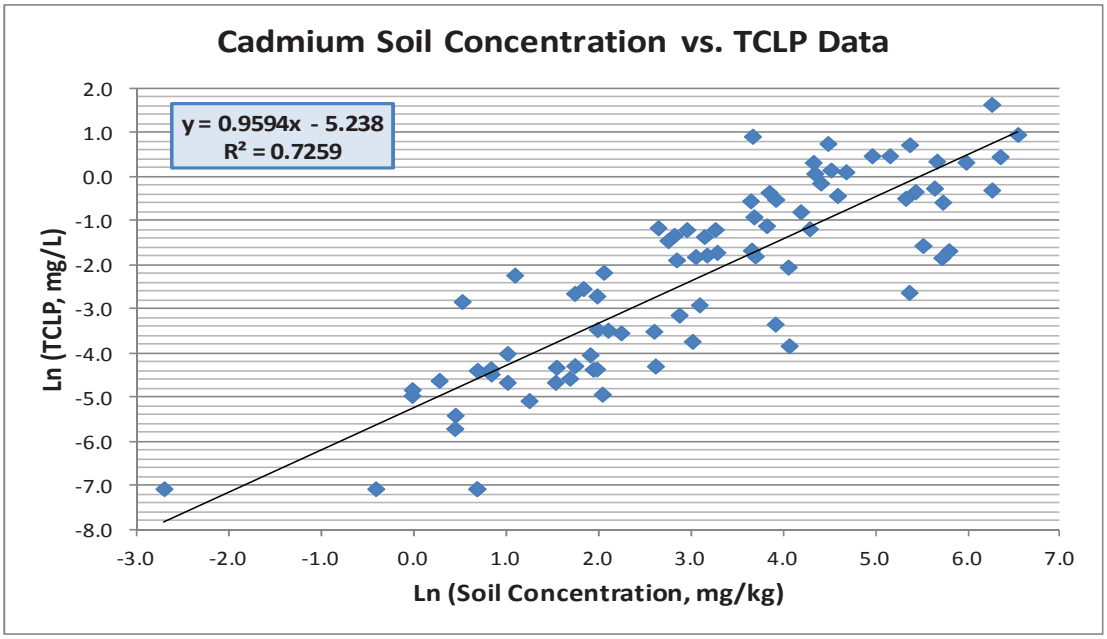
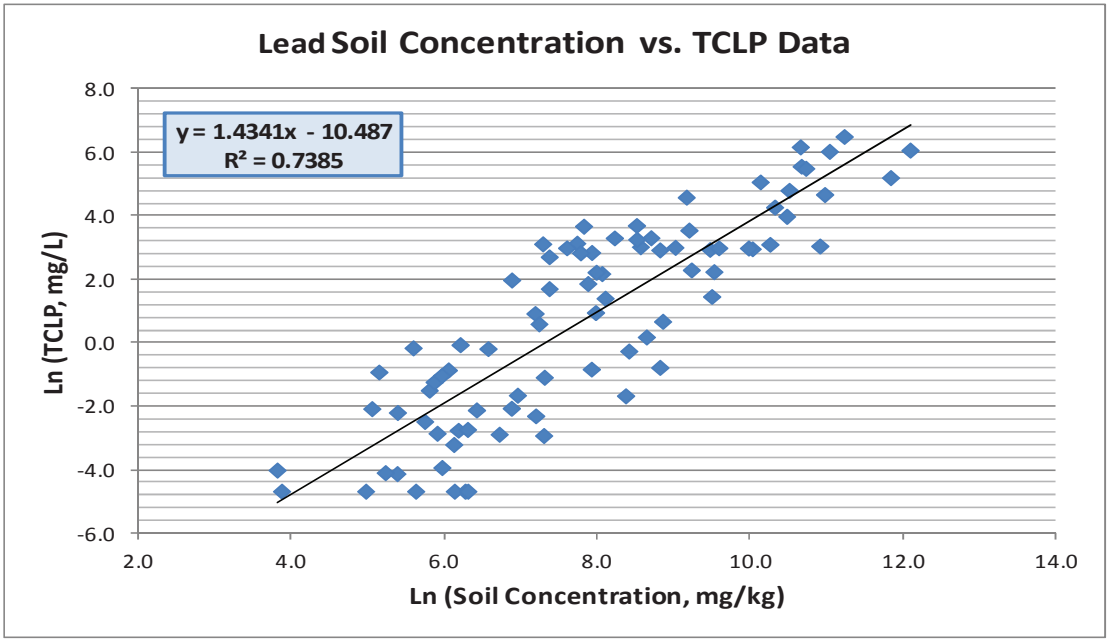


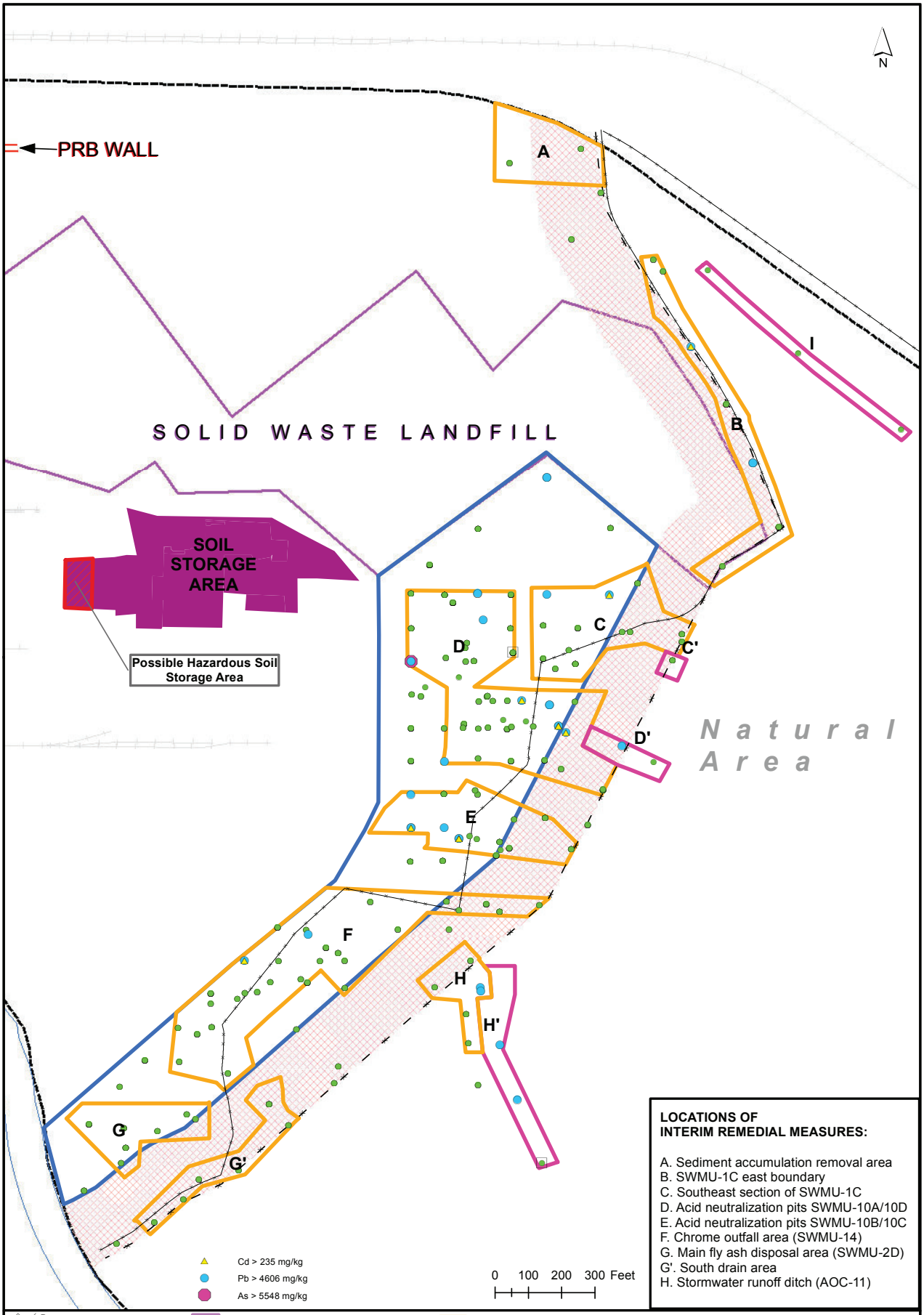
Figure 2. Soil Concentration vs. TCLP Regression - East Chicago Site Data *(cont.)*

Cadmium TCLP Limit =	1 mg/L
ln(SOIL)	5.4597
Soil Threshold (mg/kg)	235



Lead TCLP Limit =	5 mg/L
ln(SOIL)	8.4351
Soil Threshold (mg/kg)	4,606





LOCATIONS OF INTERIM REMEDIAL MEASURES:

A. Sediment accumulation removal area
B. SWMU-1C east boundary
C. Southeast section of SWMU-1C
D. Acid neutralization pits SWMU-10A/10D
E. Acid neutralization pits SWMU-10B/10C
F. Chrome outfall area (SWMU-14)
G. Main fly ash disposal area (SWMU-2D)
G'. South drain area
H. Stormwater runoff ditch (AOC-11)

Basemap
Existing Fence Line
River
Approximate Property Boundary
Solid Waste Landfill
Proposed Approximate Realignment of Fence
PRB Wall Location (approximate)
Buffer Zone
Target Remediation Area
Redevelopment Area

Excavation Area Sampling Location
< TCLP Threshold Values for As, Cd, and Pb outside IRM's
Samples approaching TCLP threshold for Lead

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Title:
HISTORICAL SURFACE SOIL SAMPLES COLLECTED FROM IRM SITES AND ADJACENT AREA
Revised Supplemental Corrective Measures Study Investigation
DuPont East Chicago Facility
East Chicago, Indiana

Prepared by: Muyiwa Sami	Date: 8/22/2012	DuPont Project No: 507942
Reviewed by:	Figure No: 3	PARSONS Project No: 446650

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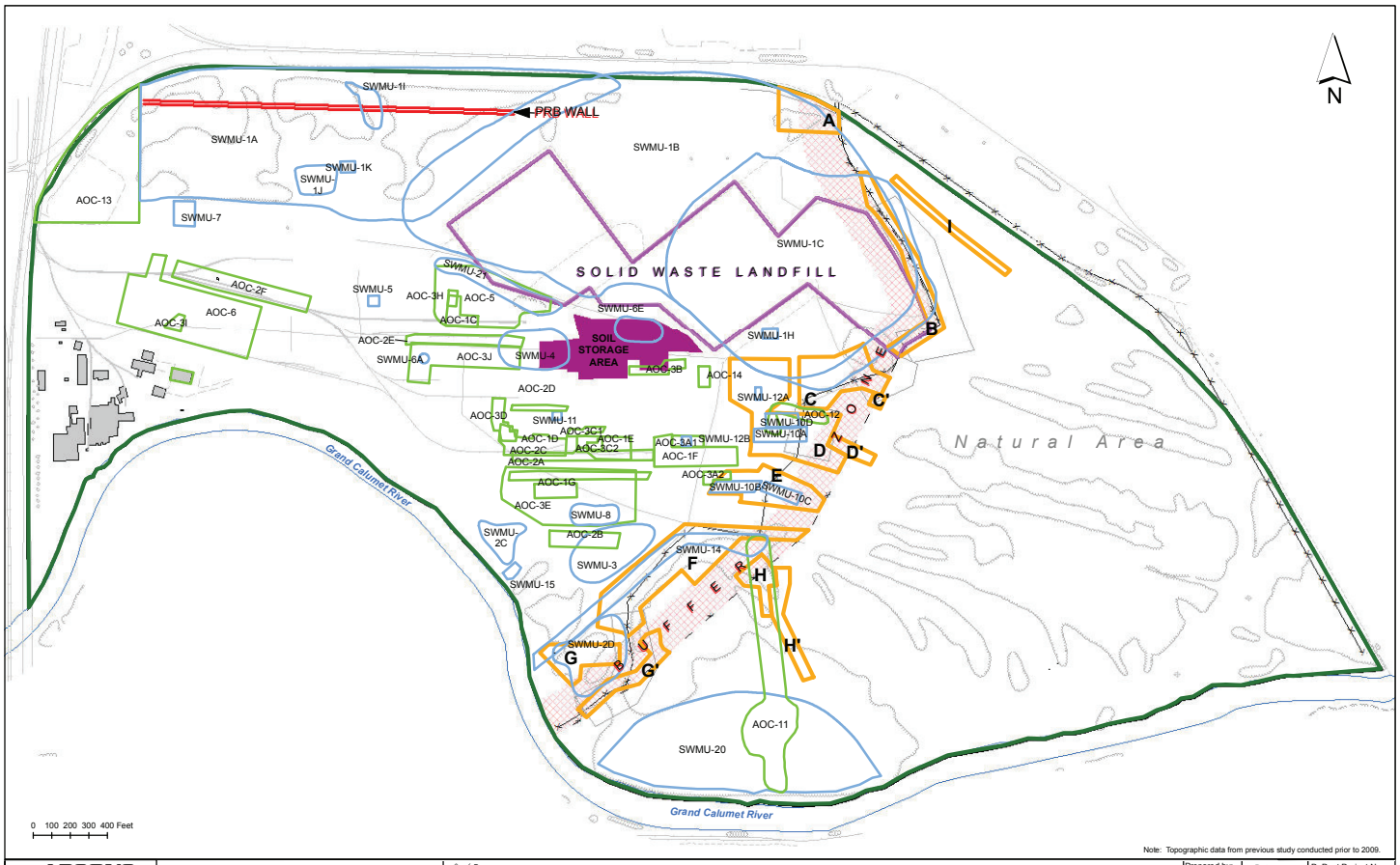

Note: Topographic data from previous study conducted prior to 2009.

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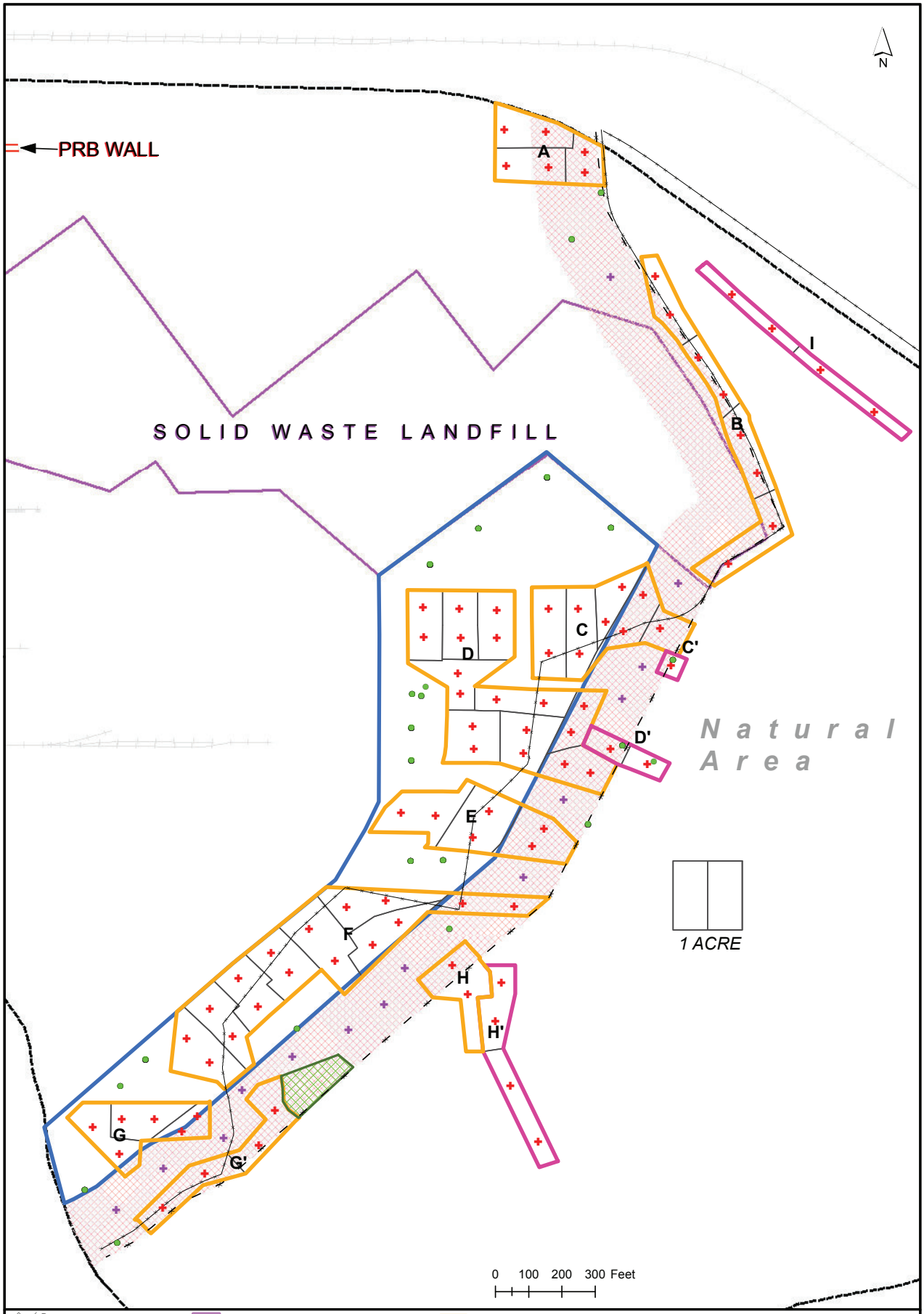
Title **Overall Property AOC**
Revised Supplemental Corrective Measures Study Investigation
DuPont East Chicago Facility
East Chicago, Indiana

Basemap
Existing Fence Line
River
Approximate Property Boundary
Site Structure
Proposed Realigned Fence
AOC Boundary
SWMU Boundary
Solid Waste Landfill
Soil Storage Area
Hazardous Soil Stockpile Area
Overall Property Area AOC

Prepared by: Muyiwa Sami	Date: 8/22/2012	DuPont Project No: 507754
Reviewed by:	Figure No: 4	PARSONS Project No: 446702
File Path: J:\DuPont East Chicago\DUPONT-000 East_Chicago\Project_Figures\SMC\Figure 4.mxd		



Basemap
Existing Fence Line
River
Approximate Property Boundary
Solid Waste Landfill
Proposed Approximate Realignment of Fence
PRB Wall Location (approximate)
Buffer Zone
Target Remediation Area
Redevelopment Area
Sampling Area
Sensitive Habitat- No excavation

Excavation Area Sampling Location
< TCLP Threshold Values for As, Cd, and Pb outside IRM's
Post Excavation IRM Sampling Location
Additional Post Excavation IRM Sampling Location

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Title: **POST EXCAVATION SAMPLE LOCATIONS**
Revised Supplemental Corrective Measures Study Investigation
DuPont East Chicago Facility
East Chicago, Indiana

Prepared by: Muyiwa Sami	Date: 8/22/2012	DuPont Project No: 507942
Reviewed by:	Figure No: 5	PARSONS Project No: 446650

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HEALTH AND SAFETY PLAN

APPENDIX Q - AIR SAMPLING PLAN

DUPONT EAST CHICAGO INTERIM REMEDIAL ACTION – EXCAVATION

EAST CHICAGO, INDIANA

June 20, 2012

EAST CHICAGO SITE - AIR MONITORING/SAMPLING PLAN

This air monitoring plan has been developed for the former DuPont East Chicago site to address site and worker protection. Real time air monitoring will be performed to measure total dust. The contractor will conduct periodic real-time air monitoring in the worker's breathing zone and at the perimeter of the exclusion zone to aid in decision-making for implementing dust control, and personal protective equipment (PPE) changes. The contractor will perform air sampling for lead, arsenic, and cadmium in the worker's breathing zone using NIOSH Method 7300. Parsons will perform the same tasks for their employees and will conduct PM_{10} sample collection.

Air samples will be obtained once the initial intrusive activity commences and will continue for several days in order to characterize potential worker exposures. Parsons and the contractor will be responsible for determining the frequency of sampling and administering this program in coordination with DuPont.

It is anticipated that Level D and modified Level D PPE will be used the during excavation activities. If monitoring results indicate elevated concentrations above action levels, additional PPE will be required.

1.0 WORK AREA AIR SAMPLING PLAN

The East Chicago Site interim remedial measure (IRM) involves a series of soil excavations in the eastern portion of the Site along the Buffer Zone to the Natural Area. Remediation activities consist of the excavation, moving, and storage of contaminated soils that have the potential to generate airborne dust which could migrate from the active work areas.

The contractor will implement dust suppression measures such as water spraying to help control particulate concentrations in the air. Air sampling in the work area will be implemented to document the actual particulate and metal concentrations levels that occur over the course of typical construction days. The contractor will provide results of the air monitoring weekly to the Parsons site supervisor to document that the appropriate PPE levels were used. The Parsons supervisor will submit these results to DuPont and Parsons Health and Safety weekly.

This plan describes the air sampling approach that will be implemented.

The objective of air sampling is to assess concentrations of dust and COC's in both work area and at the site perimeter. This will be accomplished by sampling over an 8 to 10-hour period corresponding to a construction day for a representative number of days over the duration of the construction work.

The target compounds to be sampled will consist of dust (PM_{10}), along with the contaminant metals (arsenic, lead, and cadmium). The PM_{10} is selected as the dust type to sample as it is invisible in the ambient air and is the basis for State and National ambient air quality 24-hour particulate standards.

To augment the work area sampling, as well as the real-time dust monitoring, meteorological data will be continuously recorded from the beginning to the end of the remediation work using an on-site meteorological monitoring station located in a central area of the Site. The station will record the following parameters:

- wind speed;
- wind direction;
- air temperature;
- relative humidity (RH);
- barometric pressure; and
- precipitation.

The meteorological station will be located in an area that is clear of buildings, trees, or other obstructions, at a height of approximately 10 feet above ground or more, in accordance with USEPA citing and exposure criteria (USEPA 2008).

1.1 Methods of Work Area Air Sampling

The data collection method consists of time-integrated manual air sampling with off-site laboratory analysis of PM_{10} and PM_{10}-metals. The sections below provide a brief description of the types of instruments, detection limits, and any applicable procedures.

PM_{10}

PM_{10} samples will be collected via a low-volume sampling method, coupled with pre- and post-sampling gravimetric analyses of the sample filters. The low-volume sampling method with use of a size-selective inlet with a cut point of 10 microns is a precise and accurate method that closely tracks the USEPA Federal Reference Method (FRM) for determination of PM_{10} concentrations in the ambient air.

The MiniVol TAS PM_{10} sampler will be mounted on elevated platforms such as posts, poles or tripods to provide sampling at an approximate "breathing zone" height of 1.5 to 2 meters above the ground.

Metals

Trace metal concentrations will be determined by combining the low-volume sampling method with USEPA's IO-3 Method (Chemical Species Analysis of Collected Suspended Particulate Matter) for inorganic compounds. The exposed filters will be submitted to a laboratory for chemical analysis of lead, arsenic, and cadmium.

Since trace metal levels are determined through chemical analysis of collected PM_{10} filter samples, the corresponding ambient concentrations (i.e., ug/m^3) will also be measured and reported as 8- to 10-hour integrated averages.

The analytical detection limits for the metals must be low enough to measure trace background levels in the air samples and allow comparison to appropriate reference values. **Table 1** presents background concentrations reported in the literature for each target metal:

Table 1
Reported Background Air Concentrations for Metals

Parameter	Concentration (µg/m^3)	Source
Lead (Pb)	0.01 - 0.28	USEPA
Arsenic (As)	<0.001 – 0.03	ATSDR
Cadmium (Cd)	< 0.01	ATSDR

Table 2 gives the recommended minimum analytical detection limits based on the lower of the ambient air standards/guidelines or typical background concentration values for each parameter:

Table 2
Minimum Detection Limits

Parameter	Based on Standard/Guideline or Background Conc.	Detection Limit	
		(µg/m^3)	(µg/filter)*
Lead (Pb)	Low-end Background	0.001	1.6
Arsenic (As)	RBC – cancer (annual)	0.0000574	0.092
	Low-end Background	0.0001	0.16
Cadmium (Cd)	RBC – cancer (annual)	0.00014	0.22
	RBC – noncancer (annual)	0.001	1.6

Note: Recommended detection limits are one-tenth of the desired minimum measurement value for each parameter.

* Based on a typical high volume air sample volume of 1600 cubic meters.

Laboratory Analysis

All laboratory analyses for this program will be performed by Bureau Veritas, located in Novi, Michigan. The analytical work includes gravimetric determination of particulate matter on filters (pre- and post-sampling weights) and instrumental analysis of particulate matter for the three target metals by ICP-MS.

Meteorological Conditions

A meteorological monitoring station will be employed that consists of sensors capable of continuously measuring wind speed, wind direction, temperature, RH, barometric pressure, and precipitation. The system will meet USEPA specifications for air quality monitoring studies. A **Met One Instruments Automet Model 466A** meteorological monitoring station (or equivalent) will be used for the meteorological monitoring component of the sampling program. **Attachment 1** also includes vendor specifications for the meteorological station.

1.2 Sampling Locations

One MiniVol PM_{10} sampler will be located to meet the objectives of the work area air monitoring and consistent with forecast and/or observed winds for the construction day to ensure the collection of a downwind sample. For each sampling day, the sampler will be located in the downwind direction approximately 100 to 200 feet from the active work area. The sampler will be mounted on a tripod or equivalent to ensure sample collection in the breathing zone at a height of 1.5 to 2.0 meters. If winds change substantially during the construction day, then the sampler will be moved to the new downwind location at the same distance from the active work area.

1.3 Frequency and Duration of Sampling

PM_{10} sampling will be performed at a single downwind location on a frequency of once per week. The sampling schedule will be rotated by day such that the first weekly sample will be collected on a Monday, followed by the next sample on Tuesday, and then Wednesday, Thursday, and Friday. This type of schedule will continue for the duration of the IRM, which is expected to take 5 to 6 months to complete, and will result in a total of approximately 22 to 26 PM_{10} samples that will be submitted for metals analysis.

1.4 Data Management and Reporting

Data management begins with the assembly and initial review of all field materials including particulate filters and corresponding sampler run data, meteorological data, field log notes, and calibration forms. These data are reviewed prior to and subsequent to each sampling event.

At the conclusion of sampling, the particulate filter is returned to the laboratory for equilibration and final weighing to determine the PM_{10} concentration. The filter will then be used by the laboratory for analysis and determination of metals. The laboratory will provide analytical results to Parsons within 5 days of receipt of each filter.

Meteorological data will be downloaded on a daily basis from the monitoring station. Data will be reviewed for consistency and completeness. Upon completion of all sampling, meteorological data will be processed into a “reader-friendly” format suitable for reporting meteorological conditions with concurrent sampling and real-time dust results.

A final data summary will be prepared presenting the results of each sampling event to include air sampling and meteorological data summaries.

All meterological data and sampling records will be compiled and maintained by Parsons for project documentation.

1.5 Quality Assurance

Air Sampling Personnel

Monitoring and sampling activities will be performed by appropriately trained and experienced individuals. Training will include completion of a 40-hour hazardous waste activities training course in compliance with OSHA Standard 29 CFR 1910, as well as an 8-hour refresher course within the last year. Monitoring personnel will also be experienced or trained in the calibration, operation, and routine maintenance of the specific monitoring equipment being used for the work area sampling.

MiniVol Air Sampler

The PM_{10} sampler will be calibrated prior to the start of the sampling program. The calibration procedures will conform to manufacturer's standard instructions (see Operations Manual in **Attachment 2**). This calibration will ensure that the samplers are functioning within the allowable tolerances established by the manufacturer and required on this program. Records of sampler calibration and instrument manuals will be maintained in a field notebook.

At the beginning and end of each sampling event the sampler will check the flow for proper operation. This check is required to verify the flow rate and calculating sample volume for each sample collected. This information will be recorded in a spreadsheet along with the lab-provided PM_{10}/metals mass, the air concentrations for the sample collected.

Laboratory Instruments

The laboratory will follow calibration procedures and schedules as specified in the relevant sections of the USEPA guidance documents or other established sampling methods and any subsequent updates that may apply.

Meteorological Monitoring System

The meteorological monitoring station will be field-calibrated upon start-up. This consists of sensor-control calibration checks on the individual sensors and includes aligning the wind direction vane to true north. Once data collection begins, the system will not be moved.

The meteorological station is designed to run unattended in the field for long periods of time up to 6 months without requiring calibrations or maintenance. The duration of this program is expected to be up to 6 months; therefore, end-of-period calibration checks will be required and performed once the IRM is completed. Should a malfunctioning sensor be detected and replaced, the replacement sensor will be field-calibrated when placed into service. In addition, if the meteorological station is relocated or repositioned, the wind vane will need to be realigned to true north.

2.0 WORK SPACE PARTICULATE MONITORING

Qualitative airborne dust monitoring will be conducted continuously throughout the project by all personnel on site. The first response to the generation of airborne dust will be the application of a water mist to reduce the migration of the dust followed by an adjustment to work practices to minimize dust generation.

An action level for worker exposure has been set at 2.5 mg/m^3 based on the average concentrations of site specific COCs.

2.1 Method of Air Monitoring

Real-time measurements for dust particulates will be obtained using *personal*DataRAM or equivalent □for *Personal* Data-logging. The Thermo Electron Corporation *personal*DataRAM is designed to measure the concentration of airborne particulate matter (liquid or solid), providing direct and continuous readout as well as electronic recording of the information. In addition, an audible alarm will sound when a user-defined action level is exceeded. This unit operates as a passive air sampler. The *p*DR-1000 passively samples (i.e., without a pump) the air

surrounding the monitor; air freely accesses the sensing chamber of the instrument by means of convection, diffusion, and adventitious air motion.

2.2 Monitoring Locations

Visual monitoring for airborne dust will be performed continuously throughout the project. The contractor will be responsible for monitoring the work area to ensure proper worker PPE. In addition, the contractor will be held accountable for observing, reporting, controlling, and minimizing dust generation during all phases of the onsite work.

The contractor will periodically take measurements and use discretion in locating upwind and downwind areas from which to perform real-time dust monitoring. At various times the contractor may place a pDR- 1000 on equipment and/or a construction worker via a shoulder harness, working in the active areas. Real time readings will be collected in a potential worker's breathing zone to assess potential worker exposure to dust. Data will be downloaded and provided to the Parsons and DuPont Health and Safety Representatives for evaluation.

2.3 Frequency of Monitoring

Monitoring for visible airborne dust emissions will be performed continuously during excavation activities by the entire onsite work force. The contractor will perform hourly real-time air monitoring using the pDR-1000 or equivalent during excavation and material-handling operations when potential lead, arsenic and cadmium-containing dust may be generated. Readings will be collected at least twice per day by Parsons. The real-time monitoring will not be conducted during inclement weather conditions (e.g., rain or heavy fog) because these conditions interfere with the equipment function and may damage the monitors. However, light precipitation will reduce the potential for the generation of dust so work can proceed under these conditions, even if the monitors cannot be operated. During these periods of operation, visual observations will be used to determine if dust emissions are being generated which require suppression measures.

2.4 Data Collection Requirements

During all monitoring activities, it is essential that comprehensive data be collected relative to the tasks being performed. Observational data and periodic field readings of onsite monitors are to be recorded on the appropriate data record form, found in Attachment 3. Applicable chain-of-custody procedures must be maintained for all samples sent to an offsite laboratory for analysis.

3.0 PERSONNEL MONITORING

Although dust suppression measures will be used, air sampling will also be performed to quantify concentrations of lead and arsenic in the air within the breathing zone to assess worker exposure levels.

3.1 Methods of Personal Air Sampling

The contractor will perform air sampling for lead, arsenic, and cadmium in the worker's breathing zone using NIOSH Method 7300. Parson will perform the same tasks for their employees. Arsenic, cadmium, and lead will be analyzed by an American Industrial Hygiene Association (AIHA) approved laboratory. The results of these monitoring activities will be provided to the Parsons as they become available.

3.2 Sampling Locations

Homogeneous Exposure Groups (HEGs) will be identified as part of this excavation and materials-handling phase of the project. Establishing HEGs is a recognized exposure assessment method for personnel performing similar activities where exposure potential would be predicted to be the same or reasonably equivalent. The DSR will identify personnel in each HEG to wear the personal monitoring devices.

3.2.1 Frequency of Sampling

In general, dust samples will be obtained once the initial intrusive activity commences and will continue for several days in order to characterize potential worker exposures. Periodic monitoring will be conducted when work begins on a different portion of the Site, if a different type of operation is being initiated, or if employees are working with materials known to contain lead, cadmium, and arsenic at locations where monitoring was not performed previously. Air sampling will be performed for the duration of field activities conducted in hazardous areas of the site or after analyzing the sample data DuPont Health and Safety determine that air sampling in not required.

4.0 RECORD KEEPING

All records will be compiled and maintained by Parsons for project documentation. The Contractor is also responsible for maintaining their monitoring data and providing a copy to Parsons on a weekly basis.

Records will include the following:

1. Pre-calibration (before personal air sampling begins)
2. Post-calibration (after personal air sampling has been completed)
3. Field observations
4. Calculations and chain-of-custody forms
5. Lead, and arsenic analytical results
6. Daily monitoring will be recorded in the log book
7. Downloaded electronic data from air monitor equipment

5.0 MINIMUM DATA REQUIREMENTS

The following lists the minimum data that are to be collected for sampling

Air pump/monitor data

Pump or instrument ID	Initial flow rate (L/min)
Final flowmeter setting	Calibration date
Final flow rate (L/min)	Calibrator type
Average flow rate (L/min)	Initial flow meter setting

Sample media information (filter cassettes)

• Field sample ID	Media type
• Lab ID #	Type sample

Sampling information

• Start date	Sample time
• Start time	Sample volume (L)
• End date	Sample volume (m3
• End time	Analysis
• Sample time	

Task description (for personal monitoring)

• Employee name/area description	Job task
• Employer	Activity

Results

Total mass (µg) (arsenic/lead lab results	Lab comments
Lab result only)	

6.0 ACTION LEVELS

The air-monitoring program at the Former DuPont East Chicago site consists of a combination of work zone, personnel (worker) monitoring for particulates (dust), and air sampling for lead, arsenic, and cadmium.

Table 3 outlines the various action levels to be adhered to during the IRM.

Table 3
Action Levels

Air-Sampling Instrument (Real Time)	Action Level	Action Taken when Action Level is Met or Exceeded
Work zone dust	2.5 mg/m3 total dust	Additional dust control methods will be implemented and construction activities responsible for generating the dust may be temporarily suspended if dust control is not effective. Respirators may be worn by workers in the exclusion zone represented by the air-sampling results.
Lead	0.05 mg/m3 (TWA 8 hours)	Results from personal lead sampling will be used to assess if respiratory protection for worker protection and safety is required. TWA, time-weighted average.
Cadmium	PEL: 0.005 mg/m^3	Results from personal lead sampling will be used to assess if respiratory protection for worker protection and safety is required. .
Arsenic	0.01 mg/m3 (TWA 8 hours)	Results from personal arsenic sampling will be used to assess if respiratory protection for worker protection and safety is required. TWA, time-weighted average.

Action Level—Visible Monitoring

The observation of airborne dust in the excavation area will be used as a primary action level by site project team personnel. If dust is visible in a localized area, dust suppression methods will be immediately implemented. If dust is visible from any active excavation area and is evident outside the active excavation area, engineering controls or alternate dust control methods will be initiated at once. As stated previously, the dust suppression primarily consists of using water to

wet down an area of dust generation. Covering stockpiles with tarps or wetting the stockpile with water are effective dust suppression methods.

APPENDIX D
NATURAL AREA SOIL DATA
DUPONT EAST CHICAGO SITE
(PIONEER 2013)

Natural Area Soil Data – East Chicago

DuPont East Chicago Site
East Chicago, Indiana

PREPARED FOR:

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JULY 2013

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FIGURES

FIGURE D-1: SOIL SAMPLE LOCATIONS

ACRONYMS AND ABBREVIATIONS

ACRONYM	EXPLANATION
ADQM	Analytical Data Quality Management
BGS	Below Ground Surface
Envista	Envista Corporate Environmental Database
EPC	Exposure Point Concentration
HHRA	Human Health Risk Assessment
IRM	Interim Remedial Measures
PIONEER	PIONEER Technologies Corporation
QA/QC	Quality Assurance/Quality Control
QAPPS	Quality Assurance Project Plans
UCL	Upper Confidence Limit
US EPA	United States Environmental Protection Agency

This Appendix presents the soil[1] sampling results from the Natural Area and the Extended Buffer Zone (see Figure 1-1) and identifies the process used to calculate exposure point concentrations (EPCs) for each constituent.

1.1 Analytical Data

The analytical data for soil were obtained from the DuPont Envista Corporate Environmental Database (Envista). Laboratory results were reviewed using the DuPont Analytical Data Quality Management (ADQM) system, and the non-rejected data were used for the HHRA. Quality Assurance Project Plans (QAPPS) were developed and updated as needed in order to ensure that the appropriate sample collection and laboratory QA/QC measures were implemented (CH2M Hill 1990; DuPont Environmental Remediation Services 1992; URS 2003; Parsons 2009; Parsons 2010).

1.1.1 Soil Data

The following data were included in the Natural Area HHRA (see Figure 1-1):

- Soil samples results collected from zero to two feet below ground surface (bgs) in the Natural Area and the Natural Area/Extended Buffer Zone; and,
- Soil sample results from clean backfill were substituted for locations that were covered with two feet of fill.

The following data were not included in the Natural Area HHRA:

- Soil sample results collected from portions of the Natural Area and the Natural Area/Extended Buffer Zone that were removed during the Interim Remedial Measures (IRM); and,
- Soil sample results collected from locations that were covered with two feet of fill.

The resulting sample locations are presented on Figure D-1. Table D-2 presents the soil analytical data for the Buffer Zone Extension. Table D-3 presents the Clean Backfill Metals analytical data. Tables D-4 and D-5 present the summary statistics for the Natural Area and the Natural Area/Buffer Zone Extension for samples collected from 0 to 2 feet bgs. Tables D-6 and D-7 present the summary statistics for the Natural Area and the Natural Area/Buffer Zone Extension for samples collected from 0 to 6 inches bgs.

1.1.2 Surface Water Data

Surface water samples were collected in the Natural Area in 2011 prior to the IRM. However, the objective of the IRM was to remove or cover soil that could be contributing constituents to surface water (see Figure 14 in the Main Report). Thus the existing data are likely not representative of current conditions as constituent concentrations are expected to decrease in the future due to the IRM. In the

[1] Samples identified as sediment were included in the HHRA and evaluated as soil.

absence of post-IRM surface water data, these data were included and evaluated in the risk assessment even though they are likely an overestimate of current and future conditions.

1.2 Calculation of Exposure Point Concentrations

EPCs are concentrations of constituents in a given medium to which a receptor may be exposed. Consistent with the *Human Health Risk Assessment – East Chicago* report, EPCs for the Natural Area HHRA were calculated as the 95% upper confidence limit (UCL) on the mean or the maximum detected concentration, whichever was lower for samples detected more than two times (PIONEER 2012). The EPCs for the soil constituents identified as constituents of concern in the *Human Health Risk Assessment – East Chicago* report, (i.e., arsenic, cadmium, lead, thallium, and zinc) were calculated using the latest version of the US EPA ProUCL software (v. 4.1.00) (US EPA 2010). The soil EPCs identified for the HHRA are presented in Tables D-4 through D-7. The surface water EPCs are presented in Table D-8 for the Natural Area and Table D-9 for the Natural Area/Extended Buffer Zone.

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USEPA. 2010. ProUCL Version 4.1 Technical Guide (Draft) Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations. U.S. Environmental Protection Agency, EPA/600/R-07/041.

Tables

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Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
A11-02S_102699(0.0-2.0)_SO	75-01-4	Vinyl Chloride	VOC_SOSD	7.0	UJ	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	75-00-3	Ethyl Chloride	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	75-09-2	Dichloromethane	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	74-97-5	Bromochloromethane	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	75-15-0	Carbon Disulfide	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	74-87-3	Chloromethane	VOC_SOSD	7.0	UJ	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	67-66-3	Chloroform	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	67-64-1	Acetone	VOC_SOSD	28	U	ug/kg	0.0014	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	71-43-2	Benzene	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	75-25-2	Bromoform	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	74-83-9	Bromomethane	VOC_SOSD	7.0	UJ	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	75-27-4	Bromodichloromethane	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	79-01-6	Trichloroethylene	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	79-00-5	Trichloroethane, 1,1,2-	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	79-34-5	Tetrachloroethane, 1,1,2,2-	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	78-93-3	Methyl Ethyl Ketone	VOC_SOSD	14	U	ug/kg	0.00070	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	14808-79-8	Sulfate	INORG_SOSD	360		mg/kg	360	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	78-87-5	Dichloropropane, 1,2-	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	75-35-4	Dichloroethene, 1,1-	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	75-34-3	Dichloroethane, 1,1-	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	75-69-4	CFC-11	VOC_SOSD	7.0	UJ	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	591-78-6	Hexanone, 2-	VOC_SOSD	14	U	ug/kg	0.00070	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	75-71-8	CFC-12	VOC_SOSD	7.0	UJ	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	71-55-6	Trichloroethane, 1,1,1-	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	56-23-5	Carbon Tetrachloride	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	156-60-5	Dichloroethylene, Trans-1,2-	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	4.5		mg/kg	4.5	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	380		mg/kg	380	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	7440-39-3	Barium	INORG_SOSD	15		mg/kg	15	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	110-54-3	Hexane, n-	SVOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.8		mg/kg	2.8	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	16984-48-8	Fluoride	INORG_SOSD	19		mg/kg	19	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	16887-00-6	Chloride	INORG_SOSD	13	U	mg/kg	6.5	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	6.2		mg/kg	6.2	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	100-41-4	Ethyl Benzene	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	1.5	U	mg/kg	0.75	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
A11-02S_102699(0.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	3.0	U	mg/kg	1.5	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	100-42-5	Styrene	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	127-18-4	Tetrachloroethylene	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	10061-01-5	Dichloropropene, Cis-1,3-	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	1330-20-7	Xylenes	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	124-48-1	Dibromochloromethane	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	156-59-2	Dichloroethylene, Cis-1,2-	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	108-90-7	Chlorobenzene	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	107-06-2	Dichloroethane, 1,2-	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	108-88-3	Toluene	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	10061-02-6	Dichloropropene, Trans-1,3-	VOC_SOSD	7.0	U	ug/kg	0.00035	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
A11-02S_102699(0.0-2.0)_SO	108-10-1	Methyl Isobutyl Ketone	VOC_SOSD	14	U	ug/kg	0.00070	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
BERA-BKGND-02_020206(0.0-1.0)_SO	7440-47-3	Chromium	INORG_SOSD	4.2	J	mg/kg	4.2	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7440-39-3	Barium	INORG_SOSD	22	J	mg/kg	22	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.20	J	mg/kg	0.20	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.79		mg/kg	0.79	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7440-48-4	Cobalt	INORG_SOSD	1.9	J	mg/kg	1.9	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7440-66-6	Zinc	INORG_SOSD	170		mg/kg	170	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.61	J	mg/kg	0.61	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	5.2		mg/kg	5.2	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7440-70-2	Calcium	INORG_SOSD	1,970		mg/kg	1,970	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7440-50-8	Copper	INORG_SOSD	6.9	J	mg/kg	6.9	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7440-62-2	Vanadium	INORG_SOSD	7.4	J	mg/kg	7.4	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7439-96-5	Manganese	INORG_SOSD	146		mg/kg	146	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7439-95-4	Magnesium	INORG_SOSD	597		mg/kg	597	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7429-90-5	Aluminum	INORG_SOSD	2,650		mg/kg	2,650	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	31	J	mg/kg	31	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.0028	UJ	mg/kg	0.0014	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.74	J	mg/kg	0.74	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7439-89-6	Iron	INORG_SOSD	4,510	J	mg/kg	4,510	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7440-23-5	Sodium	INORG_SOSD	74	B	mg/kg	74	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	3.0		mg/kg	3.0	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7440-28-0	Thallium	INORG_SOSD	0.11	J	mg/kg	0.11	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7440-22-4	Silver	INORG_SOSD	0.26	J	mg/kg	0.26	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(0.0-1.0)_SO	7440-09-7	Potassium	INORG_SOSD	268	J	mg/kg	268	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.090	U	mg/kg	0.045	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
BERA-BKGND-02_020206(1.0-2.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.11	J	mg/kg	0.11	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7440-39-3	Barium	INORG_SOSD	9.8	J	mg/kg	9.8	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.0	J	mg/kg	2.0	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	2.9	J	mg/kg	2.9	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	19		mg/kg	19	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7440-70-2	Calcium	INORG_SOSD	536		mg/kg	536	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.48	J	mg/kg	0.48	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7440-62-2	Vanadium	INORG_SOSD	4.1	J	mg/kg	4.1	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7440-48-4	Cobalt	INORG_SOSD	2.2	J	mg/kg	2.2	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	1.1	J	mg/kg	1.1	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.17	J	mg/kg	0.17	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	4.9	J	mg/kg	4.9	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7439-95-4	Magnesium	INORG_SOSD	452		mg/kg	452	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7439-89-6	Iron	INORG_SOSD	3,550	J	mg/kg	3,550	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7439-96-5	Manganese	INORG_SOSD	52		mg/kg	52	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7440-28-0	Thallium	INORG_SOSD	0.031	J	mg/kg	0.031	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7429-90-5	Aluminum	INORG_SOSD	1,680		mg/kg	1,680	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7440-22-4	Silver	INORG_SOSD	0.20	U	mg/kg	0.10	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.0028	UJ	mg/kg	0.0014	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7440-23-5	Sodium	INORG_SOSD	87	B	mg/kg	87	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7440-09-7	Potassium	INORG_SOSD	217	J	mg/kg	217	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-02_020206(1.0-2.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.5		mg/kg	2.5	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7440-47-3	Chromium	INORG_SOSD	6.0	J	mg/kg	6.0	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7440-43-9	Cadmium	INORG_SOSD	2.0		mg/kg	2.0	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.28	J	mg/kg	0.28	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7440-39-3	Barium	INORG_SOSD	34	J	mg/kg	34	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7440-48-4	Cobalt	INORG_SOSD	2.0	J	mg/kg	2.0	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7440-70-2	Calcium	INORG_SOSD	2,820		mg/kg	2,820	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.65	J	mg/kg	0.65	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	6.5		mg/kg	6.5	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7440-66-6	Zinc	INORG_SOSD	443		mg/kg	443	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7440-50-8	Copper	INORG_SOSD	15	J	mg/kg	15	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7440-62-2	Vanadium	INORG_SOSD	8.7	J	mg/kg	8.7	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7440-23-5	Sodium	INORG_SOSD	105	B	mg/kg	105	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7439-95-4	Magnesium	INORG_SOSD	660		mg/kg	660	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7439-96-5	Manganese	INORG_SOSD	280		mg/kg	280	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
BERA-BKGND-03_020206(0.0-1.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	72	J	mg/kg	72	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.025	J	mg/kg	0.025	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	1.1	J	mg/kg	1.1	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7439-89-6	Iron	INORG_SOSD	5,790	J	mg/kg	5,790	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	4.1		mg/kg	4.1	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7440-28-0	Thallium	INORG_SOSD	0.16	J	mg/kg	0.16	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7429-90-5	Aluminum	INORG_SOSD	2,950		mg/kg	2,950	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7440-09-7	Potassium	INORG_SOSD	332	J	mg/kg	332	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(0.0-1.0)_SO	7440-22-4	Silver	INORG_SOSD	0.35	J	mg/kg	0.35	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	2.7	J	mg/kg	2.7	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.088	U	mg/kg	0.044	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7440-39-3	Barium	INORG_SOSD	8.3	J	mg/kg	8.3	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.10	J	mg/kg	0.10	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7440-48-4	Cobalt	INORG_SOSD	2.0	J	mg/kg	2.0	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7440-70-2	Calcium	INORG_SOSD	480		mg/kg	480	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.36	U	mg/kg	0.18	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.3		mg/kg	2.3	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	24		mg/kg	24	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	1.3	J	mg/kg	1.3	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7440-62-2	Vanadium	INORG_SOSD	3.8	J	mg/kg	3.8	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7440-28-0	Thallium	INORG_SOSD	0.029	J	mg/kg	0.029	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	5.7	J	mg/kg	5.7	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7439-95-4	Magnesium	INORG_SOSD	411		mg/kg	411	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.19	J	mg/kg	0.19	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7439-96-5	Manganese	INORG_SOSD	51		mg/kg	51	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7429-90-5	Aluminum	INORG_SOSD	1,460		mg/kg	1,460	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7439-89-6	Iron	INORG_SOSD	3,330	J	mg/kg	3,330	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.0028	UJ	mg/kg	0.0014	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.4		mg/kg	2.4	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7440-23-5	Sodium	INORG_SOSD	79	B	mg/kg	79	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7440-22-4	Silver	INORG_SOSD	0.19	U	mg/kg	0.097	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-03_020206(1.0-2.0)_SO	7440-09-7	Potassium	INORG_SOSD	214	J	mg/kg	214	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7440-43-9	Cadmium	INORG_SOSD	8.0		mg/kg	8.0	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.30	J	mg/kg	0.30	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	13		mg/kg	13	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7440-39-3	Barium	INORG_SOSD	35	J	mg/kg	35	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
BERA-BKGND-04_020206(0.0-1.0)_SO	7440-66-6	Zinc	INORG_SOSD	1,950		mg/kg	1,950	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7440-48-4	Cobalt	INORG_SOSD	2.1	J	mg/kg	2.1	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.73	J	mg/kg	0.73	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7440-62-2	Vanadium	INORG_SOSD	8.8	J	mg/kg	8.8	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7440-70-2	Calcium	INORG_SOSD	3,070		mg/kg	3,070	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7440-50-8	Copper	INORG_SOSD	34	J	mg/kg	34	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7440-47-3	Chromium	INORG_SOSD	6.6	J	mg/kg	6.6	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	2.1	J	mg/kg	2.1	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	138	J	mg/kg	138	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7439-95-4	Magnesium	INORG_SOSD	584		mg/kg	584	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7439-89-6	Iron	INORG_SOSD	6,200	J	mg/kg	6,200	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7439-96-5	Manganese	INORG_SOSD	304		mg/kg	304	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7440-28-0	Thallium	INORG_SOSD	0.16	J	mg/kg	0.16	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7429-90-5	Aluminum	INORG_SOSD	2,810		mg/kg	2,810	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7440-22-4	Silver	INORG_SOSD	0.80		mg/kg	0.80	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7440-23-5	Sodium	INORG_SOSD	139	B	mg/kg	139	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7440-09-7	Potassium	INORG_SOSD	277	J	mg/kg	277	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.053	J	mg/kg	0.053	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(0.0-1.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	4.7		mg/kg	4.7	mg/kg	2/2/06	Soil	0.0	1.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7440-39-3	Barium	INORG_SOSD	11	J	mg/kg	11	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.20	J	mg/kg	0.20	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.094	J	mg/kg	0.094	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7440-48-4	Cobalt	INORG_SOSD	1.5	J	mg/kg	1.5	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	86		mg/kg	86	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.36	U	mg/kg	0.18	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.2	J	mg/kg	1.2	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7440-70-2	Calcium	INORG_SOSD	501		mg/kg	501	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	1.5	J	mg/kg	1.5	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7440-62-2	Vanadium	INORG_SOSD	3.8	J	mg/kg	3.8	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	2.6	J	mg/kg	2.6	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.43	J	mg/kg	0.43	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7439-89-6	Iron	INORG_SOSD	2,960	J	mg/kg	2,960	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	4.6	J	mg/kg	4.6	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7429-90-5	Aluminum	INORG_SOSD	1,830		mg/kg	1,830	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7439-96-5	Manganese	INORG_SOSD	37		mg/kg	37	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7440-28-0	Thallium	INORG_SOSD	0.033	J	mg/kg	0.033	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
BERA-BKGND-04_020206(1.0-2.0)_SO	7439-95-4	Magnesium	INORG_SOSD	369		mg/kg	369	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.0028	UJ	mg/kg	0.0014	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7440-23-5	Sodium	INORG_SOSD	79	B	mg/kg	79	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7440-22-4	Silver	INORG_SOSD	0.20	U	mg/kg	0.098	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7440-09-7	Potassium	INORG_SOSD	169	J	mg/kg	169	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
BERA-BKGND-04_020206(1.0-2.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	1.8		mg/kg	1.8	mg/kg	2/2/06	Soil	1.0	2.0	BERA SOIL SAMPLING 1/06
IRM1-C10_11122012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	310		mg/kg	310	mg/kg	11/12/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-C10_11122012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.5		mg/kg	1.5	mg/kg	11/12/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-C10_11122012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	1.2		mg/kg	1.2	mg/kg	11/12/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-C10_11122012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	9.9		mg/kg	9.9	mg/kg	11/12/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D18_11202012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	330		mg/kg	330	mg/kg	11/20/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D18_11202012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	41		mg/kg	41	mg/kg	11/20/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D18_11202012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	5.1		mg/kg	5.1	mg/kg	11/20/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D18_11202012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	5.5		mg/kg	5.5	mg/kg	11/20/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H1_10312012(0.0-0.5)_SO_DC	7440-66-6	Zinc	INORG_SOSD	325		mg/kg	325	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H1_10312012(0.0-0.5)_SO_DC	7440-38-2	Arsenic (inorganic)	INORG_SOSD	6.9		mg/kg	6.9	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H1_10312012(0.0-0.5)_SO_DC	7440-43-9	Cadmium	INORG_SOSD	2.8		mg/kg	2.8	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H1_10312012(0.0-0.5)_SO_DC	7439-92-1	Lead (inorganic)	INORG_SOSD	15		mg/kg	15	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H2_10312012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	33		mg/kg	33	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H2_10312012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	5.7		mg/kg	5.7	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H2_10312012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.089	J	mg/kg	0.089	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H2_10312012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	3.2		mg/kg	3.2	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H3_10312012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	38		mg/kg	38	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H3_10312012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	0.47	J	mg/kg	0.47	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H3_10312012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.067	U	mg/kg	0.034	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H3_10312012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	2.0		mg/kg	2.0	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H4_10312012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	37		mg/kg	37	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H4_10312012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.2	J	mg/kg	1.2	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H4_10312012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.17	J	mg/kg	0.17	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H4_10312012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	11		mg/kg	11	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H5_10312012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	660		mg/kg	660	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H5_10312012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	26		mg/kg	26	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H5_10312012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	2.9		mg/kg	2.9	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-H5_10312012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	560		mg/kg	560	mg/kg	10/31/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-I1_11192012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.17	J	mg/kg	0.17	mg/kg	11/19/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-I1_11192012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	160	J	mg/kg	160	mg/kg	11/19/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
IRM1-I1_11192012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.5		mg/kg	1.5	mg/kg	11/19/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-I1_11192012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	2.6		mg/kg	2.6	mg/kg	11/19/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-I2_11192012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.21	J	mg/kg	0.21	mg/kg	11/19/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-I2_11192012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	230	J	mg/kg	230	mg/kg	11/19/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-I2_11192012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.7		mg/kg	1.7	mg/kg	11/19/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
IRM1-I2_11192012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	4.6		mg/kg	4.6	mg/kg	11/19/12	Soil	0.0	0.50	IRM SOIL SAMPLING 9 2012
NA-28_042202(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	5.8		mg/kg	5.8	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-28_042202(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	38		mg/kg	38	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-28_042202(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.5		mg/kg	1.5	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-28_042202(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	2,010		mg/kg	2,010	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-28_042202(0.0-0.5)_SO	7440-41-7	Beryllium	INORG_SOSD	0.63		mg/kg	0.63	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-28_042202(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	8.9		mg/kg	8.9	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-28_042202(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	24		mg/kg	24	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-28_042202(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	7.2		mg/kg	7.2	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-28_042202(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	4.7		mg/kg	4.7	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-28_042202(0.0-0.5)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.12	J	mg/kg	0.12	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-28_042202(0.0-0.5)_SO	7440-22-4	Silver	INORG_SOSD	1.2		mg/kg	1.2	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-28_042202(0.0-0.5)_SO	7440-28-0	Thallium	INORG_SOSD	1.4	U	mg/kg	0.70	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-28_042202(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	190		mg/kg	190	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-32_042202(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	11		mg/kg	11	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-32_042202(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	12		mg/kg	12	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-32_042202(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	2,330		mg/kg	2,330	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-32_042202(0.0-0.5)_SO	7440-41-7	Beryllium	INORG_SOSD	0.64		mg/kg	0.64	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-32_042202(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.8	J	mg/kg	1.8	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-32_042202(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	61		mg/kg	61	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-32_042202(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	4.7		mg/kg	4.7	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-32_042202(0.0-0.5)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.21		mg/kg	0.21	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-32_042202(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	22		mg/kg	22	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-32_042202(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	344		mg/kg	344	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-32_042202(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	8.7		mg/kg	8.7	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-32_042202(0.0-0.5)_SO	7440-22-4	Silver	INORG_SOSD	1.2		mg/kg	1.2	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-32_042202(0.0-0.5)_SO	7440-28-0	Thallium	INORG_SOSD	1.8	U	mg/kg	0.90	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-ASH_042202(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	5.0		mg/kg	5.0	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-ASH_042202(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	11		mg/kg	11	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-ASH_042202(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	2.4		mg/kg	2.4	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-ASH_042202(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	983		mg/kg	983	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NA-ASH_042202(0.0-0.5)_SO	7440-41-7	Beryllium	INORG_SOSD	1.8		mg/kg	1.8	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-ASH_042202(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	30		mg/kg	30	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-ASH_042202(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	9.4		mg/kg	9.4	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-ASH_042202(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	22		mg/kg	22	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-ASH_042202(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	2.8		mg/kg	2.8	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-ASH_042202(0.0-0.5)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.22		mg/kg	0.22	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-ASH_042202(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	132		mg/kg	132	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-ASH_042202(0.0-0.5)_SO	7440-22-4	Silver	INORG_SOSD	0.38	J	mg/kg	0.38	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-ASH_042202(0.0-0.5)_SO	7440-28-0	Thallium	INORG_SOSD	1.3	U	mg/kg	0.65	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA-SS-1_092810(0.0-0.5)_SD	7440-47-3	Chromium	INORG_SOSD	28		mg/kg	28	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-1_092810(0.0-0.5)_SD	7440-48-4	Cobalt	INORG_SOSD	6.7	J	mg/kg	6.7	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-1_092810(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	8,970		mg/kg	8,970	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-1_092810(0.0-0.5)_SD	7440-50-8	Copper	INORG_SOSD	483	J	mg/kg	483	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-1_092810(0.0-0.5)_SD	7440-62-2	Vanadium	INORG_SOSD	27		mg/kg	27	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-1_092810(0.0-0.5)_SD	7782-49-2	Selenium (and compounds)	INORG_SOSD	10		mg/kg	10	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-1_092810(0.0-0.5)_SD	7440-39-3	Barium	INORG_SOSD	120	J	mg/kg	120	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-1_092810(0.0-0.5)_SD	7440-43-9	Cadmium	INORG_SOSD	143		mg/kg	143	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-1_092810(0.0-0.5)_SD	7439-89-6	Iron	INORG_SOSD	34,900		mg/kg	34,900	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-1_092810(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	49	J	mg/kg	49	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-1_092810(0.0-0.5)_SD	7429-90-5	Aluminum	INORG_SOSD	9,660		mg/kg	9,660	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-1_092810(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	2,910		mg/kg	2,910	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-1_092810(0.0-0.5)_SD	7440-02-0	Nickel (soluble salts)	INORG_SOSD	20		mg/kg	20	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-1_092810(0.0-0.5)_SD	7440-36-0	Antimony (metallic)	INORG_SOSD	58		mg/kg	58	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-3_092810(0.0-0.5)_SD	7440-47-3	Chromium	INORG_SOSD	19		mg/kg	19	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-3_092810(0.0-0.5)_SD	7440-48-4	Cobalt	INORG_SOSD	5.4	J	mg/kg	5.4	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-3_092810(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	1,590		mg/kg	1,590	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-3_092810(0.0-0.5)_SD	7440-50-8	Copper	INORG_SOSD	86	J	mg/kg	86	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-3_092810(0.0-0.5)_SD	7440-62-2	Vanadium	INORG_SOSD	18		mg/kg	18	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-3_092810(0.0-0.5)_SD	7782-49-2	Selenium (and compounds)	INORG_SOSD	3.1		mg/kg	3.1	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-3_092810(0.0-0.5)_SD	7440-39-3	Barium	INORG_SOSD	91	J	mg/kg	91	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-3_092810(0.0-0.5)_SD	7440-43-9	Cadmium	INORG_SOSD	22		mg/kg	22	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-3_092810(0.0-0.5)_SD	7439-89-6	Iron	INORG_SOSD	21,100		mg/kg	21,100	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-3_092810(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	66	J	mg/kg	66	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-3_092810(0.0-0.5)_SD	7429-90-5	Aluminum	INORG_SOSD	4,790		mg/kg	4,790	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-3_092810(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	386		mg/kg	386	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-3_092810(0.0-0.5)_SD	7440-02-0	Nickel (soluble salts)	INORG_SOSD	10		mg/kg	10	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NA-SS-3_092810(0.0-0.5)_SD	7440-36-0	Antimony (metallic)	INORG_SOSD	10.0	J	mg/kg	10.0	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-4_092810(0.0-0.5)_SD	7440-47-3	Chromium	INORG_SOSD	6.0		mg/kg	6.0	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-4_092810(0.0-0.5)_SD	7440-48-4	Cobalt	INORG_SOSD	0.67	J	mg/kg	0.67	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-4_092810(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	402		mg/kg	402	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-4_092810(0.0-0.5)_SD	7440-50-8	Copper	INORG_SOSD	36	J	mg/kg	36	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-4_092810(0.0-0.5)_SD	7440-62-2	Vanadium	INORG_SOSD	3.7	J	mg/kg	3.7	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-4_092810(0.0-0.5)_SD	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.2		mg/kg	1.2	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-4_092810(0.0-0.5)_SD	7440-39-3	Barium	INORG_SOSD	15	J	mg/kg	15	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-4_092810(0.0-0.5)_SD	7440-43-9	Cadmium	INORG_SOSD	12		mg/kg	12	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-4_092810(0.0-0.5)_SD	7439-89-6	Iron	INORG_SOSD	1,310		mg/kg	1,310	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-4_092810(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	4.1	J	mg/kg	4.1	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-4_092810(0.0-0.5)_SD	7429-90-5	Aluminum	INORG_SOSD	719		mg/kg	719	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-4_092810(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	214		mg/kg	214	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-4_092810(0.0-0.5)_SD	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.3	J	mg/kg	2.3	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-4_092810(0.0-0.5)_SD	7440-36-0	Antimony (metallic)	INORG_SOSD	13		mg/kg	13	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-5_092810(0.0-0.5)_SD	7440-47-3	Chromium	INORG_SOSD	3.9		mg/kg	3.9	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-5_092810(0.0-0.5)_SD	7440-50-8	Copper	INORG_SOSD	12	J	mg/kg	12	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-5_092810(0.0-0.5)_SD	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.69		mg/kg	0.69	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-5_092810(0.0-0.5)_SD	7440-62-2	Vanadium	INORG_SOSD	2.6	J	mg/kg	2.6	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-5_092810(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	142		mg/kg	142	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-5_092810(0.0-0.5)_SD	7440-43-9	Cadmium	INORG_SOSD	0.82		mg/kg	0.82	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-5_092810(0.0-0.5)_SD	7440-48-4	Cobalt	INORG_SOSD	0.37	J	mg/kg	0.37	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-5_092810(0.0-0.5)_SD	7439-89-6	Iron	INORG_SOSD	600		mg/kg	600	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-5_092810(0.0-0.5)_SD	7440-39-3	Barium	INORG_SOSD	4.8	J	mg/kg	4.8	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-5_092810(0.0-0.5)_SD	7440-02-0	Nickel (soluble salts)	INORG_SOSD	1.0	J	mg/kg	1.0	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-5_092810(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	94		mg/kg	94	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-5_092810(0.0-0.5)_SD	7440-36-0	Antimony (metallic)	INORG_SOSD	13		mg/kg	13	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-5_092810(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.4	J	mg/kg	1.4	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA-SS-5_092810(0.0-0.5)_SD	7429-90-5	Aluminum	INORG_SOSD	266		mg/kg	266	mg/kg	9/28/10	Sedimen	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NA36_042202(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	12		mg/kg	12	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA36_042202(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	2.8		mg/kg	2.8	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA36_042202(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	312		mg/kg	312	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA36_042202(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	1.9		mg/kg	1.9	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA36_042202(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.77	U	mg/kg	0.39	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA36_042202(0.0-0.5)_SO	7440-41-7	Beryllium	INORG_SOSD	0.29	J	mg/kg	0.29	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA36_042202(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.1		mg/kg	3.1	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NA36_042202(0.0-0.5)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.044	J	mg/kg	0.044	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA36_042202(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	62		mg/kg	62	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA36_042202(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	0.92	J	mg/kg	0.92	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA36_042202(0.0-0.5)_SO	7440-22-4	Silver	INORG_SOSD	0.38	J	mg/kg	0.38	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA36_042202(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	1.6	J	mg/kg	1.6	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NA36_042202(0.0-0.5)_SO	7440-28-0	Thallium	INORG_SOSD	1.7	U	mg/kg	0.85	mg/kg	4/22/02	Soil	0.0	0.50	EI DATA GATHERING
NABA-1_082511(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	4,970		mg/kg	4,970	mg/kg	8/25/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NABA-1_082511(0.0-0.5)_SD	7440-23-5	Sodium	INORG_SOSD	156		meq/100gn	156	neq/100gn	8/25/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NABA-1_082511(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	77		mg/kg	77	mg/kg	8/25/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NABA-1_082511(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	838		mg/kg	838	mg/kg	8/25/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAGRD-01_100110(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	45	J	mg/kg	45	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	24	J	mg/kg	24	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.93		mg/kg	0.93	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,030		mg/kg	1,030	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	4.8		mg/kg	4.8	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	3,250		mg/kg	3,250	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	265		mg/kg	265	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	9.1		mg/kg	9.1	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	20,400		mg/kg	20,400	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	2.1	J	mg/kg	2.1	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	12		mg/kg	12	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.5-1.0)_SO	7440-47-3	Chromium	INORG_SOSD	36	J	mg/kg	36	mg/kg	10/1/10	Soil	0.50	1.0	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.5-1.0)_SO	7440-66-6	Zinc	INORG_SOSD	313		mg/kg	313	mg/kg	10/1/10	Soil	0.50	1.0	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.5-1.0)_SO	7440-50-8	Copper	INORG_SOSD	35	J	mg/kg	35	mg/kg	10/1/10	Soil	0.50	1.0	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.5-1.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.69	U	mg/kg	0.35	mg/kg	10/1/10	Soil	0.50	1.0	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.5-1.0)_SO	7440-43-9	Cadmium	INORG_SOSD	1.8		mg/kg	1.8	mg/kg	10/1/10	Soil	0.50	1.0	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.5-1.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	1.6	J	mg/kg	1.6	mg/kg	10/1/10	Soil	0.50	1.0	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.5-1.0)_SO	7439-89-6	Iron	INORG_SOSD	29,700		mg/kg	29,700	mg/kg	10/1/10	Soil	0.50	1.0	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.5-1.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	8.8		mg/kg	8.8	mg/kg	10/1/10	Soil	0.50	1.0	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.5-1.0)_SO	7429-90-5	Aluminum	INORG_SOSD	2,640		mg/kg	2,640	mg/kg	10/1/10	Soil	0.50	1.0	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.5-1.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	93		mg/kg	93	mg/kg	10/1/10	Soil	0.50	1.0	CMS FOLLOW-UP SOILS 2010
NAGRD-01_100110(0.5-1.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	14		mg/kg	14	mg/kg	10/1/10	Soil	0.50	1.0	CMS FOLLOW-UP SOILS 2010
NAGRD-02_100110(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	139	J	mg/kg	139	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-02_100110(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	4.3	U	mg/kg	2.2	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-02_100110(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	129	J	mg/kg	129	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-02_100110(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,300		mg/kg	1,300	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAGRD-02_100110(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	4.9		mg/kg	4.9	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-02_100110(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	36		mg/kg	36	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-02_100110(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	153,000		mg/kg	153,000	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-02_100110(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	3.7	UJ	mg/kg	1.9	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-02_100110(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	9,550		mg/kg	9,550	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-02_100110(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	52		mg/kg	52	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-02_100110(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	353		mg/kg	353	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-03_100110(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	120	J	mg/kg	120	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-03_100110(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	127	J	mg/kg	127	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-03_100110(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	4.0	U	mg/kg	2.0	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-03_100110(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	2,110		mg/kg	2,110	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-03_100110(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	9.3		mg/kg	9.3	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-03_100110(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	3.5	UJ	mg/kg	1.8	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-03_100110(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	37		mg/kg	37	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-03_100110(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	8,340		mg/kg	8,340	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-03_100110(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	165,000		mg/kg	165,000	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-03_100110(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	389		mg/kg	389	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-03_100110(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	37		mg/kg	37	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-04_100110(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	159	J	mg/kg	159	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-04_100110(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	2,670		mg/kg	2,670	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-04_100110(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	161	J	mg/kg	161	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-04_100110(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	10		mg/kg	10	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-04_100110(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	4.2	U	mg/kg	2.1	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-04_100110(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	43		mg/kg	43	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-04_100110(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	201,000		mg/kg	201,000	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-04_100110(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	5.3	J	mg/kg	5.3	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-04_100110(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	8,850		mg/kg	8,850	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-04_100110(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	411		mg/kg	411	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-04_100110(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	55		mg/kg	55	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	1.8	J	mg/kg	1.8	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	598		mg/kg	598	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	3.5	J	mg/kg	3.5	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.76		mg/kg	0.76	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.56	U	mg/kg	0.28	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	4.9		mg/kg	4.9	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	2,840		mg/kg	2,840	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAGRD-05_100110(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.91	J	mg/kg	0.91	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,070		mg/kg	1,070	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	5.0		mg/kg	5.0	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	1.5	J	mg/kg	1.5	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(1.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.054	J	mg/kg	0.054	mg/kg	10/1/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(1.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	1.6	J	mg/kg	1.6	mg/kg	10/1/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(1.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	6.8		mg/kg	6.8	mg/kg	10/1/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(1.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	0.93	J	mg/kg	0.93	mg/kg	10/1/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(1.0-2.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.46	U	mg/kg	0.23	mg/kg	10/1/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(1.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.6		mg/kg	1.6	mg/kg	10/1/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(1.0-2.0)_SO	7439-89-6	Iron	INORG_SOSD	2,550		mg/kg	2,550	mg/kg	10/1/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(1.0-2.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.40	UJ	mg/kg	0.20	mg/kg	10/1/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(1.0-2.0)_SO	7429-90-5	Aluminum	INORG_SOSD	764		mg/kg	764	mg/kg	10/1/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(1.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	1.7		mg/kg	1.7	mg/kg	10/1/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-05_100110(1.0-2.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	1.6	J	mg/kg	1.6	mg/kg	10/1/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-06_100110(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	7.8	J	mg/kg	7.8	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-06_100110(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	40	J	mg/kg	40	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-06_100110(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	2.0		mg/kg	2.0	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-06_100110(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,940		mg/kg	1,940	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-06_100110(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	38		mg/kg	38	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-06_100110(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	13,300		mg/kg	13,300	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-06_100110(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	92		mg/kg	92	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-06_100110(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	14		mg/kg	14	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-06_100110(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	3,630		mg/kg	3,630	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-06_100110(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	9.4	J	mg/kg	9.4	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-06_100110(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	5.9	J	mg/kg	5.9	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-08_100110(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	15		mg/kg	15	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-08_100110(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	155	J	mg/kg	155	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-08_100110(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	3.2		mg/kg	3.2	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-08_100110(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	2,710		mg/kg	2,710	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-08_100110(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	26	J	mg/kg	26	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-08_100110(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	30	J	mg/kg	30	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-08_100110(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	804		mg/kg	804	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-08_100110(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	4,760		mg/kg	4,760	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-08_100110(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	10,000		mg/kg	10,000	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-08_100110(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	46	J	mg/kg	46	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAGRD-08_100110(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	7.9		mg/kg	7.9	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-09_100110(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	3.7		mg/kg	3.7	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-09_100110(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	6.7	J	mg/kg	6.7	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-09_100110(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.58	U	mg/kg	0.29	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-09_100110(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	449		mg/kg	449	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-09_100110(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	1.6	J	mg/kg	1.6	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-09_100110(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	1.2	J	mg/kg	1.2	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-09_100110(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	60		mg/kg	60	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-09_100110(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.4	J	mg/kg	3.4	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-09_100110(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	3,420		mg/kg	3,420	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-09_100110(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,240		mg/kg	1,240	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-09_100110(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.6	J	mg/kg	2.6	mg/kg	10/1/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	2.9		mg/kg	2.9	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,410		mg/kg	1,410	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	13		mg/kg	13	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.48	U	mg/kg	0.24	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	6.9	J	mg/kg	6.9	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	2.4		mg/kg	2.4	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	3,760		mg/kg	3,760	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	6.4		mg/kg	6.4	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,530	J	mg/kg	1,530	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	47	J	mg/kg	47	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.5	J	mg/kg	2.5	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(1.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	2.2		mg/kg	2.2	mg/kg	9/30/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(1.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.11	J	mg/kg	0.11	mg/kg	9/30/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(1.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	0.88	J	mg/kg	0.88	mg/kg	9/30/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(1.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	124		mg/kg	124	mg/kg	9/30/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(1.0-2.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.46	U	mg/kg	0.23	mg/kg	9/30/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(1.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.6		mg/kg	1.6	mg/kg	9/30/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(1.0-2.0)_SO	7439-89-6	Iron	INORG_SOSD	3,300		mg/kg	3,300	mg/kg	9/30/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(1.0-2.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.53	J	mg/kg	0.53	mg/kg	9/30/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(1.0-2.0)_SO	7429-90-5	Aluminum	INORG_SOSD	1,260	J	mg/kg	1,260	mg/kg	9/30/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(1.0-2.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.0	J	mg/kg	2.0	mg/kg	9/30/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-10_093010(1.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	2.7	J	mg/kg	2.7	mg/kg	9/30/10	Soil	1.0	2.0	CMS FOLLOW-UP SOILS 2010
NAGRD-11_093010(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	2.3		mg/kg	2.3	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-11_093010(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	5.7		mg/kg	5.7	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAGRD-11_093010(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.49	U	mg/kg	0.25	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-11_093010(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	900		mg/kg	900	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-11_093010(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	2.9	J	mg/kg	2.9	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-11_093010(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	1.6		mg/kg	1.6	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-11_093010(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	6.0		mg/kg	6.0	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-11_093010(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,560	J	mg/kg	1,560	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-11_093010(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	3,440		mg/kg	3,440	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-11_093010(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	18	J	mg/kg	18	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-11_093010(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.0	J	mg/kg	2.0	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-12_093010(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	3.1		mg/kg	3.1	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-12_093010(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	239		mg/kg	239	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-12_093010(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	4.0		mg/kg	4.0	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-12_093010(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.89	J	mg/kg	0.89	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-12_093010(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.46	U	mg/kg	0.23	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-12_093010(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.8		mg/kg	2.8	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-12_093010(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	3,970		mg/kg	3,970	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-12_093010(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.81	J	mg/kg	0.81	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-12_093010(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,890	J	mg/kg	1,890	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-12_093010(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	11	J	mg/kg	11	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-12_093010(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.4	J	mg/kg	2.4	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-13_093010(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	3.0		mg/kg	3.0	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-13_093010(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	228		mg/kg	228	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-13_093010(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	13		mg/kg	13	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-13_093010(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.21	J	mg/kg	0.21	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-13_093010(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.58	U	mg/kg	0.29	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-13_093010(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.4		mg/kg	1.4	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-13_093010(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	1,360		mg/kg	1,360	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-13_093010(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	1.4		mg/kg	1.4	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-13_093010(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	378	J	mg/kg	378	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-13_093010(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	1.6	J	mg/kg	1.6	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-13_093010(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	53	J	mg/kg	53	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-14_093010(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	3.4		mg/kg	3.4	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-14_093010(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	23		mg/kg	23	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-14_093010(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	0.95	U	mg/kg	0.48	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-14_093010(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.58	U	mg/kg	0.29	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-14_093010(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.046	UJ	mg/kg	0.023	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAGRD-14_093010(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.50	U	mg/kg	0.25	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-14_093010(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	3,750		mg/kg	3,750	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-14_093010(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.2	J	mg/kg	1.2	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-14_093010(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,500	J	mg/kg	1,500	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-14_093010(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	2.9	J	mg/kg	2.9	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-14_093010(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.2	J	mg/kg	2.2	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-15_093010(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	3.1		mg/kg	3.1	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-15_093010(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.57	U	mg/kg	0.29	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-15_093010(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.046	UJ	mg/kg	0.023	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-15_093010(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	9.7		mg/kg	9.7	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-15_093010(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	0.95	J	mg/kg	0.95	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-15_093010(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.3		mg/kg	2.3	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-15_093010(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	5,320		mg/kg	5,320	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-15_093010(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.53	J	mg/kg	0.53	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-15_093010(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,530	J	mg/kg	1,530	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-15_093010(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.7	J	mg/kg	2.7	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-15_093010(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	2.6	J	mg/kg	2.6	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-16_093010(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	2.6		mg/kg	2.6	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-16_093010(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	0.98	J	mg/kg	0.98	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-16_093010(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.58	U	mg/kg	0.29	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-16_093010(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	83		mg/kg	83	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-16_093010(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.071	J	mg/kg	0.071	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-16_093010(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.70	J	mg/kg	0.70	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-16_093010(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	0.91	J	mg/kg	0.91	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-16_093010(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,420	J	mg/kg	1,420	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-16_093010(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	1,720		mg/kg	1,720	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-16_093010(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	2.3	J	mg/kg	2.3	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-16_093010(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	1.7	J	mg/kg	1.7	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-17_093010(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	2.6		mg/kg	2.6	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-17_093010(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	14		mg/kg	14	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-17_093010(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	1.3	J	mg/kg	1.3	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-17_093010(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.042	UJ	mg/kg	0.021	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-17_093010(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.53	U	mg/kg	0.27	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-17_093010(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.4		mg/kg	1.4	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-17_093010(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	3,580		mg/kg	3,580	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-17_093010(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.69	J	mg/kg	0.69	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAGRD-17_093010(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,730	J	mg/kg	1,730	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-17_093010(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	2.7	J	mg/kg	2.7	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-17_093010(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.0	J	mg/kg	2.0	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-18_093010(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	3.4		mg/kg	3.4	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-18_093010(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	250		mg/kg	250	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-18_093010(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	5.0		mg/kg	5.0	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-18_093010(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.97	J	mg/kg	0.97	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-18_093010(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.57	U	mg/kg	0.29	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-18_093010(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.8		mg/kg	1.8	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-18_093010(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	3,570		mg/kg	3,570	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-18_093010(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.83	J	mg/kg	0.83	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-18_093010(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,360	J	mg/kg	1,360	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-18_093010(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	5.4	J	mg/kg	5.4	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-18_093010(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.3	J	mg/kg	2.3	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-19_093010(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.74	J	mg/kg	0.74	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-19_093010(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	3.5		mg/kg	3.5	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-19_093010(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	191		mg/kg	191	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-19_093010(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	6.5		mg/kg	6.5	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-19_093010(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.59	U	mg/kg	0.30	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-19_093010(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.6		mg/kg	3.6	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-19_093010(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	4,750		mg/kg	4,750	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-19_093010(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	1.9		mg/kg	1.9	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-19_093010(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	2,180	J	mg/kg	2,180	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-19_093010(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	29	J	mg/kg	29	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-19_093010(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.5	J	mg/kg	2.5	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-20_093010(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	2.9		mg/kg	2.9	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-20_093010(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.11	J	mg/kg	0.11	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-20_093010(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	353		mg/kg	353	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-20_093010(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	2.3	J	mg/kg	2.3	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-20_093010(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.60	U	mg/kg	0.30	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-20_093010(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	4.4	J	mg/kg	4.4	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-20_093010(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	3,350		mg/kg	3,350	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-20_093010(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.1	J	mg/kg	3.1	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-20_093010(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,130		mg/kg	1,130	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-20_093010(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.52	U	mg/kg	0.26	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-20_093010(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	3.9		mg/kg	3.9	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAGRD-21_093010(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	3.2		mg/kg	3.2	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-21_093010(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	1.3	J	mg/kg	1.3	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-21_093010(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.59	U	mg/kg	0.30	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-21_093010(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	20		mg/kg	20	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-21_093010(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.048	U	mg/kg	0.024	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-21_093010(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.52	U	mg/kg	0.26	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-21_093010(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	5.6	J	mg/kg	5.6	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-21_093010(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,450		mg/kg	1,450	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-21_093010(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	5,820		mg/kg	5,820	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-21_093010(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	3.3		mg/kg	3.3	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-21_093010(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.5	J	mg/kg	2.5	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-22_093010(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	2.3		mg/kg	2.3	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-22_093010(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	378		mg/kg	378	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-22_093010(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.060	J	mg/kg	0.060	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-22_093010(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.60	U	mg/kg	0.30	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-22_093010(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	0.98	U	mg/kg	0.49	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-22_093010(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.0	J	mg/kg	2.0	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-22_093010(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	2,260		mg/kg	2,260	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-22_093010(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.52	U	mg/kg	0.26	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-22_093010(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,230		mg/kg	1,230	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-22_093010(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	1.7		mg/kg	1.7	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-22_093010(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.3	J	mg/kg	2.3	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-24_093010(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	2.6		mg/kg	2.6	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-24_093010(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.59	U	mg/kg	0.30	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-24_093010(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	636		mg/kg	636	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-24_093010(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.18	J	mg/kg	0.18	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-24_093010(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	2.2	J	mg/kg	2.2	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-24_093010(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.2	J	mg/kg	3.2	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-24_093010(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	4,390		mg/kg	4,390	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-24_093010(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.77	J	mg/kg	0.77	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-24_093010(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,260		mg/kg	1,260	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-24_093010(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	3.0	J	mg/kg	3.0	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-24_093010(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	5.3		mg/kg	5.3	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-25_093010(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	3.6		mg/kg	3.6	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-25_093010(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,490		mg/kg	1,490	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-25_093010(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	1.4	J	mg/kg	1.4	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAGRD-25_093010(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.59	U	mg/kg	0.30	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-25_093010(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.10	J	mg/kg	0.10	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-25_093010(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	4.6	J	mg/kg	4.6	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-25_093010(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	4,620		mg/kg	4,620	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-25_093010(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,650		mg/kg	1,650	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-25_093010(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	3.0		mg/kg	3.0	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-25_093010(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.51	U	mg/kg	0.26	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAGRD-25_093010(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	4.2	J	mg/kg	4.2	mg/kg	9/30/10	Soil	0.0	0.50	CMS FOLLOW-UP SOILS 2010
NAPLOT-03_082211(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	2,150		mg/kg	2,150	mg/kg	8/22/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-03_082211(0.0-0.5)_SD	7440-23-5	Sodium	INORG_SOSD	24		meq/100gm	24	meq/100gm	8/22/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-03_082211(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	84		mg/kg	84	mg/kg	8/22/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-03_082211(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	1,420		mg/kg	1,420	mg/kg	8/22/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-03_082211(0.5-1.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	55		mg/kg	55	mg/kg	8/22/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-03_082211(0.5-1.5)_SD	7440-66-6	Zinc	INORG_SOSD	1,800		mg/kg	1,800	mg/kg	8/22/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-03_082211(0.5-1.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	852		mg/kg	852	mg/kg	8/22/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-03_082211(0.5-1.5)_SD	7440-23-5	Sodium	INORG_SOSD	12		meq/100gm	12	meq/100gm	8/22/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-04_082211(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	2,440		mg/kg	2,440	mg/kg	8/22/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-04_082211(0.0-0.5)_SD	7440-23-5	Sodium	INORG_SOSD	48		meq/100gm	48	meq/100gm	8/22/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-04_082211(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	54		mg/kg	54	mg/kg	8/22/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-04_082211(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	2,090		mg/kg	2,090	mg/kg	8/22/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-04_082211(0.5-1.5)_SD	7440-66-6	Zinc	INORG_SOSD	1,180		mg/kg	1,180	mg/kg	8/22/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-04_082211(0.5-1.5)_SD	7440-23-5	Sodium	INORG_SOSD	20		meq/100gm	20	meq/100gm	8/22/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-04_082211(0.5-1.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	19		mg/kg	19	mg/kg	8/22/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-04_082211(0.5-1.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	893		mg/kg	893	mg/kg	8/22/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-05_082511(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	27		mg/kg	27	mg/kg	8/25/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-05_082511(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	1,490		mg/kg	1,490	mg/kg	8/25/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-05_082511(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	675		mg/kg	675	mg/kg	8/25/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-05_082511(0.0-0.5)_SD	7440-23-5	Sodium	INORG_SOSD	49		meq/100gm	49	meq/100gm	8/25/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-05_082511(0.5-1.5)_SD	7440-66-6	Zinc	INORG_SOSD	615		mg/kg	615	mg/kg	8/25/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-05_082511(0.5-1.5)_SD	7440-23-5	Sodium	INORG_SOSD	19		meq/100gm	19	meq/100gm	8/25/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-05_082511(0.5-1.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	9.7		mg/kg	9.7	mg/kg	8/25/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-05_082511(0.5-1.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	184		mg/kg	184	mg/kg	8/25/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-07_082911(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	49		mg/kg	49	mg/kg	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-07_082911(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	6,170	J	mg/kg	6,170	mg/kg	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-07_082911(0.0-0.5)_SD	7440-23-5	Sodium	INORG_SOSD	79		meq/100gm	79	meq/100gm	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-07_082911(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	697		mg/kg	697	mg/kg	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAPLOT-07_082911(0.5-1.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	25		mg/kg	25	mg/kg	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-07_082911(0.5-1.5)_SD	7440-66-6	Zinc	INORG_SOSD	1,660	J	mg/kg	1,660	mg/kg	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-07_082911(0.5-1.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	344		mg/kg	344	mg/kg	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-07_082911(0.5-1.5)_SD	7440-23-5	Sodium	INORG_SOSD	38		meq/100gn	38	meq/100gn	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-08_082911(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	1,740	J	mg/kg	1,740	mg/kg	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-08_082911(0.0-0.5)_SD	7440-23-5	Sodium	INORG_SOSD	79		meq/100gn	79	meq/100gn	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-08_082911(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	26		mg/kg	26	mg/kg	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-08_082911(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	419		mg/kg	419	mg/kg	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-08_082911(0.5-1.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	15		mg/kg	15	mg/kg	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-08_082911(0.5-1.5)_SD	7440-66-6	Zinc	INORG_SOSD	1,040	J	mg/kg	1,040	mg/kg	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-08_082911(0.5-1.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	292		mg/kg	292	mg/kg	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-08_082911(0.5-1.5)_SD	7440-23-5	Sodium	INORG_SOSD	35		meq/100gn	35	meq/100gn	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-09_082611(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	1,130		mg/kg	1,130	mg/kg	8/26/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-09_082611(0.0-0.5)_SD	7440-23-5	Sodium	INORG_SOSD	39		meq/100gn	39	meq/100gn	8/26/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-09_082611(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	9.8		mg/kg	9.8	mg/kg	8/26/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-09_082611(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	268		mg/kg	268	mg/kg	8/26/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-09_082611(0.5-1.5)_SD	7440-66-6	Zinc	INORG_SOSD	931		mg/kg	931	mg/kg	8/26/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-09_082611(0.5-1.5)_SD	7440-23-5	Sodium	INORG_SOSD	12		meq/100gn	12	meq/100gn	8/26/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-09_082611(0.5-1.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	10		mg/kg	10	mg/kg	8/26/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-09_082611(0.5-1.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	165		mg/kg	165	mg/kg	8/26/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-10_082911(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	301	J	mg/kg	301	mg/kg	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-10_082911(0.0-0.5)_SD	7440-23-5	Sodium	INORG_SOSD	11		meq/100gn	11	meq/100gn	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-10_082911(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.4		mg/kg	3.4	mg/kg	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-10_082911(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	77		mg/kg	77	mg/kg	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-10_082911(0.5-1.5)_SD	7440-66-6	Zinc	INORG_SOSD	360	J	mg/kg	360	mg/kg	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-10_082911(0.5-1.5)_SD	7440-23-5	Sodium	INORG_SOSD	23		meq/100gn	23	meq/100gn	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-10_082911(0.5-1.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.4		mg/kg	3.4	mg/kg	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-10_082911(0.5-1.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	124		mg/kg	124	mg/kg	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-11_082911(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	34		mg/kg	34	mg/kg	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-11_082911(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	2,930	J	mg/kg	2,930	mg/kg	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-11_082911(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	1,180		mg/kg	1,180	mg/kg	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-11_082911(0.0-0.5)_SD	7440-23-5	Sodium	INORG_SOSD	141		meq/100gn	141	meq/100gn	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-11_082911(0.5-1.5)_SD	7440-66-6	Zinc	INORG_SOSD	2,410	J	mg/kg	2,410	mg/kg	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-11_082911(0.5-1.5)_SD	7440-23-5	Sodium	INORG_SOSD	156		meq/100gn	156	meq/100gn	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-11_082911(0.5-1.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	39		mg/kg	39	mg/kg	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-11_082911(0.5-1.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	674		mg/kg	674	mg/kg	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAPLOT-12_082911(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	1,110	J	mg/kg	1,110	mg/kg	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-12_082911(0.0-0.5)_SD	7440-23-5	Sodium	INORG_SOSD	78		meq/100gr	78	meq/100gr	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-12_082911(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	9.1		mg/kg	9.1	mg/kg	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-12_082911(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	196		mg/kg	196	mg/kg	8/29/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-12_082911(0.5-1.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	5.0		mg/kg	5.0	mg/kg	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-12_082911(0.5-1.5)_SD	7440-66-6	Zinc	INORG_SOSD	553	J	mg/kg	553	mg/kg	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-12_082911(0.5-1.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	132		mg/kg	132	mg/kg	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-12_082911(0.5-1.5)_SD	7440-23-5	Sodium	INORG_SOSD	22		meq/100gr	22	meq/100gr	8/29/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-13_082611(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	884		mg/kg	884	mg/kg	8/26/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-13_082611(0.0-0.5)_SD	7440-23-5	Sodium	INORG_SOSD	48		meq/100gr	48	meq/100gr	8/26/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-13_082611(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	33		mg/kg	33	mg/kg	8/26/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-13_082611(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	201		mg/kg	201	mg/kg	8/26/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-13_082611(0.5-1.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	30		mg/kg	30	mg/kg	8/26/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-13_082611(0.5-1.5)_SD	7440-66-6	Zinc	INORG_SOSD	1,400		mg/kg	1,400	mg/kg	8/26/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-13_082611(0.5-1.5)_SD	7440-23-5	Sodium	INORG_SOSD	33		meq/100gr	33	meq/100gr	8/26/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-13_082611(0.5-1.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	216		mg/kg	216	mg/kg	8/26/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-16_082311(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	12		mg/kg	12	mg/kg	8/23/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-16_082311(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,890		mg/kg	1,890	mg/kg	8/23/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-16_082311(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	194		mg/kg	194	mg/kg	8/23/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-16_082311(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	7.8		meq/100gr	7.8	meq/100gr	8/23/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-17_082311(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,910		mg/kg	1,910	mg/kg	8/23/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-17_082311(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	13		meq/100gr	13	meq/100gr	8/23/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-17_082311(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	14		mg/kg	14	mg/kg	8/23/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-17_082311(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	247		mg/kg	247	mg/kg	8/23/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-18_082511(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	54		mg/kg	54	mg/kg	8/25/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-18_082511(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	3,210		mg/kg	3,210	mg/kg	8/25/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-18_082511(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	771		mg/kg	771	mg/kg	8/25/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-18_082511(0.0-0.5)_SD	7440-23-5	Sodium	INORG_SOSD	135		meq/100gr	135	meq/100gr	8/25/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-18_082511(0.5-1.5)_SD	7440-66-6	Zinc	INORG_SOSD	3,980		mg/kg	3,980	mg/kg	8/25/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-18_082511(0.5-1.5)_SD	7440-23-5	Sodium	INORG_SOSD	141		meq/100gr	141	meq/100gr	8/25/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-18_082511(0.5-1.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	47		mg/kg	47	mg/kg	8/25/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-18_082511(0.5-1.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	711		mg/kg	711	mg/kg	8/25/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-19_082211(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,630		mg/kg	1,630	mg/kg	8/22/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-19_082211(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	17		meq/100gr	17	meq/100gr	8/22/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-19_082211(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	11		mg/kg	11	mg/kg	8/22/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-19_082211(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	261		mg/kg	261	mg/kg	8/22/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAPLOT-20_082211(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	2,210		mg/kg	2,210	mg/kg	8/22/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-20_082211(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	25		meq/100gr	25	meq/100gr	8/22/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-20_082211(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	15		mg/kg	15	mg/kg	8/22/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-20_082211(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	311		mg/kg	311	mg/kg	8/22/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-21_082611(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	3,860		mg/kg	3,860	mg/kg	8/26/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-21_082611(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	760		mg/kg	760	mg/kg	8/26/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-21_082611(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	37		mg/kg	37	mg/kg	8/26/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-21_082611(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	32		meq/100gr	32	meq/100gr	8/26/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-22_082611(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	20		mg/kg	20	mg/kg	8/26/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-22_082611(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	2,330		mg/kg	2,330	mg/kg	8/26/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-22_082611(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	271		mg/kg	271	mg/kg	8/26/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-22_082611(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	18		meq/100gr	18	meq/100gr	8/26/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-23_082511(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,270		mg/kg	1,270	mg/kg	8/25/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-23_082511(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	12		meq/100gr	12	meq/100gr	8/25/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-23_082511(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	16		mg/kg	16	mg/kg	8/25/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-23_082511(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	141		mg/kg	141	mg/kg	8/25/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-24_082911(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	4,460	J	mg/kg	4,460	mg/kg	8/29/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-24_082911(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	78		meq/100gr	78	meq/100gr	8/29/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-24_082911(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	37		mg/kg	37	mg/kg	8/29/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-24_082911(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	771		mg/kg	771	mg/kg	8/29/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-25_082911(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	45		mg/kg	45	mg/kg	8/29/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-25_082911(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	3,040	J	mg/kg	3,040	mg/kg	8/29/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-25_082911(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	951		mg/kg	951	mg/kg	8/29/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-25_082911(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	65		meq/100gr	65	meq/100gr	8/29/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-26_082311(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,770		mg/kg	1,770	mg/kg	8/23/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-26_082311(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	6.4		meq/100gr	6.4	meq/100gr	8/23/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-26_082311(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	9.8		mg/kg	9.8	mg/kg	8/23/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-26_082311(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	116		mg/kg	116	mg/kg	8/23/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-27_082311(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	12		mg/kg	12	mg/kg	8/23/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-27_082311(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	2,160		mg/kg	2,160	mg/kg	8/23/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-27_082311(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	7.9		meq/100gr	7.9	meq/100gr	8/23/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-27_082311(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	157		mg/kg	157	mg/kg	8/23/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-28_082211(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	25		mg/kg	25	mg/kg	8/22/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-28_082211(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	2,790		mg/kg	2,790	mg/kg	8/22/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-28_082211(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	710		mg/kg	710	mg/kg	8/22/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-28_082211(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	27		meq/100gr	27	meq/100gr	8/22/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAPLOT-29_082911(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,440	J	mg/kg	1,440	mg/kg	8/29/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-29_082911(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	24		meq/100gr	24	meq/100gr	8/29/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-29_082911(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	16		mg/kg	16	mg/kg	8/29/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-29_082911(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	211		mg/kg	211	mg/kg	8/29/11	Soil	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-30_082511(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	58		mg/kg	58	mg/kg	8/25/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-30_082511(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	2,700		mg/kg	2,700	mg/kg	8/25/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-30_082511(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	723		mg/kg	723	mg/kg	8/25/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-30_082511(0.0-0.5)_SD	7440-23-5	Sodium	INORG_SOSD	183		meq/100gr	183	meq/100gr	8/25/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-30_082511(0.5-1.5)_SD	7440-66-6	Zinc	INORG_SOSD	4,690		mg/kg	4,690	mg/kg	8/25/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-30_082511(0.5-1.5)_SD	7440-23-5	Sodium	INORG_SOSD	111		meq/100gr	111	meq/100gr	8/25/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-30_082511(0.5-1.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	76		mg/kg	76	mg/kg	8/25/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-30_082511(0.5-1.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	812		mg/kg	812	mg/kg	8/25/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-32_082611(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	8,210		mg/kg	8,210	mg/kg	8/26/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-32_082611(0.0-0.5)_SD	7440-23-5	Sodium	INORG_SOSD	179		meq/100gr	179	meq/100gr	8/26/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-32_082611(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	44		mg/kg	44	mg/kg	8/26/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-32_082611(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	964		mg/kg	964	mg/kg	8/26/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-32_082611(0.5-1.5)_SD	7440-66-6	Zinc	INORG_SOSD	11,100		mg/kg	11,100	mg/kg	8/26/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-32_082611(0.5-1.5)_SD	7440-23-5	Sodium	INORG_SOSD	111		meq/100gr	111	meq/100gr	8/26/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-32_082611(0.5-1.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	81		mg/kg	81	mg/kg	8/26/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-32_082611(0.5-1.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	1,510		mg/kg	1,510	mg/kg	8/26/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-33_082611(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	11,100		mg/kg	11,100	mg/kg	8/26/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-33_082611(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	746		mg/kg	746	mg/kg	8/26/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-33_082611(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	67		mg/kg	67	mg/kg	8/26/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-33_082611(0.0-0.5)_SD	7440-23-5	Sodium	INORG_SOSD	181		meq/100gr	181	meq/100gr	8/26/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-33_082611(0.5-1.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	66		mg/kg	66	mg/kg	8/26/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-33_082611(0.5-1.5)_SD	7440-66-6	Zinc	INORG_SOSD	6,600		mg/kg	6,600	mg/kg	8/26/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-33_082611(0.5-1.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	830		mg/kg	830	mg/kg	8/26/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-33_082611(0.5-1.5)_SD	7440-23-5	Sodium	INORG_SOSD	105		meq/100gr	105	meq/100gr	8/26/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-34_083011(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	2,310		mg/kg	2,310	mg/kg	8/30/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-34_083011(0.0-0.5)_SD	7440-23-5	Sodium	INORG_SOSD	79		meq/100gr	79	meq/100gr	8/30/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-34_083011(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	24	J	mg/kg	24	mg/kg	8/30/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-34_083011(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	200		mg/kg	200	mg/kg	8/30/11	Sedimen	0.0	0.50	NATURAL AREA SAMPLING 8/11
NAPLOT-34_083011(0.5-1.5)_SD	7440-66-6	Zinc	INORG_SOSD	1,440		mg/kg	1,440	mg/kg	8/30/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-34_083011(0.5-1.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	9.3	J	mg/kg	9.3	mg/kg	8/30/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-34_083011(0.5-1.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	92		mg/kg	92	mg/kg	8/30/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11
NAPLOT-34_083011(0.5-1.5)_SD	7440-23-5	Sodium	INORG_SOSD	29		meq/100gr	29	meq/100gr	8/30/11	Sedimen	0.50	1.5	NATURAL AREA SAMPLING 8/11

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAS01_091008(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	6.8		mg/kg	6.8	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7440-39-3	Barium	INORG_SOSD	73		mg/kg	73	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7440-41-7	Beryllium	INORG_SOSD	0.37	J	mg/kg	0.37	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	13		mg/kg	13	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	31		mg/kg	31	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7440-48-4	Cobalt	INORG_SOSD	3.2		mg/kg	3.2	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7440-70-2	Calcium	INORG_SOSD	8,120		mg/kg	8,120	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.1	U	mg/kg	0.56	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,240		mg/kg	1,240	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	11		mg/kg	11	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7440-62-2	Vanadium	INORG_SOSD	13		mg/kg	13	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7440-28-0	Thallium	INORG_SOSD	1.4	U	mg/kg	0.72	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	213		mg/kg	213	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7439-95-4	Magnesium	INORG_SOSD	3,420		mg/kg	3,420	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	10,200		mg/kg	10,200	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7439-96-5	Manganese	INORG_SOSD	377		mg/kg	377	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	2.7		mg/kg	2.7	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	4,000		mg/kg	4,000	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7440-22-4	Silver	INORG_SOSD	1.1		mg/kg	1.1	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.12		mg/kg	0.12	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	108	J	mg/kg	108	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7440-09-7	Potassium	INORG_SOSD	620		mg/kg	620	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	7.6		mg/kg	7.6	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7440-47-3	Chromium	INORG_SOSD	5.6		mg/kg	5.6	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7440-43-9	Cadmium	INORG_SOSD	2.0		mg/kg	2.0	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.18	J	mg/kg	0.18	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7440-39-3	Barium	INORG_SOSD	26		mg/kg	26	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7440-48-4	Cobalt	INORG_SOSD	2.7		mg/kg	2.7	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7440-66-6	Zinc	INORG_SOSD	364		mg/kg	364	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7440-70-2	Calcium	INORG_SOSD	5,920		mg/kg	5,920	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.1	U	mg/kg	0.54	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7440-62-2	Vanadium	INORG_SOSD	8.5		mg/kg	8.4	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	6.2		mg/kg	6.2	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7440-50-8	Copper	INORG_SOSD	9.3		mg/kg	9.3	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.032	J	mg/kg	0.032	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	47		mg/kg	47	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAS01_091008(0.5-1.0)_SO	7439-95-4	Magnesium	INORG_SOSD	3,130		mg/kg	3,130	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7439-89-6	Iron	INORG_SOSD	6,000		mg/kg	6,000	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7439-96-5	Manganese	INORG_SOSD	171		mg/kg	171	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	1.1		mg/kg	1.1	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7429-90-5	Aluminum	INORG_SOSD	2,960		mg/kg	2,960	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	4.9		mg/kg	4.9	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7440-28-0	Thallium	INORG_SOSD	1.4	U	mg/kg	0.69	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7440-23-5	Sodium	INORG_SOSD	86	J	mg/kg	86	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7440-09-7	Potassium	INORG_SOSD	452		mg/kg	452	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(0.5-1.0)_SO	7440-22-4	Silver	INORG_SOSD	0.53	J	mg/kg	0.53	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	4.2		mg/kg	4.2	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.16	J	mg/kg	0.16	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7440-39-3	Barium	INORG_SOSD	11		mg/kg	11	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.11	J	mg/kg	0.11	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7440-48-4	Cobalt	INORG_SOSD	2.6		mg/kg	2.6	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7440-70-2	Calcium	INORG_SOSD	23,600		mg/kg	23,600	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.0	U	mg/kg	0.52	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.0		mg/kg	3.0	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	30		mg/kg	30	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	2.3		mg/kg	2.3	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7440-62-2	Vanadium	INORG_SOSD	6.5		mg/kg	6.5	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.55	J	mg/kg	0.55	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7439-95-4	Magnesium	INORG_SOSD	11,300		mg/kg	11,300	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7439-96-5	Manganese	INORG_SOSD	147		mg/kg	147	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	4.9		mg/kg	4.9	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.012	U	mg/kg	0.0061	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7429-90-5	Aluminum	INORG_SOSD	2,310		mg/kg	2,310	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7439-89-6	Iron	INORG_SOSD	4,790		mg/kg	4,790	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	3.6		mg/kg	3.6	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7440-28-0	Thallium	INORG_SOSD	1.4	U	mg/kg	0.68	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7440-23-5	Sodium	INORG_SOSD	100	J	mg/kg	100	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7440-09-7	Potassium	INORG_SOSD	592		mg/kg	592	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS01_091008(1.0-2.0)_SO	7440-22-4	Silver	INORG_SOSD	0.28	J	mg/kg	0.28	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	5.1		mg/kg	5.1	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.76	J	mg/kg	0.76	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7440-39-3	Barium	INORG_SOSD	16		mg/kg	16	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAS02_091008(0.0-0.5)_SO	7440-41-7	Beryllium	INORG_SOSD	0.14	J	mg/kg	0.14	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7440-48-4	Cobalt	INORG_SOSD	2.1		mg/kg	2.1	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7440-70-2	Calcium	INORG_SOSD	14,500		mg/kg	14,500	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.5	U	mg/kg	0.77	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	7.2		mg/kg	7.2	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	212		mg/kg	212	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	6.8		mg/kg	6.8	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7440-62-2	Vanadium	INORG_SOSD	6.5		mg/kg	6.5	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7440-28-0	Thallium	INORG_SOSD	2.0	U	mg/kg	1.0	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7439-95-4	Magnesium	INORG_SOSD	7,640		mg/kg	7,640	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7439-96-5	Manganese	INORG_SOSD	128		mg/kg	128	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	33		mg/kg	33	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.019	J	mg/kg	0.019	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.97	J	mg/kg	0.97	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	5,870		mg/kg	5,870	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	112	J	mg/kg	112	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	3.5		mg/kg	3.5	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,890		mg/kg	1,890	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7440-22-4	Silver	INORG_SOSD	0.41	J	mg/kg	0.41	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.0-0.5)_SO	7440-09-7	Potassium	INORG_SOSD	369		mg/kg	369	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.38	J	mg/kg	0.38	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7440-39-3	Barium	INORG_SOSD	13		mg/kg	13	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.12	J	mg/kg	0.12	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7440-47-3	Chromium	INORG_SOSD	3.8		mg/kg	3.8	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7440-66-6	Zinc	INORG_SOSD	84		mg/kg	84	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7440-48-4	Cobalt	INORG_SOSD	2.2		mg/kg	2.2	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.3	U	mg/kg	0.63	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	9.3		mg/kg	9.3	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7440-70-2	Calcium	INORG_SOSD	21,700		mg/kg	21,700	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7440-50-8	Copper	INORG_SOSD	3.9		mg/kg	3.9	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7440-62-2	Vanadium	INORG_SOSD	6.0		mg/kg	6.0	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7440-28-0	Thallium	INORG_SOSD	1.6	U	mg/kg	0.82	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	12		mg/kg	12	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7439-95-4	Magnesium	INORG_SOSD	10,400		mg/kg	10,400	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7439-89-6	Iron	INORG_SOSD	5,960		mg/kg	5,960	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7439-96-5	Manganese	INORG_SOSD	143		mg/kg	143	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAS02_091008(0.5-1.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.47	J	mg/kg	0.47	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7429-90-5	Aluminum	INORG_SOSD	1,920		mg/kg	1,920	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7440-22-4	Silver	INORG_SOSD	0.42	J	mg/kg	0.42	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.015	U	mg/kg	0.0073	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7440-23-5	Sodium	INORG_SOSD	94	J	mg/kg	94	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7440-09-7	Potassium	INORG_SOSD	450		mg/kg	450	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(0.5-1.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	3.3		mg/kg	3.3	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.18	J	mg/kg	0.18	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7440-39-3	Barium	INORG_SOSD	11		mg/kg	11	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.11	J	mg/kg	0.11	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	3.6		mg/kg	3.6	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	52		mg/kg	52	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7440-48-4	Cobalt	INORG_SOSD	2.1		mg/kg	2.1	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	4.7		mg/kg	4.7	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7440-62-2	Vanadium	INORG_SOSD	5.7		mg/kg	5.7	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7440-70-2	Calcium	INORG_SOSD	24,900		mg/kg	24,900	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	2.9		mg/kg	2.9	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.2	U	mg/kg	0.62	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.29	U	mg/kg	0.15	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	6.6		mg/kg	6.6	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7439-95-4	Magnesium	INORG_SOSD	11,800		mg/kg	11,800	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7439-89-6	Iron	INORG_SOSD	4,910		mg/kg	4,910	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7439-96-5	Manganese	INORG_SOSD	148		mg/kg	148	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7440-28-0	Thallium	INORG_SOSD	1.6	U	mg/kg	0.80	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7429-90-5	Aluminum	INORG_SOSD	1,870		mg/kg	1,870	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.014	U	mg/kg	0.0070	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7440-23-5	Sodium	INORG_SOSD	101	J	mg/kg	101	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7440-22-4	Silver	INORG_SOSD	0.28	J	mg/kg	0.28	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	3.1		mg/kg	3.1	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS02_091008(1.0-2.0)_SO	7440-09-7	Potassium	INORG_SOSD	485		mg/kg	485	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	7.2		mg/kg	7.2	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	7.4		mg/kg	7.4	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7440-39-3	Barium	INORG_SOSD	49		mg/kg	49	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7440-41-7	Beryllium	INORG_SOSD	0.27	J	mg/kg	0.27	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7440-48-4	Cobalt	INORG_SOSD	1.6		mg/kg	1.6	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7440-70-2	Calcium	INORG_SOSD	2,470		mg/kg	2,470	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAS04_091008(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.4	J	mg/kg	1.4	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	19		mg/kg	19	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	896		mg/kg	896	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	53		mg/kg	53	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7440-62-2	Vanadium	INORG_SOSD	10.0		mg/kg	10.0	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7440-28-0	Thallium	INORG_SOSD	1.6	U	mg/kg	0.78	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	419		mg/kg	419	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7439-95-4	Magnesium	INORG_SOSD	396		mg/kg	396	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	5.4		mg/kg	5.4	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7439-96-5	Manganese	INORG_SOSD	193		mg/kg	193	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	2,940		mg/kg	2,940	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	8,520		mg/kg	8,520	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.12	J	mg/kg	0.12	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	3.7		mg/kg	3.7	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	46	U	mg/kg	23	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7440-22-4	Silver	INORG_SOSD	1.3		mg/kg	1.3	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.0-0.5)_SO	7440-09-7	Potassium	INORG_SOSD	265		mg/kg	265	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.48	J	mg/kg	0.48	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.081	U	mg/kg	0.041	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7440-47-3	Chromium	INORG_SOSD	2.5		mg/kg	2.5	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7440-39-3	Barium	INORG_SOSD	11		mg/kg	11	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7440-66-6	Zinc	INORG_SOSD	125		mg/kg	125	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7440-48-4	Cobalt	INORG_SOSD	0.50	J	mg/kg	0.50	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	8.4		mg/kg	8.4	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7440-62-2	Vanadium	INORG_SOSD	3.1		mg/kg	3.1	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7440-70-2	Calcium	INORG_SOSD	519		mg/kg	519	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7440-50-8	Copper	INORG_SOSD	4.4		mg/kg	4.4	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.2	U	mg/kg	0.59	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	1.9		mg/kg	1.9	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	30		mg/kg	30	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7439-95-4	Magnesium	INORG_SOSD	173		mg/kg	173	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7439-89-6	Iron	INORG_SOSD	2,160		mg/kg	2,160	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7439-96-5	Manganese	INORG_SOSD	14		mg/kg	14	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7440-28-0	Thallium	INORG_SOSD	1.5	U	mg/kg	0.76	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7429-90-5	Aluminum	INORG_SOSD	1,020		mg/kg	1,020	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7440-22-4	Silver	INORG_SOSD	0.43	J	mg/kg	0.43	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAS04_091008(0.5-1.0)_SO	7440-23-5	Sodium	INORG_SOSD	45	U	mg/kg	22	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7440-09-7	Potassium	INORG_SOSD	139		mg/kg	139	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	0.73	U	mg/kg	0.36	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(0.5-1.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.014	U	mg/kg	0.0069	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.17	U	mg/kg	0.087	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7440-39-3	Barium	INORG_SOSD	3.2		mg/kg	3.2	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.082	U	mg/kg	0.041	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	1.5	J	mg/kg	1.5	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	42		mg/kg	42	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7440-48-4	Cobalt	INORG_SOSD	0.23	J	mg/kg	0.23	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	5.5		mg/kg	5.5	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7440-62-2	Vanadium	INORG_SOSD	2.2		mg/kg	2.2	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7440-70-2	Calcium	INORG_SOSD	314		mg/kg	314	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	1.5		mg/kg	1.5	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.2	U	mg/kg	0.59	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	12		mg/kg	12	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	20		mg/kg	20	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7439-95-4	Magnesium	INORG_SOSD	98		mg/kg	98	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7439-89-6	Iron	INORG_SOSD	1,080		mg/kg	1,080	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7439-96-5	Manganese	INORG_SOSD	6.0		mg/kg	6.0	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7440-28-0	Thallium	INORG_SOSD	1.5	U	mg/kg	0.77	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7429-90-5	Aluminum	INORG_SOSD	542		mg/kg	542	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7440-22-4	Silver	INORG_SOSD	0.67		mg/kg	0.67	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.014	U	mg/kg	0.0069	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7440-23-5	Sodium	INORG_SOSD	45	U	mg/kg	22	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7440-09-7	Potassium	INORG_SOSD	134		mg/kg	134	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS04_091008(1.0-2.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	0.73	U	mg/kg	0.37	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	17		mg/kg	17	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7440-41-7	Beryllium	INORG_SOSD	0.63	J	mg/kg	0.63	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7440-39-3	Barium	INORG_SOSD	55		mg/kg	55	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	9.1		mg/kg	9.1	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	15		mg/kg	15	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,800		mg/kg	1,800	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7440-70-2	Calcium	INORG_SOSD	6,190		mg/kg	6,190	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	2.6	J	mg/kg	2.6	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7440-62-2	Vanadium	INORG_SOSD	17		mg/kg	17	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAS05_091008(0.0-0.5)_SO	7440-48-4	Cobalt	INORG_SOSD	2.3		mg/kg	2.3	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	57		mg/kg	57	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	5.1		mg/kg	5.1	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	240		mg/kg	240	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7439-95-4	Magnesium	INORG_SOSD	731		mg/kg	731	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	11,800		mg/kg	11,800	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7439-96-5	Manganese	INORG_SOSD	251		mg/kg	251	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7440-28-0	Thallium	INORG_SOSD	2.3	U	mg/kg	1.2	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	5,350		mg/kg	5,350	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7440-22-4	Silver	INORG_SOSD	1.3		mg/kg	1.3	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.16	J	mg/kg	0.16	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	96	J	mg/kg	96	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7440-09-7	Potassium	INORG_SOSD	485		mg/kg	485	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	9.7		mg/kg	9.7	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7440-47-3	Chromium	INORG_SOSD	2.8		mg/kg	2.8	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7440-43-9	Cadmium	INORG_SOSD	1.6		mg/kg	1.6	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.087	J	mg/kg	0.087	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7440-39-3	Barium	INORG_SOSD	6.9		mg/kg	6.9	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7440-48-4	Cobalt	INORG_SOSD	1.5		mg/kg	1.5	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7440-70-2	Calcium	INORG_SOSD	467		mg/kg	467	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.2	U	mg/kg	0.61	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.8	J	mg/kg	1.8	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7440-66-6	Zinc	INORG_SOSD	112		mg/kg	112	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7440-50-8	Copper	INORG_SOSD	2.3		mg/kg	2.3	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7440-62-2	Vanadium	INORG_SOSD	4.6		mg/kg	4.6	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.78	J	mg/kg	0.78	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7439-95-4	Magnesium	INORG_SOSD	407		mg/kg	407	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7439-96-5	Manganese	INORG_SOSD	23		mg/kg	23	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	20		mg/kg	20	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.014	U	mg/kg	0.0069	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7429-90-5	Aluminum	INORG_SOSD	2,140		mg/kg	2,140	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7439-89-6	Iron	INORG_SOSD	2,960		mg/kg	2,960	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	1.9		mg/kg	1.9	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7440-28-0	Thallium	INORG_SOSD	1.6	U	mg/kg	0.80	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7440-23-5	Sodium	INORG_SOSD	47	U	mg/kg	23	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(0.5-1.0)_SO	7440-09-7	Potassium	INORG_SOSD	170		mg/kg	170	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAS05_091008(0.5-1.0)_SO	7440-22-4	Silver	INORG_SOSD	0.22	J	mg/kg	0.22	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	2.8		mg/kg	2.8	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	4.4		mg/kg	4.4	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7440-39-3	Barium	INORG_SOSD	6.4		mg/kg	6.4	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.090	J	mg/kg	0.090	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7440-48-4	Cobalt	INORG_SOSD	1.6		mg/kg	1.6	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7440-70-2	Calcium	INORG_SOSD	396		mg/kg	396	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.2	U	mg/kg	0.61	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.2	J	mg/kg	2.2	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	75		mg/kg	75	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	1.3		mg/kg	1.3	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7440-62-2	Vanadium	INORG_SOSD	4.1		mg/kg	4.1	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.76	J	mg/kg	0.76	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7439-95-4	Magnesium	INORG_SOSD	433		mg/kg	433	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7439-96-5	Manganese	INORG_SOSD	22		mg/kg	22	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	3.6		mg/kg	3.6	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.014	U	mg/kg	0.0069	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7429-90-5	Aluminum	INORG_SOSD	1,460		mg/kg	1,460	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7439-89-6	Iron	INORG_SOSD	3,100		mg/kg	3,100	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.1		mg/kg	2.1	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7440-28-0	Thallium	INORG_SOSD	1.6	U	mg/kg	0.78	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7440-23-5	Sodium	INORG_SOSD	46	U	mg/kg	23	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7440-09-7	Potassium	INORG_SOSD	219		mg/kg	219	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS05_091008(1.0-2.0)_SO	7440-22-4	Silver	INORG_SOSD	0.22	J	mg/kg	0.22	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	30		mg/kg	30	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	7.6		mg/kg	7.6	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7440-39-3	Barium	INORG_SOSD	106		mg/kg	106	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7440-41-7	Beryllium	INORG_SOSD	0.72		mg/kg	0.72	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7440-48-4	Cobalt	INORG_SOSD	4.1		mg/kg	4.1	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7440-70-2	Calcium	INORG_SOSD	16,600		mg/kg	16,600	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.8	J	mg/kg	1.8	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	19		mg/kg	19	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	2,370		mg/kg	2,370	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	171		mg/kg	171	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7440-62-2	Vanadium	INORG_SOSD	22		mg/kg	22	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7440-28-0	Thallium	INORG_SOSD	2.6	J	mg/kg	2.6	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAS06_090908(0.0-0.5)_SO	7439-95-4	Magnesium	INORG_SOSD	2,420		mg/kg	2,420	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7439-96-5	Manganese	INORG_SOSD	818		mg/kg	818	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	321		mg/kg	321	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.17		mg/kg	0.17	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	4.1		mg/kg	4.1	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	25,700		mg/kg	25,700	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	158		mg/kg	158	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	31		mg/kg	31	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	5,890		mg/kg	5,890	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7440-22-4	Silver	INORG_SOSD	1.7		mg/kg	1.7	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.0-0.5)_SO	7440-09-7	Potassium	INORG_SOSD	907		mg/kg	907	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.37	J	mg/kg	0.37	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7440-39-3	Barium	INORG_SOSD	17		mg/kg	17	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.10	J	mg/kg	0.10	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7440-47-3	Chromium	INORG_SOSD	3.1		mg/kg	3.1	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7440-66-6	Zinc	INORG_SOSD	68		mg/kg	68	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7440-48-4	Cobalt	INORG_SOSD	1.3		mg/kg	1.3	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.1	U	mg/kg	0.54	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.0		mg/kg	3.0	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7440-70-2	Calcium	INORG_SOSD	1,330		mg/kg	1,330	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7440-50-8	Copper	INORG_SOSD	8.0		mg/kg	8.0	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7440-62-2	Vanadium	INORG_SOSD	5.2		mg/kg	5.2	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7440-28-0	Thallium	INORG_SOSD	1.4	U	mg/kg	0.69	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	22		mg/kg	22	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7439-95-4	Magnesium	INORG_SOSD	488		mg/kg	488	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7439-89-6	Iron	INORG_SOSD	3,910		mg/kg	3,910	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7439-96-5	Manganese	INORG_SOSD	78		mg/kg	78	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.76	J	mg/kg	0.76	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7429-90-5	Aluminum	INORG_SOSD	2,090		mg/kg	2,090	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7440-22-4	Silver	INORG_SOSD	0.28	J	mg/kg	0.28	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.012	U	mg/kg	0.0060	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7440-23-5	Sodium	INORG_SOSD	41	U	mg/kg	20	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7440-09-7	Potassium	INORG_SOSD	198		mg/kg	198	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(0.5-1.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.1		mg/kg	2.1	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.16	U	mg/kg	0.082	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7440-39-3	Barium	INORG_SOSD	8.5		mg/kg	8.5	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAS06_090908(1.0-2.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.080	U	mg/kg	0.040	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	2.8		mg/kg	2.8	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	11		mg/kg	11	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7440-48-4	Cobalt	INORG_SOSD	1.7		mg/kg	1.7	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.9	J	mg/kg	1.9	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7440-62-2	Vanadium	INORG_SOSD	4.4		mg/kg	4.4	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7440-70-2	Calcium	INORG_SOSD	492		mg/kg	492	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	1.1	J	mg/kg	1.1	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.2	U	mg/kg	0.58	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.36	J	mg/kg	0.36	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	3.3		mg/kg	3.3	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7439-95-4	Magnesium	INORG_SOSD	471		mg/kg	471	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7439-89-6	Iron	INORG_SOSD	3,590		mg/kg	3,590	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7439-96-5	Manganese	INORG_SOSD	23		mg/kg	23	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7440-28-0	Thallium	INORG_SOSD	1.5	U	mg/kg	0.75	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7429-90-5	Aluminum	INORG_SOSD	1,970		mg/kg	1,970	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.013	U	mg/kg	0.0066	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7440-23-5	Sodium	INORG_SOSD	44	U	mg/kg	22	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7440-22-4	Silver	INORG_SOSD	0.27	J	mg/kg	0.27	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.0		mg/kg	2.0	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS06_090908(1.0-2.0)_SO	7440-09-7	Potassium	INORG_SOSD	182		mg/kg	182	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	9.3		mg/kg	9.3	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	13	J	mg/kg	13	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7440-39-3	Barium	INORG_SOSD	54		mg/kg	54	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7440-41-7	Beryllium	INORG_SOSD	0.54	J	mg/kg	0.54	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7440-48-4	Cobalt	INORG_SOSD	2.5		mg/kg	2.5	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7440-70-2	Calcium	INORG_SOSD	5,730		mg/kg	5,730	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.2	U	mg/kg	0.61	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	15		mg/kg	15	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	2,750		mg/kg	2,750	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	55		mg/kg	55	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7440-62-2	Vanadium	INORG_SOSD	13		mg/kg	13	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7440-28-0	Thallium	INORG_SOSD	1.6	U	mg/kg	0.79	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	282		mg/kg	282	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7439-95-4	Magnesium	INORG_SOSD	839		mg/kg	839	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	5.1	J	mg/kg	5.1	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAS09_091008(0.0-0.5)_SO	7439-96-5	Manganese	INORG_SOSD	414		mg/kg	414	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	4,140		mg/kg	4,140	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	9,500		mg/kg	9,500	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.065	J	mg/kg	0.065	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	7.4		mg/kg	7.4	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	96	J	mg/kg	96	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7440-22-4	Silver	INORG_SOSD	1.5		mg/kg	1.5	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.0-0.5)_SO	7440-09-7	Potassium	INORG_SOSD	559	J	mg/kg	559	mg/kg	9/10/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.23	J	mg/kg	0.23	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.074	U	mg/kg	0.037	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7440-47-3	Chromium	INORG_SOSD	2.4		mg/kg	2.4	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7440-39-3	Barium	INORG_SOSD	10		mg/kg	10	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7440-66-6	Zinc	INORG_SOSD	55		mg/kg	55	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7440-48-4	Cobalt	INORG_SOSD	0.95		mg/kg	0.95	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.0		mg/kg	3.0	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7440-62-2	Vanadium	INORG_SOSD	4.2		mg/kg	4.2	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7440-70-2	Calcium	INORG_SOSD	697		mg/kg	697	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7440-50-8	Copper	INORG_SOSD	2.4		mg/kg	2.4	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.1	U	mg/kg	0.54	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.45	J	mg/kg	0.45	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	7.0		mg/kg	7.0	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7439-95-4	Magnesium	INORG_SOSD	376		mg/kg	376	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7439-89-6	Iron	INORG_SOSD	2,690		mg/kg	2,690	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7439-96-5	Manganese	INORG_SOSD	26		mg/kg	26	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7440-28-0	Thallium	INORG_SOSD	1.4	U	mg/kg	0.69	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7429-90-5	Aluminum	INORG_SOSD	1,910		mg/kg	1,910	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7440-22-4	Silver	INORG_SOSD	0.26	J	mg/kg	0.26	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7440-23-5	Sodium	INORG_SOSD	41	U	mg/kg	20	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7440-09-7	Potassium	INORG_SOSD	194	J	mg/kg	194	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	1.4		mg/kg	1.4	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(0.5-1.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.012	U	mg/kg	0.0062	mg/kg	9/10/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.15	U	mg/kg	0.077	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7440-39-3	Barium	INORG_SOSD	6.1		mg/kg	6.1	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.075	U	mg/kg	0.038	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	2.8		mg/kg	2.8	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	15		mg/kg	15	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAS09_091008(1.0-2.0)_SO	7440-48-4	Cobalt	INORG_SOSD	1.4		mg/kg	1.4	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.6	J	mg/kg	1.6	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7440-62-2	Vanadium	INORG_SOSD	4.3		mg/kg	4.3	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7440-70-2	Calcium	INORG_SOSD	639		mg/kg	639	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	0.59	J	mg/kg	0.59	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.1	U	mg/kg	0.55	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.26	U	mg/kg	0.13	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	2.8		mg/kg	2.8	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7439-95-4	Magnesium	INORG_SOSD	385		mg/kg	385	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7439-89-6	Iron	INORG_SOSD	2,620		mg/kg	2,620	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7439-96-5	Manganese	INORG_SOSD	17		mg/kg	17	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7440-28-0	Thallium	INORG_SOSD	1.4	U	mg/kg	0.71	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7429-90-5	Aluminum	INORG_SOSD	1,920		mg/kg	1,920	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7440-22-4	Silver	INORG_SOSD	0.21	J	mg/kg	0.21	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.013	U	mg/kg	0.0063	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7440-23-5	Sodium	INORG_SOSD	41	U	mg/kg	21	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7440-09-7	Potassium	INORG_SOSD	179	J	mg/kg	179	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS09_091008(1.0-2.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	1.7		mg/kg	1.7	mg/kg	9/10/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	5.9	J	mg/kg	5.9	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7440-41-7	Beryllium	INORG_SOSD	0.52	J	mg/kg	0.52	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7440-39-3	Barium	INORG_SOSD	61		mg/kg	61	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	11		mg/kg	11	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	12		mg/kg	12	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,350		mg/kg	1,350	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7440-70-2	Calcium	INORG_SOSD	7,670		mg/kg	7,670	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.2	U	mg/kg	0.62	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7440-62-2	Vanadium	INORG_SOSD	15		mg/kg	15	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7440-48-4	Cobalt	INORG_SOSD	2.2		mg/kg	2.2	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	40		mg/kg	40	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	2.0	J	mg/kg	2.0	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	169		mg/kg	169	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7439-95-4	Magnesium	INORG_SOSD	1,040		mg/kg	1,040	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	10,200		mg/kg	10,200	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7439-96-5	Manganese	INORG_SOSD	510		mg/kg	510	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7440-28-0	Thallium	INORG_SOSD	1.6	U	mg/kg	0.80	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	4,520		mg/kg	4,520	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAS10_090908(0.0-0.5)_SO	7440-22-4	Silver	INORG_SOSD	1.1		mg/kg	1.1	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.082	J	mg/kg	0.082	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	91	J	mg/kg	91	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7440-09-7	Potassium	INORG_SOSD	618	J	mg/kg	618	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	7.3		mg/kg	7.3	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7440-47-3	Chromium	INORG_SOSD	2.1		mg/kg	2.1	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.15	U	mg/kg	0.073	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.073	U	mg/kg	0.037	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7440-39-3	Barium	INORG_SOSD	10		mg/kg	10	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7440-48-4	Cobalt	INORG_SOSD	1.0		mg/kg	1.0	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7440-66-6	Zinc	INORG_SOSD	41		mg/kg	41	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7440-70-2	Calcium	INORG_SOSD	730		mg/kg	730	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.1	U	mg/kg	0.53	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7440-62-2	Vanadium	INORG_SOSD	4.0		mg/kg	4.0	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.4		mg/kg	2.4	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7440-50-8	Copper	INORG_SOSD	1.7		mg/kg	1.7	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.012	U	mg/kg	0.0059	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	4.1		mg/kg	4.1	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7439-95-4	Magnesium	INORG_SOSD	355		mg/kg	355	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7439-89-6	Iron	INORG_SOSD	2,490		mg/kg	2,490	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7439-96-5	Manganese	INORG_SOSD	27		mg/kg	27	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.25	U	mg/kg	0.12	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7429-90-5	Aluminum	INORG_SOSD	1,640		mg/kg	1,640	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	1.3		mg/kg	1.3	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7440-28-0	Thallium	INORG_SOSD	1.4	U	mg/kg	0.69	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7440-23-5	Sodium	INORG_SOSD	40	U	mg/kg	20	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7440-09-7	Potassium	INORG_SOSD	153	J	mg/kg	153	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(0.5-1.0)_SO	7440-22-4	Silver	INORG_SOSD	0.23	J	mg/kg	0.23	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	2.5		mg/kg	2.5	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.15	U	mg/kg	0.075	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7440-39-3	Barium	INORG_SOSD	6.1		mg/kg	6.1	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.072	U	mg/kg	0.036	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7440-48-4	Cobalt	INORG_SOSD	1.3		mg/kg	1.3	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7440-70-2	Calcium	INORG_SOSD	540		mg/kg	540	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.0	U	mg/kg	0.52	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.0	J	mg/kg	2.0	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAS10_090908(1.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	7.8		mg/kg	7.8	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	0.51	J	mg/kg	0.51	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7440-62-2	Vanadium	INORG_SOSD	4.2		mg/kg	4.2	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.25	U	mg/kg	0.13	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7439-95-4	Magnesium	INORG_SOSD	367		mg/kg	367	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7439-96-5	Manganese	INORG_SOSD	16		mg/kg	16	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	2.1		mg/kg	2.1	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.012	U	mg/kg	0.0061	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7429-90-5	Aluminum	INORG_SOSD	1,550		mg/kg	1,550	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7439-89-6	Iron	INORG_SOSD	3,080		mg/kg	3,080	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	1.5		mg/kg	1.5	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7440-28-0	Thallium	INORG_SOSD	1.4	U	mg/kg	0.68	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7440-23-5	Sodium	INORG_SOSD	40	U	mg/kg	20	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7440-09-7	Potassium	INORG_SOSD	151	J	mg/kg	151	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS10_090908(1.0-2.0)_SO	7440-22-4	Silver	INORG_SOSD	0.21	J	mg/kg	0.21	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	5.4		mg/kg	5.4	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.66	J	mg/kg	0.66	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7440-39-3	Barium	INORG_SOSD	14		mg/kg	14	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7440-41-7	Beryllium	INORG_SOSD	0.12	J	mg/kg	0.12	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7440-48-4	Cobalt	INORG_SOSD	1.7		mg/kg	1.7	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7440-70-2	Calcium	INORG_SOSD	3,160		mg/kg	3,160	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.3	U	mg/kg	0.65	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.1		mg/kg	3.1	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	151		mg/kg	151	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	8.2		mg/kg	8.2	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7440-62-2	Vanadium	INORG_SOSD	7.0		mg/kg	7.0	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.46	J	mg/kg	0.46	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7439-95-4	Magnesium	INORG_SOSD	1,120		mg/kg	1,120	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7439-96-5	Manganese	INORG_SOSD	161		mg/kg	161	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	31		mg/kg	31	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.017	J	mg/kg	0.017	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,460		mg/kg	1,460	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	4,710		mg/kg	4,710	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	3.2		mg/kg	3.2	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7440-28-0	Thallium	INORG_SOSD	1.7	U	mg/kg	0.84	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7440-23-5	Sodium	INORG_SOSD	49	U	mg/kg	25	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAS11_090908(0.0-0.5)_SO	7440-09-7	Potassium	INORG_SOSD	240	J	mg/kg	240	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.0-0.5)_SO	7440-22-4	Silver	INORG_SOSD	0.38	J	mg/kg	0.38	mg/kg	9/9/08	Soil	0.0	0.50	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7440-47-3	Chromium	INORG_SOSD	9.7		mg/kg	9.7	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7440-43-9	Cadmium	INORG_SOSD	5.3	J	mg/kg	5.3	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7440-39-3	Barium	INORG_SOSD	44		mg/kg	44	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.61	J	mg/kg	0.61	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7440-48-4	Cobalt	INORG_SOSD	2.5		mg/kg	2.5	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7440-70-2	Calcium	INORG_SOSD	7,540		mg/kg	7,540	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.6	U	mg/kg	0.81	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	18		mg/kg	18	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7440-66-6	Zinc	INORG_SOSD	774		mg/kg	774	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7440-50-8	Copper	INORG_SOSD	32		mg/kg	32	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7440-62-2	Vanadium	INORG_SOSD	13		mg/kg	13	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	4.9	J	mg/kg	4.9	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7439-95-4	Magnesium	INORG_SOSD	1,280		mg/kg	1,280	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7439-96-5	Manganese	INORG_SOSD	181		mg/kg	181	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	210		mg/kg	210	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.070	J	mg/kg	0.070	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7429-90-5	Aluminum	INORG_SOSD	5,380		mg/kg	5,380	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7439-89-6	Iron	INORG_SOSD	12,800		mg/kg	12,800	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	7.3		mg/kg	7.3	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7440-28-0	Thallium	INORG_SOSD	2.1	U	mg/kg	1.1	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7440-23-5	Sodium	INORG_SOSD	96	J	mg/kg	96	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7440-09-7	Potassium	INORG_SOSD	457	J	mg/kg	457	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(0.5-1.0)_SO	7440-22-4	Silver	INORG_SOSD	1.2		mg/kg	1.2	mg/kg	9/9/08	Soil	0.50	1.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	3.0		mg/kg	3.0	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.45	J	mg/kg	0.45	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7440-39-3	Barium	INORG_SOSD	9.8		mg/kg	9.8	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7440-41-7	Beryllium	INORG_SOSD	0.13	J	mg/kg	0.13	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7440-48-4	Cobalt	INORG_SOSD	1.1		mg/kg	1.1	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7440-70-2	Calcium	INORG_SOSD	1,800		mg/kg	1,800	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.3	U	mg/kg	0.66	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.2	J	mg/kg	2.2	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	36		mg/kg	36	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	2.2		mg/kg	2.2	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7440-62-2	Vanadium	INORG_SOSD	5.2		mg/kg	5.2	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NAS11_090908(1.0-2.0)_SO	7440-23-5	Sodium	INORG_SOSD	50	U	mg/kg	25	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	16		mg/kg	16	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7439-95-4	Magnesium	INORG_SOSD	465		mg/kg	465	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7439-89-6	Iron	INORG_SOSD	2,280		mg/kg	2,280	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7439-96-5	Manganese	INORG_SOSD	17		mg/kg	17	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.62	J	mg/kg	0.62	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.015	U	mg/kg	0.0075	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7429-90-5	Aluminum	INORG_SOSD	2,340		mg/kg	2,340	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7440-28-0	Thallium	INORG_SOSD	1.7	U	mg/kg	0.86	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7440-22-4	Silver	INORG_SOSD	0.23	U	mg/kg	0.11	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	2.0		mg/kg	2.0	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
NAS11_090908(1.0-2.0)_SO	7440-09-7	Potassium	INORG_SOSD	203	J	mg/kg	203	mg/kg	9/9/08	Soil	1.0	2.0	NATURAL AREA SAMPLING 9/08
S20-01S_102699(0.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	3.6		mg/kg	3.6	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-01S_102699(0.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	3.2	U	mg/kg	1.6	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-01S_102699(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.5		mg/kg	1.5	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-01S_102699(0.0-2.0)_SO	57-12-5	Cyanide (free)	INORG_SOSD	0.52	U	mg/kg	0.26	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-01S_102699(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	5.6		mg/kg	5.6	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-01S_102699(0.0-2.0)_SO	16887-00-6	Chloride	INORG_SOSD	9.6	J	mg/kg	9.6	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-01S_102699(0.0-2.0)_SO	14808-79-8	Sulfate	INORG_SOSD	16	U	mg/kg	8.0	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-01S_102699(0.0-2.0)_SO	16984-48-8	Fluoride	INORG_SOSD	1.0	UJ	mg/kg	0.50	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	75-00-3	Ethyl Chloride	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	75-09-2	Dichloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	75-01-4	Vinyl Chloride	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	74-97-5	Bromochloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	71-55-6	Trichloroethane, 1,1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	74-87-3	Chloromethane	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	67-66-3	Chloroform	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	75-15-0	Carbon Disulfide	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	71-43-2	Benzene	VOC_SOSD	8.0		ug/kg	0.00080	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	74-83-9	Bromomethane	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	79-01-6	Trichloroethylene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	79-00-5	Trichloroethane, 1,1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	78-93-3	Methyl Ethyl Ketone	VOC_SOSD	12	U	ug/kg	0.00060	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	591-78-6	Hexanone, 2-	VOC_SOSD	12	U	ug/kg	0.00060	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	78-87-5	Dichloropropane, 1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	79-34-5	Tetrachloroethane, 1,1,2,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
S20-02S_102699(0.0-2.0)_SO	75-71-8	CFC-12	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	75-34-3	Dichloroethane, 1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	75-27-4	Bromodichloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	75-35-4	Dichloroethene, 1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	75-25-2	Bromoform	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	75-69-4	CFC-11	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	67-64-1	Acetone	VOC_SOSD	24		ug/kg	0.0024	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	10		mg/kg	10	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	9.5		mg/kg	9.5	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	110-54-3	Hexane, n-	SVOC_SOSD	13		ug/kg	0.0013	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.0		mg/kg	3.0	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	100-41-4	Ethyl Benzene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	27		mg/kg	27	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	16887-00-6	Chloride	INORG_SOSD	11	J	mg/kg	11	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	56-23-5	Carbon Tetrachloride	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	16984-48-8	Fluoride	INORG_SOSD	1.1	U	mg/kg	0.55	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	100-42-5	Styrene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	57-12-5	Cyanide (free)	INORG_SOSD	0.52	U	mg/kg	0.26	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	14808-79-8	Sulfate	INORG_SOSD	38		mg/kg	38	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	1330-20-7	Xylenes	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	127-18-4	Tetrachloroethylene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	156-59-2	Dichloroethylene, Cis-1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	124-48-1	Dibromochloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	10061-01-5	Dichloropropene, Cis-1,3-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	156-60-5	Dichloroethylene, Trans-1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	108-90-7	Chlorobenzene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	10061-02-6	Dichloropropene, Trans-1,3-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	107-06-2	Dichloroethane, 1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	108-88-3	Toluene	VOC_SOSD	6.0		ug/kg	0.00060	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-02S_102699(0.0-2.0)_SO	108-10-1	Methyl Isobutyl Ketone	VOC_SOSD	12	U	ug/kg	0.00060	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	74-83-9	Bromomethane	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	74-87-3	Chloromethane	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	75-01-4	Vinyl Chloride	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	74-97-5	Bromochloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	75-00-3	Ethyl Chloride	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	67-66-3	Chloroform	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
S20-03S_102699(0.0-2.0)_SO	591-78-6	Hexanone, 2-	VOC_SOSD	11	U	ug/kg	0.00055	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	75-09-2	Dichloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	67-64-1	Acetone	VOC_SOSD	23	U	ug/kg	0.0012	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	71-55-6	Trichloroethane, 1,1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	71-43-2	Benzene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	56-23-5	Carbon Tetrachloride	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	79-00-5	Trichloroethane, 1,1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	78-93-3	Methyl Ethyl Ketone	VOC_SOSD	11	U	ug/kg	0.00055	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	79-01-6	Trichloroethylene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	78-87-5	Dichloropropane, 1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	79-34-5	Tetrachloroethane, 1,1,2,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	75-69-4	CFC-11	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	75-27-4	Bromodichloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	75-25-2	Bromoform	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	75-34-3	Dichloroethane, 1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	75-15-0	Carbon Disulfide	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	75-35-4	Dichloroethene, 1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	75-71-8	CFC-12	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	156-60-5	Dichloroethylene, Trans-1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	7440-39-3	Barium	INORG_SOSD	9.5		mg/kg	9.5	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	6.8	J	mg/kg	6.8	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	8.9		mg/kg	8.9	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	1.0	U	mg/kg	0.50	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	11		mg/kg	11	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	51	J	mg/kg	51	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	14808-79-8	Sulfate	INORG_SOSD	23	U	mg/kg	12	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	156-59-2	Dichloroethylene, Cis-1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	16984-48-8	Fluoride	INORG_SOSD	1.1	UJ	mg/kg	0.55	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	85		mg/kg	85	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	57-12-5	Cyanide (free)	INORG_SOSD	0.53	U	mg/kg	0.27	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	16887-00-6	Chloride	INORG_SOSD	8.3	J	mg/kg	8.3	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	110-54-3	Hexane, n-	SVOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	124-48-1	Dibromochloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	108-90-7	Chlorobenzene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	1330-20-7	Xylenes	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	108-88-3	Toluene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
S20-03S_102699(0.0-2.0)_SO	100-41-4	Ethyl Benzene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	127-18-4	Tetrachloroethylene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	100-42-5	Styrene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	10061-01-5	Dichloropropene, Cis-1,3-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	10061-02-6	Dichloropropene, Trans-1,3-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	107-06-2	Dichloroethane, 1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-03S_102699(0.0-2.0)_SO	108-10-1	Methyl Isobutyl Ketone	VOC_SOSD	11	U	ug/kg	0.00055	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	74-97-5	Bromochloromethane	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	75-01-4	Vinyl Chloride	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	75-00-3	Ethyl Chloride	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	75-09-2	Dichloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	71-55-6	Trichloroethane, 1,1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	75-15-0	Carbon Disulfide	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	67-64-1	Acetone	VOC_SOSD	24	U	ug/kg	0.0012	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	71-43-2	Benzene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	74-87-3	Chloromethane	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	74-83-9	Bromomethane	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	78-87-5	Dichloropropane, 1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	75-25-2	Bromoform	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	79-01-6	Trichloroethylene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	591-78-6	Hexanone, 2-	VOC_SOSD	12	U	ug/kg	0.00060	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	79-34-5	Tetrachloroethane, 1,1,2,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	79-00-5	Trichloroethane, 1,1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	75-71-8	CFC-12	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	78-93-3	Methyl Ethyl Ketone	VOC_SOSD	12	U	ug/kg	0.00060	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	75-34-3	Dichloroethane, 1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	75-69-4	CFC-11	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	75-35-4	Dichloroethene, 1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	75-27-4	Bromodichloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	67-66-3	Chloroform	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	110-54-3	Hexane, n-	SVOC_SOSD	7.0		ug/kg	0.00070	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	3.9	U	mg/kg	2.0	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	100-41-4	Ethyl Benzene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	4.4		mg/kg	4.4	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	100-42-5	Styrene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.1		mg/kg	2.1	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
S20-04S_102699(0.0-2.0)_SO	16984-48-8	Fluoride	INORG_SOSD	1.0	U	mg/kg	0.50	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	16887-00-6	Chloride	INORG_SOSD	61	J	mg/kg	61	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	57-12-5	Cyanide (free)	INORG_SOSD	0.52	U	mg/kg	0.26	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	56-23-5	Carbon Tetrachloride	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	7.9		mg/kg	7.9	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	10061-01-5	Dichloropropene, Cis-1,3-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	156-59-2	Dichloroethylene, Cis-1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	1330-20-7	Xylenes	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	14808-79-8	Sulfate	INORG_SOSD	71		mg/kg	71	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	10061-02-6	Dichloropropene, Trans-1,3-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	156-60-5	Dichloroethylene, Trans-1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	127-18-4	Tetrachloroethylene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	124-48-1	Dibromochloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	107-06-2	Dichloroethane, 1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	108-10-1	Methyl Isobutyl Ketone	VOC_SOSD	12	U	ug/kg	0.00060	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	108-88-3	Toluene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-04S_102699(0.0-2.0)_SO	108-90-7	Chlorobenzene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-05S_102699(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.1		mg/kg	2.1	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-05S_102699(0.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	3.6	U	mg/kg	1.8	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-05S_102699(0.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	4.1		mg/kg	4.1	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-05S_102699(0.0-2.0)_SO	57-12-5	Cyanide (free)	INORG_SOSD	0.53	U	mg/kg	0.27	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-05S_102699(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	6.6		mg/kg	6.6	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-05S_102699(0.0-2.0)_SO	14808-79-8	Sulfate	INORG_SOSD	61		mg/kg	61	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-05S_102699(0.0-2.0)_SO	16984-48-8	Fluoride	INORG_SOSD	1.1	UJ	mg/kg	0.55	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-05S_102699(0.0-2.0)_SO	16887-00-6	Chloride	INORG_SOSD	62	J	mg/kg	62	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	74-97-5	Bromochloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	75-01-4	Vinyl Chloride	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	591-78-6	Hexanone, 2-	VOC_SOSD	11	U	ug/kg	0.00055	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	74-87-3	Chloromethane	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	71-55-6	Trichloroethane, 1,1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	67-66-3	Chloroform	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	67-64-1	Acetone	VOC_SOSD	23	U	ug/kg	0.0012	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	71-43-2	Benzene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	74-83-9	Bromomethane	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	75-09-2	Dichloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	75-27-4	Bromodichloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
S20-06S_102699(0.0-2.0)_SO	75-15-0	Carbon Disulfide	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	79-00-5	Trichloroethane, 1,1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	79-34-5	Tetrachloroethane, 1,1,2,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	79-01-6	Trichloroethylene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	78-93-3	Methyl Ethyl Ketone	VOC_SOSD	11	U	ug/kg	0.00055	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	75-71-8	CFC-12	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	78-87-5	Dichloropropane, 1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	75-34-3	Dichloroethane, 1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	75-69-4	CFC-11	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	75-35-4	Dichloroethene, 1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	75-25-2	Bromoform	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	75-00-3	Ethyl Chloride	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	4.1	U	mg/kg	2.1	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	4.9		mg/kg	4.9	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	110-54-3	Hexane, n-	SVOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.7		mg/kg	1.7	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	100-41-4	Ethyl Benzene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	9.4		mg/kg	9.4	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	16887-00-6	Chloride	INORG_SOSD	9.2	J	mg/kg	9.2	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	56-23-5	Carbon Tetrachloride	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	16984-48-8	Fluoride	INORG_SOSD	1.1	U	mg/kg	0.55	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	100-42-5	Styrene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	57-12-5	Cyanide (free)	INORG_SOSD	0.52	U	mg/kg	0.26	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	14808-79-8	Sulfate	INORG_SOSD	15	U	mg/kg	7.5	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	1330-20-7	Xylenes	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	127-18-4	Tetrachloroethylene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	156-59-2	Dichloroethylene, Cis-1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	10061-01-5	Dichloropropene, Cis-1,3-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	156-60-5	Dichloroethylene, Trans-1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	124-48-1	Dibromochloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	108-90-7	Chlorobenzene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	10061-02-6	Dichloropropene, Trans-1,3-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	107-06-2	Dichloroethane, 1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	108-10-1	Methyl Isobutyl Ketone	VOC_SOSD	11	U	ug/kg	0.00055	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-06S_102699(0.0-2.0)_SO	108-88-3	Toluene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	74-87-3	Chloromethane	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
S20-07S_102699(0.0-2.0)_SO	75-00-3	Ethyl Chloride	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	74-97-5	Bromochloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	591-78-6	Hexanone, 2-	VOC_SOSD	13	U	ug/kg	0.00065	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	74-83-9	Bromomethane	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	67-64-1	Acetone	VOC_SOSD	25	U	ug/kg	0.0013	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	75-09-2	Dichloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	67-66-3	Chloroform	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	71-55-6	Trichloroethane, 1,1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	71-43-2	Benzene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	75-71-8	CFC-12	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	75-15-0	Carbon Disulfide	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	79-01-6	Trichloroethylene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	79-00-5	Trichloroethane, 1,1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	79-34-5	Tetrachloroethane, 1,1,2,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	78-93-3	Methyl Ethyl Ketone	VOC_SOSD	13	U	ug/kg	0.00065	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	56-23-5	Carbon Tetrachloride	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	78-87-5	Dichloropropane, 1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	75-34-3	Dichloroethane, 1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	75-27-4	Bromodichloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	75-35-4	Dichloroethene, 1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	75-25-2	Bromoform	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	75-69-4	CFC-11	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	75-01-4	Vinyl Chloride	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	156-60-5	Dichloroethylene, Trans-1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	7440-39-3	Barium	INORG_SOSD	5.0		mg/kg	5.0	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.3		mg/kg	1.3	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	2.7		mg/kg	2.7	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	1.1	U	mg/kg	0.55	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	3.4	U	mg/kg	1.7	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	5.8		mg/kg	5.8	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	14808-79-8	Sulfate	INORG_SOSD	54		mg/kg	54	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	156-59-2	Dichloroethylene, Cis-1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	16984-48-8	Fluoride	INORG_SOSD	1.1	UJ	mg/kg	0.55	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	23		mg/kg	23	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	57-12-5	Cyanide (free)	INORG_SOSD	0.50	U	mg/kg	0.25	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	16887-00-6	Chloride	INORG_SOSD	65	J	mg/kg	65	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
S20-07S_102699(0.0-2.0)_SO	110-54-3	Hexane, n-	SVOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	124-48-1	Dibromochloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	108-90-7	Chlorobenzene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	1330-20-7	Xylenes	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	108-88-3	Toluene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	100-41-4	Ethyl Benzene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	127-18-4	Tetrachloroethylene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	100-42-5	Styrene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	108-10-1	Methyl Isobutyl Ketone	VOC_SOSD	13	U	ug/kg	0.00065	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	10061-01-5	Dichloropropene, Cis-1,3-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	10061-02-6	Dichloropropene, Trans-1,3-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-07S_102699(0.0-2.0)_SO	107-06-2	Dichloroethane, 1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	75-00-3	Ethyl Chloride	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	75-09-2	Dichloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	75-01-4	Vinyl Chloride	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	75-15-0	Carbon Disulfide	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	74-83-9	Bromomethane	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	71-43-2	Benzene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	67-66-3	Chloroform	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	71-55-6	Trichloroethane, 1,1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	74-97-5	Bromochloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	74-87-3	Chloromethane	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	75-71-8	CFC-12	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	75-25-2	Bromoform	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	79-01-6	Trichloroethylene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	67-64-1	Acetone	VOC_SOSD	26	U	ug/kg	0.0013	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	79-34-5	Tetrachloroethane, 1,1,2,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	79-00-5	Trichloroethane, 1,1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	78-87-5	Dichloropropane, 1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	78-93-3	Methyl Ethyl Ketone	VOC_SOSD	13	U	ug/kg	0.00065	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	75-34-3	Dichloroethane, 1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	75-69-4	CFC-11	VOC_SOSD	6.0	UJ	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	75-35-4	Dichloroethene, 1,1-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	75-27-4	Bromodichloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	100-42-5	Styrene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	591-78-6	Hexanone, 2-	VOC_SOSD	13	U	ug/kg	0.00065	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI

Table D-1: Natural Area Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
S20-08S_102699(0.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	4.6		mg/kg	4.6	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	110-54-3	Hexane, n-	SVOC_SOSD	7.0		ug/kg	0.00070	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	2.4	U	mg/kg	1.2	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.6		mg/kg	1.6	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	57-12-5	Cyanide (free)	INORG_SOSD	0.54	U	mg/kg	0.27	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	7.0		mg/kg	7.0	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	14808-79-8	Sulfate	INORG_SOSD	121		mg/kg	121	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	16984-48-8	Fluoride	INORG_SOSD	1.1		mg/kg	1.1	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	16887-00-6	Chloride	INORG_SOSD	79	J	mg/kg	79	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	100-41-4	Ethyl Benzene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	10061-02-6	Dichloropropene, Trans-1,3-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	10061-01-5	Dichloropropene, Cis-1,3-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	1330-20-7	Xylenes	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	156-60-5	Dichloroethylene, Trans-1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	156-59-2	Dichloroethylene, Cis-1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	127-18-4	Tetrachloroethylene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	108-90-7	Chlorobenzene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	124-48-1	Dibromochloromethane	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	107-06-2	Dichloroethane, 1,2-	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	108-88-3	Toluene	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	108-10-1	Methyl Isobutyl Ketone	VOC_SOSD	13	U	ug/kg	0.00065	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI
S20-08S_102699(0.0-2.0)_SO	56-23-5	Carbon Tetrachloride	VOC_SOSD	6.0	U	ug/kg	0.00030	mg/kg	10/26/99	Soil	0.0	2.0	PHASE I RFI

Notes:

[1]Includes soil and sediment data collected from zero to two feet below ground surface.

[2]Nondetect data are presented as one-half the reporting limit.

[3]Samples with BFDATA postfix represent sample results for locations where there is now two feet of clean fill on top of the existing sample. The analytical results are for the clean fill.

[4]Samples with DC postfix represent samples where two results were combined using the following decision rules:

1. If both results were detected values, then the two values were averaged.
2. If one result was detected and one was not detected, then the detected value was used as the concentration for that sample location.
3. If both results were not detected, the lowest detection limit value was used as the concentration for that sample.

Table D-2: Buffer Zone Extension Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
AOI-4-26_030513(0.0-0.5)_SO_BFDATA	7440-66-6	Zinc	INORG_SOSD	31		mg/kg	31	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
AOI-4-26_030513(0.0-0.5)_SO_BFDATA	7439-92-1	Lead (inorganic)	INORG_SOSD	8.0		mg/kg	8.0	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
AOI-4-26_030513(0.0-0.5)_SO_BFDATA	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.51	U	mg/kg	0.26	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
AOI-4-26_030513(0.0-0.5)_SO_BFDATA	7440-43-9	Cadmium	INORG_SOSD	0.31		mg/kg	0.31	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
AOI-4-26_030513(0.0-0.5)_SO_BFDATA	7440-47-3	Chromium	INORG_SOSD	10		mg/kg	10	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
AOI-4-26_030513(0.0-0.5)_SO_BFDATA	7440-39-3	Barium	INORG_SOSD	28		mg/kg	28	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
AOI-4-26_030513(0.0-0.5)_SO_BFDATA	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.029		mg/kg	0.029	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
AOI-4-26_030513(0.0-0.5)_SO_BFDATA	7440-22-4	Silver	INORG_SOSD	0.52	U	mg/kg	0.26	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
AOI-4-26_030513(0.0-0.5)_SO_BFDATA	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.0		mg/kg	2.0	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
AOI-4-26_030513(0.5-1.0)_SO_BFDATA	7440-47-3	Chromium	INORG_SOSD	10		mg/kg	10	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
AOI-4-26_030513(0.5-1.0)_SO_BFDATA	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.51	U	mg/kg	0.26	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
AOI-4-26_030513(0.5-1.0)_SO_BFDATA	7440-66-6	Zinc	INORG_SOSD	31		mg/kg	31	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
AOI-4-26_030513(0.5-1.0)_SO_BFDATA	7440-43-9	Cadmium	INORG_SOSD	0.31		mg/kg	0.31	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
AOI-4-26_030513(0.5-1.0)_SO_BFDATA	7440-22-4	Silver	INORG_SOSD	0.52	U	mg/kg	0.26	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
AOI-4-26_030513(0.5-1.0)_SO_BFDATA	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.029		mg/kg	0.029	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
AOI-4-26_030513(0.5-1.0)_SO_BFDATA	7440-39-3	Barium	INORG_SOSD	28		mg/kg	28	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
AOI-4-26_030513(0.5-1.0)_SO_BFDATA	7439-92-1	Lead (inorganic)	INORG_SOSD	8.0		mg/kg	8.0	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
AOI-4-26_030513(0.5-1.0)_SO_BFDATA	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.0		mg/kg	2.0	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
BFZ-01_093010(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	748		mg/kg	748	mg/kg	9/30/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-01_093010(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	1,940		mg/kg	1,940	mg/kg	9/30/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-01_093010(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	11	U	mg/kg	5.4	mg/kg	9/30/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-01_093010(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	2,330		mg/kg	2,330	mg/kg	9/30/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-01_093010(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	16	J	mg/kg	16	mg/kg	9/30/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-01_093010(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	78		mg/kg	78	mg/kg	9/30/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-01_093010(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	142,000		mg/kg	142,000	mg/kg	9/30/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-01_093010(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	9,280	J	mg/kg	9,280	mg/kg	9/30/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-01_093010(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	1,290	J	mg/kg	1,290	mg/kg	9/30/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-01_093010(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	29		mg/kg	29	mg/kg	9/30/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-01_093010(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	55		mg/kg	55	mg/kg	9/30/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-11_111109(0.0-0.5)_SO	71-55-6	Trichloroethane, 1,1,1-	VOC_SOSD	0.64	U	ug/kg	0.000032	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	71-43-2	Benzene	VOC_SOSD	0.26	U	ug/kg	0.000013	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	74-83-9	Bromomethane	VOC_SOSD	0.62	U	ug/kg	0.000031	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	75-00-3	Ethyl Chloride	VOC_SOSD	0.98	U	ug/kg	0.000049	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	74-87-3	Chloromethane	VOC_SOSD	0.47	U	ug/kg	0.000024	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	67-66-3	Chloroform	VOC_SOSD	0.33	U	ug/kg	0.000017	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	74-95-3	Methylene Bromide	VOC_SOSD	0.72	U	ug/kg	0.000036	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	74-88-4	Methyl iodide	VOC_SOSD	0.62	U	ug/kg	0.000031	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009

Table D-2: Buffer Zone Extension Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
BFZ-11_111109(0.0-0.5)_SO	56-23-5	Carbon Tetrachloride	VOC_SOSD	0.42	U	ug/kg	0.000021	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	67-64-1	Acetone	VOC_SOSD	7.2	U	ug/kg	0.00036	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	126-99-8	Chloro-1,3-Butadiene, 2-	VOC_SOSD	0.42	U	ug/kg	0.000021	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	126-98-7	Methacrylonitrile	VOC_SOSD	0.32	U	ug/kg	0.000016	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	127-18-4	Tetrachloroethylene	VOC_SOSD	0.59	U	ug/kg	0.000030	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	156-60-5	Dichloroethylene, Trans-1,2-	VOC_SOSD	0.47	U	ug/kg	0.000024	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	1330-20-7	Xylenes	VOC_SOSD	0.77	U	ug/kg	0.000039	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	591-78-6	Hexanone, 2-	VOC_SOSD	0.72	U	ug/kg	0.000036	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	75-05-8	Acetonitrile	VOC_SOSD	4.2	U	ug/kg	0.00021	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	630-20-6	Tetrachloroethane, 1,1,1,2-	VOC_SOSD	0.71	U	ug/kg	0.000036	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	96-12-8	Dibromo-3-chloropropane, 1,2	VOC_SOSD	1.5	U	ug/kg	0.000075	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	79-01-6	Trichloroethylene	VOC_SOSD	0.48	U	ug/kg	0.000024	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	79-00-5	Trichloroethane, 1,1,2-	VOC_SOSD	0.45	U	ug/kg	0.000023	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	79-34-5	Tetrachloroethane, 1,1,2,2-	VOC_SOSD	0.39	U	ug/kg	0.000020	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	124-48-1	Dibromochloromethane	VOC_SOSD	0.63	U	ug/kg	0.000032	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	80-62-6	Methyl methacrylate	VOC_SOSD	0.62	U	ug/kg	0.000031	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	97-63-2	Ethyl Methacrylate	VOC_SOSD	0.47	U	ug/kg	0.000024	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	96-18-4	Trichloropropane, 1,2,3-	VOC_SOSD	1.0	U	ug/kg	0.000050	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	78-93-3	Methyl Ethyl Ketone	VOC_SOSD	1.6	U	ug/kg	0.000080	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	78-83-1	Isobutyl Alcohol	VOC_SOSD	39	U	ug/kg	0.0020	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	78-87-5	Dichloropropane, 1,2-	VOC_SOSD	0.79	U	ug/kg	0.000040	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	75-25-2	Bromoform	VOC_SOSD	0.38	U	ug/kg	0.000019	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	75-15-0	Carbon Disulfide	VOC_SOSD	0.50	U	ug/kg	0.000025	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	75-27-4	Bromodichloromethane	VOC_SOSD	0.32	U	ug/kg	0.000016	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	75-35-4	Dichloroethene, 1,1-	VOC_SOSD	0.59	U	ug/kg	0.000030	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	75-34-3	Dichloroethane, 1,1-	VOC_SOSD	0.41	U	ug/kg	0.000021	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	75-71-8	CFC-12	VOC_SOSD	0.57	U	ug/kg	0.000029	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	75-69-4	CFC-11	VOC_SOSD	0.39	U	ug/kg	0.000020	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	75-09-2	Dichloromethane	VOC_SOSD	3.3	J	ug/kg	0.00033	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	75-01-4	Vinyl Chloride	VOC_SOSD	0.45	U	ug/kg	0.000023	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	1.6	J	mg/kg	1.6	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7440-32-6	Titanium	INORG_SOSD	51		mg/kg	51	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7440-39-3	Barium	INORG_SOSD	19	J	mg/kg	19	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	1.6		mg/kg	1.6	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7440-41-7	Beryllium	INORG_SOSD	0.056	U	mg/kg	0.028	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7440-48-4	Cobalt	INORG_SOSD	1.1	J	mg/kg	1.1	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	2.7		mg/kg	2.7	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009

Table D-2: Buffer Zone Extension Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
BFZ-11_111109(0.0-0.5)_SO	7440-31-5	Tin	INORG_SOSD	1.1	B	mg/kg	1.1	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7440-22-4	Silver	INORG_SOSD	0.15	J	mg/kg	0.15	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7440-28-0	Thallium	INORG_SOSD	0.71	U	mg/kg	0.36	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	1,820		mg/kg	1,820	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	108-90-7	Chlorobenzene	VOC_SOSD	0.38	U	ug/kg	0.000019	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	2,910		mg/kg	2,910	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7439-96-5	Manganese	INORG_SOSD	46		mg/kg	46	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	38		mg/kg	38	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	1.8	J	mg/kg	1.8	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.40		mg/kg	0.40	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	6.1		mg/kg	6.1	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	6.5		mg/kg	6.5	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7440-62-2	Vanadium	INORG_SOSD	3.7	J	mg/kg	3.7	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	107-06-2	Dichloroethane, 1,2-	VOC_SOSD	0.39	U	ug/kg	0.000020	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	107-02-8	Acrolein	VOC_SOSD	3.1	U	ug/kg	0.00016	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	107-05-1	Allyl Chloride	VOC_SOSD	1.0	U	ug/kg	0.000050	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	107-12-0	Propionitrile	VOC_SOSD	3.2	U	ug/kg	0.00016	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	107-13-1	Acrylonitrile	VOC_SOSD	3.1	U	ug/kg	0.00016	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	108-88-3	Toluene	VOC_SOSD	0.31	U	ug/kg	0.000016	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	57-12-5	Cyanide (free)	INORG_SOSD	0.16	J	mg/kg	0.16	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	108-10-1	Methyl Isobutyl Ketone	VOC_SOSD	0.62	U	ug/kg	0.000031	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	106-93-4	Dibromoethane, 1,2-	VOC_SOSD	0.57	U	ug/kg	0.000029	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	108-05-4	Vinyl Acetate	VOC_SOSD	0.29	U	ug/kg	0.000015	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.58	U	mg/kg	0.29	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	10061-02-6	Dichloropropene, Trans-1,3-	VOC_SOSD	0.62	U	ug/kg	0.000031	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	123-91-1	Dioxane, 1,4-	SVOC_SOSD	110	U	ug/kg	0.0055	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	110-57-6	trans-1,4-Dichloro-2-butene	SVOC_SOSD	1.1	U	ug/kg	0.000055	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	100-41-4	Ethyl Benzene	VOC_SOSD	0.30	U	ug/kg	0.000015	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	100-42-5	Styrene	VOC_SOSD	0.17	U	ug/kg	0.0000085	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	10061-01-5	Dichloropropene, Cis-1,3-	VOC_SOSD	0.39	U	ug/kg	0.000020	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-11_111109(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,140		mg/kg	1,140	mg/kg	11/11/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-12_100110(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	18		mg/kg	18	mg/kg	10/1/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-12_100110(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	4.9		mg/kg	4.9	mg/kg	10/1/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-12_100110(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	423	J	mg/kg	423	mg/kg	10/1/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-12_100110(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	17,000		mg/kg	17,000	mg/kg	10/1/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-12_100110(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	109	J	mg/kg	109	mg/kg	10/1/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-12_100110(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	20		mg/kg	20	mg/kg	10/1/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010

Table D-2: Buffer Zone Extension Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
BFZ-12_100110(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	25,000		mg/kg	25,000	mg/kg	10/1/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-12_100110(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	76	J	mg/kg	76	mg/kg	10/1/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-12_100110(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	8,540		mg/kg	8,540	mg/kg	10/1/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-12_100110(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	1,670		mg/kg	1,670	mg/kg	10/1/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-12_100110(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	24	J	mg/kg	24	mg/kg	10/1/10	Soil	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-24_030513(0.0-0.5)_SO_BFDATA	7440-43-9	Cadmium	INORG_SOSD	0.31		mg/kg	0.31	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
BFZ-24_030513(0.0-0.5)_SO_BFDATA	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.51	U	mg/kg	0.26	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
BFZ-24_030513(0.0-0.5)_SO_BFDATA	7440-47-3	Chromium	INORG_SOSD	10		mg/kg	10	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
BFZ-24_030513(0.0-0.5)_SO_BFDATA	7440-66-6	Zinc	INORG_SOSD	31		mg/kg	31	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
BFZ-24_030513(0.0-0.5)_SO_BFDATA	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.0		mg/kg	2.0	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
BFZ-24_030513(0.0-0.5)_SO_BFDATA	7440-39-3	Barium	INORG_SOSD	28		mg/kg	28	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
BFZ-24_030513(0.0-0.5)_SO_BFDATA	7439-92-1	Lead (inorganic)	INORG_SOSD	8.0		mg/kg	8.0	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
BFZ-24_030513(0.0-0.5)_SO_BFDATA	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.029		mg/kg	0.029	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
BFZ-24_030513(0.0-0.5)_SO_BFDATA	7440-22-4	Silver	INORG_SOSD	0.52	U	mg/kg	0.26	mg/kg	3/5/13	Soil	0.00	0.50	Backfill Data - Calculated 2012 Ave
BFZ-24_030513(0.5-1.0)_SO_BFDATA	7440-66-6	Zinc	INORG_SOSD	31		mg/kg	31	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
BFZ-24_030513(0.5-1.0)_SO_BFDATA	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.51	U	mg/kg	0.26	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
BFZ-24_030513(0.5-1.0)_SO_BFDATA	7440-43-9	Cadmium	INORG_SOSD	0.31		mg/kg	0.31	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
BFZ-24_030513(0.5-1.0)_SO_BFDATA	7440-47-3	Chromium	INORG_SOSD	10		mg/kg	10	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
BFZ-24_030513(0.5-1.0)_SO_BFDATA	7440-39-3	Barium	INORG_SOSD	28		mg/kg	28	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
BFZ-24_030513(0.5-1.0)_SO_BFDATA	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.0		mg/kg	2.0	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
BFZ-24_030513(0.5-1.0)_SO_BFDATA	7439-92-1	Lead (inorganic)	INORG_SOSD	8.0		mg/kg	8.0	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
BFZ-24_030513(0.5-1.0)_SO_BFDATA	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.029		mg/kg	0.029	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
BFZ-24_030513(0.5-1.0)_SO_BFDATA	7440-22-4	Silver	INORG_SOSD	0.52	U	mg/kg	0.26	mg/kg	3/5/13	Soil	0.50	1.00	Backfill Data - Calculated 2012 Ave
BFZ-2_111309(0.0-0.5)_SO	71-43-2	Benzene	VOC_SOSD	41	J	ug/kg	0.0041	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	71-55-6	Trichloroethane, 1,1,1-	VOC_SOSD	43	UJ	ug/kg	0.0022	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	74-83-9	Bromomethane	VOC_SOSD	110	UJ	ug/kg	0.0055	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	74-95-3	Methylene Bromide	VOC_SOSD	29	UJ	ug/kg	0.0015	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	67-66-3	Chloroform	VOC_SOSD	54	UJ	ug/kg	0.0027	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	74-88-4	Methyl iodide	VOC_SOSD	110	UJ	ug/kg	0.0055	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	75-00-3	Ethyl Chloride	VOC_SOSD	290	UJ	ug/kg	0.015	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	74-87-3	Chloromethane	VOC_SOSD	24	UJ	ug/kg	0.0012	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	127-18-4	Tetrachloroethylene	VOC_SOSD	41	UJ	ug/kg	0.0021	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	75-01-4	Vinyl Chloride	VOC_SOSD	72	UJ	ug/kg	0.0036	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	126-98-7	Methacrylonitrile	VOC_SOSD	140	UJ	ug/kg	0.0070	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	126-99-8	Chloro-1,3-Butadiene, 2-	VOC_SOSD	50	UJ	ug/kg	0.0025	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	1330-20-7	Xylenes	VOC_SOSD	270	J	ug/kg	0.027	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	156-60-5	Dichloroethylene, Trans-1,2-	VOC_SOSD	50	UJ	ug/kg	0.0025	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009

Table D-2: Buffer Zone Extension Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
BFZ-2_111309(0.0-0.5)_SO	630-20-6	Tetrachloroethane, 1,1,1,2-	VOC_SOSD	59	UJ	ug/kg	0.0030	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	56-23-5	Carbon Tetrachloride	VOC_SOSD	54	UJ	ug/kg	0.0027	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	591-78-6	Hexanone, 2-	VOC_SOSD	110	UJ	ug/kg	0.0055	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	67-64-1	Acetone	VOC_SOSD	450	UJ	ug/kg	0.023	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	75-69-4	CFC-11	VOC_SOSD	38	UJ	ug/kg	0.0019	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	75-05-8	Acetonitrile	VOC_SOSD	1,400	UJ	ug/kg	0.070	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	79-34-5	Tetrachloroethane, 1,1,2,2-	VOC_SOSD	37	UJ	ug/kg	0.0019	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	79-01-6	Trichloroethylene	VOC_SOSD	54	UJ	ug/kg	0.0027	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	80-62-6	Methyl methacrylate	VOC_SOSD	77	U	ug/kg	0.0039	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	96-18-4	Trichloropropane, 1,2,3-	VOC_SOSD	63	UJ	ug/kg	0.0032	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	96-12-8	Dibromo-3-chloropropane, 1,2	VOC_SOSD	270	UJ	ug/kg	0.014	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	124-48-1	Dibromochloromethane	VOC_SOSD	31	UJ	ug/kg	0.0016	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	97-63-2	Ethyl Methacrylate	VOC_SOSD	39	UJ	ug/kg	0.0020	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	79-00-5	Trichloroethane, 1,1,2-	VOC_SOSD	45	UJ	ug/kg	0.0023	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	78-87-5	Dichloropropane, 1,2-	VOC_SOSD	34	UJ	ug/kg	0.0017	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	78-93-3	Methyl Ethyl Ketone	VOC_SOSD	550	B	ug/kg	0.055	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	75-25-2	Bromoform	VOC_SOSD	59	UJ	ug/kg	0.0030	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	75-15-0	Carbon Disulfide	VOC_SOSD	91	UJ	ug/kg	0.0046	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	75-27-4	Bromodichloromethane	VOC_SOSD	54	UJ	ug/kg	0.0027	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	75-35-4	Dichloroethene, 1,1-	VOC_SOSD	38	UJ	ug/kg	0.0019	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	75-34-3	Dichloroethane, 1,1-	VOC_SOSD	33	UJ	ug/kg	0.0017	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	78-83-1	Isobutyl Alcohol	VOC_SOSD	2,600	UJ	ug/kg	0.13	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	75-71-8	CFC-12	VOC_SOSD	24	UJ	ug/kg	0.0012	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	75-09-2	Dichloromethane	VOC_SOSD	450	UJ	ug/kg	0.023	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	226	J	mg/kg	226	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	68		mg/kg	68	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	7.0	J	mg/kg	7.0	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7440-39-3	Barium	INORG_SOSD	140		mg/kg	140	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7440-42-8	Boron	INORG_SOSD	23	J	mg/kg	23	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7440-41-7	Beryllium	INORG_SOSD	1.5		mg/kg	1.5	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	578		mg/kg	578	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	33		mg/kg	33	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7440-32-6	Titanium	INORG_SOSD	241		mg/kg	241	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7440-28-0	Thallium	INORG_SOSD	9.7	J	mg/kg	9.7	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7440-31-5	Tin	INORG_SOSD	306		mg/kg	306	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7439-89-6	Iron	INORG_SOSD	211,000		mg/kg	211,000	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	108-90-7	Chlorobenzene	VOC_SOSD	29	UJ	ug/kg	0.0015	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009

Table D-2: Buffer Zone Extension Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
BFZ-2_111309(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	828	J	mg/kg	828	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	1.6	J	mg/kg	1.6	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7439-96-5	Manganese	INORG_SOSD	1,260		mg/kg	1,260	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7440-22-4	Silver	INORG_SOSD	2.2		mg/kg	2.2	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	159		mg/kg	159	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7440-48-4	Cobalt	INORG_SOSD	19		mg/kg	19	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7429-90-5	Aluminum	INORG_SOSD	13,300	J	mg/kg	13,300	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	57-12-5	Cyanide (free)	INORG_SOSD	18		mg/kg	18	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7440-62-2	Vanadium	INORG_SOSD	42	J	mg/kg	42	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	107-05-1	Allyl Chloride	VOC_SOSD	100	UJ	ug/kg	0.0050	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	107-12-0	Propionitrile	VOC_SOSD	430	UJ	ug/kg	0.022	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	108-05-4	Vinyl Acetate	VOC_SOSD	77	UJ	ug/kg	0.0039	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	107-13-1	Acrylonitrile	VOC_SOSD	590	UJ	ug/kg	0.030	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	108-88-3	Toluene	VOC_SOSD	110	J	ug/kg	0.011	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	108-10-1	Methyl Isobutyl Ketone	VOC_SOSD	50	UJ	ug/kg	0.0025	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	107-02-8	Acrolein	VOC_SOSD	680	UJ	ug/kg	0.034	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	107-06-2	Dichloroethane, 1,2-	VOC_SOSD	42	UJ	ug/kg	0.0021	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	106-93-4	Dibromoethane, 1,2-	VOC_SOSD	45	UJ	ug/kg	0.0023	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	10061-02-6	Dichloropropene, Trans-1,3-	VOC_SOSD	24	UJ	ug/kg	0.0012	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	7,660		mg/kg	7,660	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	6.9	U	mg/kg	3.5	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	110-57-6	trans-1,4-Dichloro-2-butene	SVOC_SOSD	86	UJ	ug/kg	0.0043	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	123-91-1	Dioxane, 1,4-	SVOC_SOSD	7,700	UJ	ug/kg	0.39	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	10061-01-5	Dichloropropene, Cis-1,3-	VOC_SOSD	25	UJ	ug/kg	0.0013	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	100-42-5	Styrene	VOC_SOSD	130	UJ	ug/kg	0.0065	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(0.0-0.5)_SO	100-41-4	Ethyl Benzene	VOC_SOSD	54	J	ug/kg	0.0054	mg/kg	11/13/09	Soil	0.00	0.50	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	71-43-2	Benzene	VOC_SOSD	0.61	U	ug/kg	0.000031	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	67-66-3	Chloroform	VOC_SOSD	0.77	U	ug/kg	0.000039	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	71-55-6	Trichloroethane, 1,1,1-	VOC_SOSD	1.5	U	ug/kg	0.000075	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	75-00-3	Ethyl Chloride	VOC_SOSD	2.3	U	ug/kg	0.00012	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	74-95-3	Methylene Bromide	VOC_SOSD	1.7	U	ug/kg	0.000085	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	74-87-3	Chloromethane	VOC_SOSD	1.1	U	ug/kg	0.000055	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	74-88-4	Methyl iodide	VOC_SOSD	1.4	U	ug/kg	0.000070	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	74-83-9	Bromomethane	VOC_SOSD	1.4	U	ug/kg	0.000070	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	126-98-7	Methacrylonitrile	VOC_SOSD	0.75	U	ug/kg	0.000038	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	127-18-4	Tetrachloroethylene	VOC_SOSD	1.4	U	ug/kg	0.000070	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	75-01-4	Vinyl Chloride	VOC_SOSD	1.0	U	ug/kg	0.000050	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009

Table D-2: Buffer Zone Extension Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
BFZ-2_111309(1.0-2.0)_SO	126-99-8	Chloro-1,3-Butadiene, 2-	VOC_SOSD	0.99	U	ug/kg	0.000050	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	1330-20-7	Xylenes	VOC_SOSD	1.8	U	ug/kg	0.000090	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	156-60-5	Dichloroethylene, Trans-1,2-	VOC_SOSD	1.1	U	ug/kg	0.000055	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	630-20-6	Tetrachloroethane, 1,1,1,2-	VOC_SOSD	1.7	U	ug/kg	0.000085	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	56-23-5	Carbon Tetrachloride	VOC_SOSD	0.99	U	ug/kg	0.000050	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	591-78-6	Hexanone, 2-	VOC_SOSD	1.7	U	ug/kg	0.000085	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	67-64-1	Acetone	VOC_SOSD	190		ug/kg	0.019	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	78-83-1	Isobutyl Alcohol	VOC_SOSD	91	U	ug/kg	0.0046	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	79-34-5	Tetrachloroethane, 1,1,2,2-	VOC_SOSD	0.91	U	ug/kg	0.000046	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	79-00-5	Trichloroethane, 1,1,2-	VOC_SOSD	1.0	U	ug/kg	0.000050	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	79-01-6	Trichloroethylene	VOC_SOSD	1.1	U	ug/kg	0.000055	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	80-62-6	Methyl methacrylate	VOC_SOSD	1.4	U	ug/kg	0.000070	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	96-12-8	Dibromo-3-chloropropane, 1,2	VOC_SOSD	3.5	U	ug/kg	0.00018	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	124-48-1	Dibromochloromethane	VOC_SOSD	1.5	U	ug/kg	0.000075	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	96-18-4	Trichloropropane, 1,2,3-	VOC_SOSD	2.4	U	ug/kg	0.00012	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	97-63-2	Ethyl Methacrylate	VOC_SOSD	1.1	U	ug/kg	0.000055	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	78-93-3	Methyl Ethyl Ketone	VOC_SOSD	8.8	J	ug/kg	0.00088	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	78-87-5	Dichloropropane, 1,2-	VOC_SOSD	1.8	U	ug/kg	0.000090	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	75-25-2	Bromoform	VOC_SOSD	0.88	U	ug/kg	0.000044	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	75-09-2	Dichloromethane	VOC_SOSD	1.8	U	ug/kg	0.000090	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	75-15-0	Carbon Disulfide	VOC_SOSD	1.3	J	ug/kg	0.00013	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	75-27-4	Bromodichloromethane	VOC_SOSD	0.75	U	ug/kg	0.000038	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	75-34-3	Dichloroethane, 1,1-	VOC_SOSD	0.96	U	ug/kg	0.000048	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	75-71-8	CFC-12	VOC_SOSD	1.3	U	ug/kg	0.000065	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	75-35-4	Dichloroethene, 1,1-	VOC_SOSD	1.4	U	ug/kg	0.000070	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	75-69-4	CFC-11	VOC_SOSD	0.91	U	ug/kg	0.000046	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	75-05-8	Acetonitrile	VOC_SOSD	9.9	U	ug/kg	0.00050	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	106-93-4	Dibromoethane, 1,2-	VOC_SOSD	1.3	U	ug/kg	0.000065	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	6.8	U	mg/kg	3.4	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7440-32-6	Titanium	INORG_SOSD	229		mg/kg	229	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	65		mg/kg	65	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7440-41-7	Beryllium	INORG_SOSD	1.0		mg/kg	1.0	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7440-39-3	Barium	INORG_SOSD	70		mg/kg	70	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	41		mg/kg	41	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7440-42-8	Boron	INORG_SOSD	11	J	mg/kg	11	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	108-90-7	Chlorobenzene	VOC_SOSD	0.88	U	ug/kg	0.000044	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7440-22-4	Silver	INORG_SOSD	3.9		mg/kg	3.9	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009

Table D-2: Buffer Zone Extension Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
BFZ-2_111309(1.0-2.0)_SO	7440-28-0	Thallium	INORG_SOSD	9.7	U	mg/kg	4.9	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7429-90-5	Aluminum	INORG_SOSD	7,000	J	mg/kg	7,000	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	57-12-5	Cyanide (free)	INORG_SOSD	5.3		mg/kg	5.3	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7439-89-6	Iron	INORG_SOSD	247,000		mg/kg	247,000	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7439-96-5	Manganese	INORG_SOSD	1,760		mg/kg	1,760	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	1,470	J	mg/kg	1,470	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	127		mg/kg	127	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	2.1	J	mg/kg	2.1	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7440-47-3	Chromium	INORG_SOSD	690		mg/kg	690	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7440-31-5	Tin	INORG_SOSD	394		mg/kg	394	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7440-48-4	Cobalt	INORG_SOSD	12		mg/kg	12	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	107-12-0	Propionitrile	VOC_SOSD	7.5	U	ug/kg	0.00038	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	107-06-2	Dichloroethane, 1,2-	VOC_SOSD	0.91	U	ug/kg	0.000046	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	107-13-1	Acrylonitrile	VOC_SOSD	7.2	U	ug/kg	0.00036	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	108-10-1	Methyl Isobutyl Ketone	VOC_SOSD	1.4	U	ug/kg	0.000070	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	108-05-4	Vinyl Acetate	VOC_SOSD	0.67	U	ug/kg	0.000034	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7440-50-8	Copper	INORG_SOSD	286	J	mg/kg	286	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	108-88-3	Toluene	VOC_SOSD	0.87	J	ug/kg	0.000087	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	107-02-8	Acrolein	VOC_SOSD	7.2	U	ug/kg	0.00036	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	107-05-1	Allyl Chloride	VOC_SOSD	2.4	U	ug/kg	0.00012	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	10061-02-6	Dichloropropene, Trans-1,3-	VOC_SOSD	1.4	U	ug/kg	0.000070	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	10061-01-5	Dichloropropene, Cis-1,3-	VOC_SOSD	0.91	U	ug/kg	0.000046	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7440-62-2	Vanadium	INORG_SOSD	38	J	mg/kg	38	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	3,250		mg/kg	3,250	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	110-57-6	trans-1,4-Dichloro-2-butene	SVOC_SOSD	2.5	U	ug/kg	0.00013	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	7.9	U	mg/kg	4.0	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	123-91-1	Dioxane, 1,4-	SVOC_SOSD	270	U	ug/kg	0.014	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	100-42-5	Styrene	VOC_SOSD	0.40	U	ug/kg	0.000020	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-2_111309(1.0-2.0)_SO	100-41-4	Ethyl Benzene	VOC_SOSD	0.69	U	ug/kg	0.000035	mg/kg	11/13/09	Soil	1.00	2.00	CMS SOILS SAMPLING 2009
BFZ-SS-1_092910(0.0-0.5)_SD	7440-48-4	Cobalt	INORG_SOSD	22		mg/kg	22	mg/kg	9/29/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-1_092910(0.0-0.5)_SD	7440-50-8	Copper	INORG_SOSD	175		mg/kg	175	mg/kg	9/29/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-1_092910(0.0-0.5)_SD	7782-49-2	Selenium (and compounds)	INORG_SOSD	10	U	mg/kg	5.1	mg/kg	9/29/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-1_092910(0.0-0.5)_SD	7440-62-2	Vanadium	INORG_SOSD	43	J	mg/kg	43	mg/kg	9/29/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-1_092910(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	10,400		mg/kg	10,400	mg/kg	9/29/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-1_092910(0.0-0.5)_SD	7440-47-3	Chromium	INORG_SOSD	272		mg/kg	272	mg/kg	9/29/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-1_092910(0.0-0.5)_SD	7429-90-5	Aluminum	INORG_SOSD	11,300		mg/kg	11,300	mg/kg	9/29/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-1_092910(0.0-0.5)_SD	7440-43-9	Cadmium	INORG_SOSD	33		mg/kg	33	mg/kg	9/29/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010

Table D-2: Buffer Zone Extension Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
BFZ-SS-1_092910(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	709	J	mg/kg	709	mg/kg	9/29/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-1_092910(0.0-0.5)_SD	7440-39-3	Barium	INORG_SOSD	74		mg/kg	74	mg/kg	9/29/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-1_092910(0.0-0.5)_SD	7439-89-6	Iron	INORG_SOSD	182,000		mg/kg	182,000	mg/kg	9/29/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-1_092910(0.0-0.5)_SD	7440-02-0	Nickel (soluble salts)	INORG_SOSD	39		mg/kg	39	mg/kg	9/29/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-1_092910(0.0-0.5)_SD	7440-36-0	Antimony (metallic)	INORG_SOSD	9.4	J	mg/kg	9.4	mg/kg	9/29/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-1_092910(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	66		mg/kg	66	mg/kg	9/29/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-2_092810(0.0-0.5)_SD	7440-48-4	Cobalt	INORG_SOSD	2.1	J	mg/kg	2.1	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-2_092810(0.0-0.5)_SD	7440-50-8	Copper	INORG_SOSD	68	J	mg/kg	68	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-2_092810(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	4,690		mg/kg	4,690	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-2_092810(0.0-0.5)_SD	7440-47-3	Chromium	INORG_SOSD	6.0		mg/kg	6.0	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-2_092810(0.0-0.5)_SD	7440-62-2	Vanadium	INORG_SOSD	10	J	mg/kg	10	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-2_092810(0.0-0.5)_SD	7782-49-2	Selenium (and compounds)	INORG_SOSD	2.3		mg/kg	2.3	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-2_092810(0.0-0.5)_SD	7440-02-0	Nickel (soluble salts)	INORG_SOSD	7.2	J	mg/kg	7.2	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-2_092810(0.0-0.5)_SD	7440-43-9	Cadmium	INORG_SOSD	72		mg/kg	72	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-2_092810(0.0-0.5)_SD	7439-89-6	Iron	INORG_SOSD	17,800		mg/kg	17,800	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-2_092810(0.0-0.5)_SD	7440-39-3	Barium	INORG_SOSD	73	J	mg/kg	73	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-2_092810(0.0-0.5)_SD	7429-90-5	Aluminum	INORG_SOSD	4,670		mg/kg	4,670	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-2_092810(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	183		mg/kg	183	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-2_092810(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	19	J	mg/kg	19	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-2_092810(0.0-0.5)_SD	7440-36-0	Antimony (metallic)	INORG_SOSD	24		mg/kg	24	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-3_092810(0.0-0.5)_SD	7440-47-3	Chromium	INORG_SOSD	15		mg/kg	15	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-3_092810(0.0-0.5)_SD	7440-48-4	Cobalt	INORG_SOSD	1.7	J	mg/kg	1.7	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-3_092810(0.0-0.5)_SD	7782-49-2	Selenium (and compounds)	INORG_SOSD	1.1		mg/kg	1.1	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-3_092810(0.0-0.5)_SD	7440-50-8	Copper	INORG_SOSD	193	J	mg/kg	193	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-3_092810(0.0-0.5)_SD	7440-62-2	Vanadium	INORG_SOSD	8.3		mg/kg	8.3	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-3_092810(0.0-0.5)_SD	7440-43-9	Cadmium	INORG_SOSD	44		mg/kg	44	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-3_092810(0.0-0.5)_SD	7440-66-6	Zinc	INORG_SOSD	4,650		mg/kg	4,650	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-3_092810(0.0-0.5)_SD	7439-89-6	Iron	INORG_SOSD	21,400		mg/kg	21,400	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-3_092810(0.0-0.5)_SD	7440-39-3	Barium	INORG_SOSD	629	J	mg/kg	629	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-3_092810(0.0-0.5)_SD	7439-92-1	Lead (inorganic)	INORG_SOSD	2,640		mg/kg	2,640	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-3_092810(0.0-0.5)_SD	7429-90-5	Aluminum	INORG_SOSD	7,250		mg/kg	7,250	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-3_092810(0.0-0.5)_SD	7440-02-0	Nickel (soluble salts)	INORG_SOSD	9.5		mg/kg	9.5	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-3_092810(0.0-0.5)_SD	7440-38-2	Arsenic (inorganic)	INORG_SOSD	33	J	mg/kg	33	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
BFZ-SS-3_092810(0.0-0.5)_SD	7440-36-0	Antimony (metallic)	INORG_SOSD	3.5	J	mg/kg	3.5	mg/kg	9/28/10	Sediment	0.00	0.50	CMS FOLLOW-UP SOILS 2010
IRM1-A1_9272012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	5,100		mg/kg	5,100	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A1_9272012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	530		mg/kg	530	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A1_9272012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	5.1		mg/kg	5.1	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012

Table D-2: Buffer Zone Extension Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
IRM1-A1_9272012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	27	J	mg/kg	27	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A2_9272012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	3,300		mg/kg	3,300	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A2_9272012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	210		mg/kg	210	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A2_9272012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	4.2		mg/kg	4.2	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A2_9272012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	16	J	mg/kg	16	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A3_9272012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.81		mg/kg	0.81	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A3_9272012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	280		mg/kg	280	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A3_9272012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	68		mg/kg	68	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A3_9272012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.5	J	mg/kg	3.5	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A4_9272012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	570		mg/kg	570	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A4_9272012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.7	J	mg/kg	3.7	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A4_9272012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	7.3		mg/kg	7.3	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A4_9272012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	86		mg/kg	86	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A5_9272012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	78		mg/kg	78	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A5_9272012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	11		mg/kg	11	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A5_9272012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.24	J	mg/kg	0.24	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A5_9272012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.4	J	mg/kg	1.4	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A6_9272012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	200		mg/kg	200	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A6_9272012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	6.4	J	mg/kg	6.4	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A6_9272012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	1.4		mg/kg	1.4	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-A6_9272012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	10.0		mg/kg	10.0	mg/kg	9/27/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-32_102312(0.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	8,800		mg/kg	8,800	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-32_102312(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	56		mg/kg	56	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-32_102312(0.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	40		mg/kg	40	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-32_102312(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	4,600		mg/kg	4,600	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-34_121012(0.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	120		mg/kg	120	mg/kg	12/10/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-34_121012(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	0.93	J	mg/kg	0.93	mg/kg	12/10/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-34_121012(0.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	3.2		mg/kg	3.2	mg/kg	12/10/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-34_121012(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	6.6	J	mg/kg	6.6	mg/kg	12/10/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-35_121012(0.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	1.9		mg/kg	1.9	mg/kg	12/10/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-35_121012(0.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	120		mg/kg	120	mg/kg	12/10/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-35_121012(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.1	J	mg/kg	1.1	mg/kg	12/10/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-35_121012(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	8.3	J	mg/kg	8.3	mg/kg	12/10/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-36_121012(0.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	250		mg/kg	250	mg/kg	12/10/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-36_121012(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.1		mg/kg	2.1	mg/kg	12/10/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-36_121012(0.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	1.4		mg/kg	1.4	mg/kg	12/10/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-36_121012(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	9.3	J	mg/kg	9.3	mg/kg	12/10/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012

Table D-2: Buffer Zone Extension Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
IRM1-BFZ-37_102312(0.0-2.0)_SO_DC	7440-43-9	Cadmium	INORG_SOSD	9.4		mg/kg	9.4	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-37_102312(0.0-2.0)_SO_DC	7440-66-6	Zinc	INORG_SOSD	910		mg/kg	910	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-37_102312(0.0-2.0)_SO_DC	7440-38-2	Arsenic (inorganic)	INORG_SOSD	5.4		mg/kg	5.4	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-37_102312(0.0-2.0)_SO_DC	7439-92-1	Lead (inorganic)	INORG_SOSD	335		mg/kg	335	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-38_102312(0.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	1.8		mg/kg	1.8	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-38_102312(0.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	380		mg/kg	380	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-38_102312(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	55		mg/kg	55	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-38_102312(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.4		mg/kg	2.4	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-39_102312(0.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	600		mg/kg	600	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-39_102312(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.1		mg/kg	3.1	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-39_102312(0.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	3.0		mg/kg	3.0	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-39_102312(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	32		mg/kg	32	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-40_102312(0.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	630		mg/kg	630	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-40_102312(0.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	3.4		mg/kg	3.4	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-40_102312(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.3		mg/kg	2.3	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-40_102312(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	42		mg/kg	42	mg/kg	10/23/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-41_102412(0.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	88		mg/kg	88	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-41_102412(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.5		mg/kg	1.5	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-41_102412(0.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	0.32		mg/kg	0.32	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-41_102412(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	11		mg/kg	11	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-42_102412(0.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	270		mg/kg	270	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-42_102412(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.3		mg/kg	1.3	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-42_102412(0.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	3.0		mg/kg	3.0	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-42_102412(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	32		mg/kg	32	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-44_102412(0.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	9,300		mg/kg	9,300	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-44_102412(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	65		mg/kg	65	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-44_102412(0.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	25		mg/kg	25	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-44_102412(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	1,000		mg/kg	1,000	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-45_102412(0.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	7.1		mg/kg	7.1	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-45_102412(0.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	1,300		mg/kg	1,300	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-45_102412(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	7.1		mg/kg	7.1	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-45_102412(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	54		mg/kg	54	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-46_102412(0.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	1,600		mg/kg	1,600	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-46_102412(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	14		mg/kg	14	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-46_102412(0.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	5.7		mg/kg	5.7	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-46_102412(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	120		mg/kg	120	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-47_102412(0.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	2.1		mg/kg	2.1	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012

Table D-2: Buffer Zone Extension Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
IRM1-BFZ-47_102412(0.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	810		mg/kg	810	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-47_102412(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.9		mg/kg	3.9	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-47_102412(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	85		mg/kg	85	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-48_102412(0.0-2.0)_SO	7440-43-9	Cadmium	INORG_SOSD	18		mg/kg	18	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-48_102412(0.0-2.0)_SO	7440-66-6	Zinc	INORG_SOSD	1,700		mg/kg	1,700	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-48_102412(0.0-2.0)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	610		mg/kg	610	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-BFZ-48_102412(0.0-2.0)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	16		mg/kg	16	mg/kg	10/24/12	Soil	0.00	2.00	IRM SOIL SAMPLING 9 2012
IRM1-C2_10152012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,500		mg/kg	1,500	mg/kg	10/15/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-C2_10152012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	19	J	mg/kg	19	mg/kg	10/15/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-C2_10152012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	7.2	J	mg/kg	7.2	mg/kg	10/15/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-C2_10152012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	370		mg/kg	370	mg/kg	10/15/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-C4_10152012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	25	J	mg/kg	25	mg/kg	10/15/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-C4_10152012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	3,000		mg/kg	3,000	mg/kg	10/15/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-C4_10152012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	7.6	J	mg/kg	7.6	mg/kg	10/15/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-C4_10152012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	260		mg/kg	260	mg/kg	10/15/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-C9_10152012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	600		mg/kg	600	mg/kg	10/15/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-C9_10152012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.3	J	mg/kg	2.3	mg/kg	10/15/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-C9_10152012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.66	J	mg/kg	0.66	mg/kg	10/15/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-C9_10152012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	35		mg/kg	35	mg/kg	10/15/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D13_10222012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	8.0	J	mg/kg	8.0	mg/kg	10/22/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D13_10222012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	480		mg/kg	480	mg/kg	10/22/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D13_10222012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	18		mg/kg	18	mg/kg	10/22/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D13_10222012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	160		mg/kg	160	mg/kg	10/22/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D15_10222012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	23	J	mg/kg	23	mg/kg	10/22/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D15_10222012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	500		mg/kg	500	mg/kg	10/22/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D15_10222012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	170		mg/kg	170	mg/kg	10/22/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D15_10222012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	5.5		mg/kg	5.5	mg/kg	10/22/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D16_10222012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	540		mg/kg	540	mg/kg	10/22/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D16_10222012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	5.3		mg/kg	5.3	mg/kg	10/22/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D16_10222012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	6.2	J	mg/kg	6.2	mg/kg	10/22/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D16_10222012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	160		mg/kg	160	mg/kg	10/22/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D17_10222012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	430		mg/kg	430	mg/kg	10/22/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D17_10222012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.0		mg/kg	3.0	mg/kg	10/22/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D17_10222012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	3.4	J	mg/kg	3.4	mg/kg	10/22/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-D17_10222012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	71		mg/kg	71	mg/kg	10/22/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E3_10262012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	150		mg/kg	150	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E3_10262012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	5.3		mg/kg	5.3	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012

Table D-2: Buffer Zone Extension Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
IRM1-E3_10262012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	1.5		mg/kg	1.5	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E3_10262012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	78		mg/kg	78	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E4_10262012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.54		mg/kg	0.54	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E4_10262012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	75		mg/kg	75	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E4_10262012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.0		mg/kg	3.0	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E4_10262012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	25		mg/kg	25	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E5_10262012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	2.3		mg/kg	2.3	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E5_10262012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	330		mg/kg	330	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E5_10262012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	46		mg/kg	46	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E5_10262012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.3		mg/kg	2.3	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E6_10262012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	170		mg/kg	170	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E6_10262012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.5		mg/kg	2.5	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E6_10262012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	1.1		mg/kg	1.1	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E6_10262012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	24		mg/kg	24	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E7_10262012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	720		mg/kg	720	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E7_10262012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	5.1		mg/kg	5.1	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E7_10262012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.9		mg/kg	1.9	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-E7_10262012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	17		mg/kg	17	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F10_12132012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	350		mg/kg	350	mg/kg	12/13/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F10_12132012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	0.85	J	mg/kg	0.85	mg/kg	12/13/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F10_12132012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	58		mg/kg	58	mg/kg	12/13/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F10_12132012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	38	J	mg/kg	38	mg/kg	12/13/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F11_10252012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	250		mg/kg	250	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F11_10252012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.8		mg/kg	1.8	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F11_10252012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.98		mg/kg	0.98	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F11_10252012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	18	J	mg/kg	18	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F12_12122012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	3,100		mg/kg	3,100	mg/kg	12/12/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F12_12122012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	7.5		mg/kg	7.5	mg/kg	12/12/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F12_12122012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	41		mg/kg	41	mg/kg	12/12/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F12_12122012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	520		mg/kg	520	mg/kg	12/12/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F13_10262012(0.0-0.5)_SO_DC	7440-43-9	Cadmium	INORG_SOSD	7.2		mg/kg	7.2	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F13_10262012(0.0-0.5)_SO_DC	7440-66-6	Zinc	INORG_SOSD	1,135		mg/kg	1,135	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F13_10262012(0.0-0.5)_SO_DC	7440-38-2	Arsenic (inorganic)	INORG_SOSD	14		mg/kg	14	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F13_10262012(0.0-0.5)_SO_DC	7439-92-1	Lead (inorganic)	INORG_SOSD	200		mg/kg	200	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F14_12122012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	4,600		mg/kg	4,600	mg/kg	12/12/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F14_12122012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	21		mg/kg	21	mg/kg	12/12/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F14_12122012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	84		mg/kg	84	mg/kg	12/12/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012

Table D-2: Buffer Zone Extension Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
IRM1-F14_12122012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	2,100		mg/kg	2,100	mg/kg	12/12/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F15_1272012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.62		mg/kg	0.62	mg/kg	12/7/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F15_1272012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,000		mg/kg	1,000	mg/kg	12/7/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F15_1272012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.8		mg/kg	2.8	mg/kg	12/7/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F15_1272012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	6.9		mg/kg	6.9	mg/kg	12/7/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F16_10262012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	12		mg/kg	12	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F16_10262012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,400		mg/kg	1,400	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F16_10262012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	530		mg/kg	530	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F16_10262012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	32		mg/kg	32	mg/kg	10/26/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F17_1252012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	380		mg/kg	380	mg/kg	12/5/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F17_1252012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	5.0		mg/kg	5.0	mg/kg	12/5/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F17_1252012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	1.7		mg/kg	1.7	mg/kg	12/5/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F17_1252012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	110		mg/kg	110	mg/kg	12/5/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F1_10252012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	5.5		mg/kg	5.5	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F1_10252012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,100		mg/kg	1,100	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F1_10252012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	5.0		mg/kg	5.0	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F1_10252012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	240	J	mg/kg	240	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F2_10252012(0.0-0.5)_SO_DC	7440-66-6	Zinc	INORG_SOSD	1,500		mg/kg	1,500	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F2_10252012(0.0-0.5)_SO_DC	7440-38-2	Arsenic (inorganic)	INORG_SOSD	4.3		mg/kg	4.3	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F2_10252012(0.0-0.5)_SO_DC	7440-43-9	Cadmium	INORG_SOSD	5.0		mg/kg	5.0	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F2_10252012(0.0-0.5)_SO_DC	7439-92-1	Lead (inorganic)	INORG_SOSD	56		mg/kg	56	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F3_10252012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	1.1		mg/kg	1.1	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F3_10252012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	360		mg/kg	360	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F3_10252012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.9		mg/kg	2.9	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F3_10252012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	20	J	mg/kg	20	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F4_12132012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	1.0		mg/kg	1.0	mg/kg	12/13/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F4_12132012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	120		mg/kg	120	mg/kg	12/13/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F4_12132012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	97	J	mg/kg	97	mg/kg	12/13/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F4_12132012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	6.7		mg/kg	6.7	mg/kg	12/13/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F5_12132012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	430		mg/kg	430	mg/kg	12/13/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F5_12132012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	6.0		mg/kg	6.0	mg/kg	12/13/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F5_12132012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	7.0		mg/kg	7.0	mg/kg	12/13/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F5_12132012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	48	J	mg/kg	48	mg/kg	12/13/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F6_10252012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	610		mg/kg	610	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F6_10252012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	4.3		mg/kg	4.3	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F6_10252012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	3.2		mg/kg	3.2	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F6_10252012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	110	J	mg/kg	110	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012

Table D-2: Buffer Zone Extension Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
IRM1-F7_12132012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	47		mg/kg	47	mg/kg	12/13/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F7_12132012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.0		mg/kg	1.0	mg/kg	12/13/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F7_12132012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.47		mg/kg	0.47	mg/kg	12/13/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F7_12132012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	25	J	mg/kg	25	mg/kg	12/13/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F8_10252012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	2.0		mg/kg	2.0	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F8_10252012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	320		mg/kg	320	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F8_10252012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.6		mg/kg	2.6	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F8_10252012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	40	J	mg/kg	40	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F9_10252012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	3.4		mg/kg	3.4	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F9_10252012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	620		mg/kg	620	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F9_10252012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	170	J	mg/kg	170	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-F9_10252012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.8		mg/kg	2.8	mg/kg	10/25/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G1_10112012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,300		mg/kg	1,300	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G1_10112012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	16		mg/kg	16	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G1_10112012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	11		mg/kg	11	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G1_10112012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	420		mg/kg	420	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G2_10112012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,700		mg/kg	1,700	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G2_10112012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	18		mg/kg	18	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G2_10112012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	7.9		mg/kg	7.9	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G2_10112012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	280		mg/kg	280	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G3_10112012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	890		mg/kg	890	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G3_10112012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	6.9		mg/kg	6.9	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G3_10112012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	3.7		mg/kg	3.7	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G3_10112012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	130		mg/kg	130	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G4_10112012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	7.4		mg/kg	7.4	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G4_10112012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,300		mg/kg	1,300	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G4_10112012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	19		mg/kg	19	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G4_10112012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	480		mg/kg	480	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G5_10112012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	7.6		mg/kg	7.6	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G5_10112012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,500		mg/kg	1,500	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G5_10112012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	130		mg/kg	130	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G5_10112012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	12		mg/kg	12	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G6_10112012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,600		mg/kg	1,600	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G6_10112012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	11		mg/kg	11	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G6_10112012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	7.8		mg/kg	7.8	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G6_10112012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	190		mg/kg	190	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G7_1232012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	450		mg/kg	450	mg/kg	12/3/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012

Table D-2: Buffer Zone Extension Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
IRM1-G7_1232012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	5.6		mg/kg	5.6	mg/kg	12/3/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G7_1232012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.24	J	mg/kg	0.24	mg/kg	12/3/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G7_1232012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	7.0		mg/kg	7.0	mg/kg	12/3/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G8_1232012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	120		mg/kg	120	mg/kg	12/3/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G8_1232012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.5		mg/kg	3.5	mg/kg	12/3/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G8_1232012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.50		mg/kg	0.50	mg/kg	12/3/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G8_1232012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	7.6		mg/kg	7.6	mg/kg	12/3/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G9_10112012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	2.6		mg/kg	2.6	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G9_10112012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	490		mg/kg	490	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G9_10112012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	5.9		mg/kg	5.9	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-G9_10112012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	60		mg/kg	60	mg/kg	10/11/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-HW-E2 FLOOR_1032012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.23		mg/kg	0.23	mg/kg	10/3/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-HW-E2 FLOOR_1032012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.0		mg/kg	2.0	mg/kg	10/3/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-HW-E2 FLOOR_1032012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	13		mg/kg	13	mg/kg	10/3/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-1_12142012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	1,200		mg/kg	1,200	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-1_12142012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	0.82	J	mg/kg	0.82	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-1_12142012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	29		mg/kg	29	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-1_12142012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	19	J	mg/kg	19	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-2_12142012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	140		mg/kg	140	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-2_12142012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	66	J	mg/kg	66	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-2_12142012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	370		mg/kg	370	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-2_12142012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	5.8		mg/kg	5.8	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-3_12142012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	320		mg/kg	320	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-3_12142012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	8,900		mg/kg	8,900	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-3_12142012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	89	J	mg/kg	89	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-3_12142012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	3.3		mg/kg	3.3	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-4_12142012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	5,500		mg/kg	5,500	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-4_12142012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.2		mg/kg	2.2	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-4_12142012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	76		mg/kg	76	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-4_12142012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	3.6	J	mg/kg	3.6	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-5_12142012(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	540		mg/kg	540	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-5_12142012(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	2.8	J	mg/kg	2.8	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-5_12142012(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.072	J	mg/kg	0.072	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
IRM1-TS-5_12142012(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	1.3		mg/kg	1.3	mg/kg	12/14/12	Soil	0.00	0.50	IRM SOIL SAMPLING 9 2012
NA-38_042202(0.0-0.5)_SO	7440-43-9	Cadmium	INORG_SOSD	0.19	J	mg/kg	0.19	mg/kg	4/22/02	Soil	0.00	0.50	EI DATA GATHERING
NA-38_042202(0.0-0.5)_SO	7440-41-7	Beryllium	INORG_SOSD	0.12	J	mg/kg	0.12	mg/kg	4/22/02	Soil	0.00	0.50	EI DATA GATHERING
NA-38_042202(0.0-0.5)_SO	7440-50-8	Copper	INORG_SOSD	3.6		mg/kg	3.6	mg/kg	4/22/02	Soil	0.00	0.50	EI DATA GATHERING

Table D-2: Buffer Zone Extension Soil Data[1]

Sample Number[3,4]	Cas Number	Analyte	Datgroup	Result	Qual	Result Units	Query Result[2]	Query Units	Sample Date	Media	Sample Top Depth (ft bgs)	Sample Bottom Depth (ft bgs)	Sample Event
NA-38_042202(0.0-0.5)_SO	7440-47-3	Chromium	INORG_SOSD	8.4		mg/kg	8.4	mg/kg	4/22/02	Soil	0.00	0.50	EI DATA GATHERING
NA-38_042202(0.0-0.5)_SO	7440-66-6	Zinc	INORG_SOSD	52		mg/kg	52	mg/kg	4/22/02	Soil	0.00	0.50	EI DATA GATHERING
NA-38_042202(0.0-0.5)_SO	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.57	U	mg/kg	0.29	mg/kg	4/22/02	Soil	0.00	0.50	EI DATA GATHERING
NA-38_042202(0.0-0.5)_SO	7440-28-0	Thallium	INORG_SOSD	1.3	U	mg/kg	0.65	mg/kg	4/22/02	Soil	0.00	0.50	EI DATA GATHERING
NA-38_042202(0.0-0.5)_SO	7439-92-1	Lead (inorganic)	INORG_SOSD	15		mg/kg	15	mg/kg	4/22/02	Soil	0.00	0.50	EI DATA GATHERING
NA-38_042202(0.0-0.5)_SO	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.1		mg/kg	2.1	mg/kg	4/22/02	Soil	0.00	0.50	EI DATA GATHERING
NA-38_042202(0.0-0.5)_SO	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.014	U	mg/kg	0.0070	mg/kg	4/22/02	Soil	0.00	0.50	EI DATA GATHERING
NA-38_042202(0.0-0.5)_SO	7440-02-0	Nickel (soluble salts)	INORG_SOSD	3.3		mg/kg	3.3	mg/kg	4/22/02	Soil	0.00	0.50	EI DATA GATHERING
NA-38_042202(0.0-0.5)_SO	7440-22-4	Silver	INORG_SOSD	0.13	U	mg/kg	0.065	mg/kg	4/22/02	Soil	0.00	0.50	EI DATA GATHERING
NA-38_042202(0.0-0.5)_SO	7440-36-0	Antimony (metallic)	INORG_SOSD	0.93	U	mg/kg	0.47	mg/kg	4/22/02	Soil	0.00	0.50	EI DATA GATHERING
RFI2-S10D-4_030513(0.0-2.0)_SO_BFDATA	7440-47-3	Chromium	INORG_SOSD	10		mg/kg	10	mg/kg	3/5/13	Soil	0.00	2.00	Backfill Data - Calculated 2012 Ave
RFI2-S10D-4_030513(0.0-2.0)_SO_BFDATA	7782-49-2	Selenium (and compounds)	INORG_SOSD	0.51	U	mg/kg	0.26	mg/kg	3/5/13	Soil	0.00	2.00	Backfill Data - Calculated 2012 Ave
RFI2-S10D-4_030513(0.0-2.0)_SO_BFDATA	7440-66-6	Zinc	INORG_SOSD	31		mg/kg	31	mg/kg	3/5/13	Soil	0.00	2.00	Backfill Data - Calculated 2012 Ave
RFI2-S10D-4_030513(0.0-2.0)_SO_BFDATA	7440-43-9	Cadmium	INORG_SOSD	0.31		mg/kg	0.31	mg/kg	3/5/13	Soil	0.00	2.00	Backfill Data - Calculated 2012 Ave
RFI2-S10D-4_030513(0.0-2.0)_SO_BFDATA	7439-97-6	Mercury (inorganic)	INORG_SOSD	0.029		mg/kg	0.029	mg/kg	3/5/13	Soil	0.00	2.00	Backfill Data - Calculated 2012 Ave
RFI2-S10D-4_030513(0.0-2.0)_SO_BFDATA	7439-92-1	Lead (inorganic)	INORG_SOSD	8.0		mg/kg	8.0	mg/kg	3/5/13	Soil	0.00	2.00	Backfill Data - Calculated 2012 Ave
RFI2-S10D-4_030513(0.0-2.0)_SO_BFDATA	7440-38-2	Arsenic (inorganic)	INORG_SOSD	2.0		mg/kg	2.0	mg/kg	3/5/13	Soil	0.00	2.00	Backfill Data - Calculated 2012 Ave
RFI2-S10D-4_030513(0.0-2.0)_SO_BFDATA	7440-22-4	Silver	INORG_SOSD	0.52	U	mg/kg	0.26	mg/kg	3/5/13	Soil	0.00	2.00	Backfill Data - Calculated 2012 Ave
RFI2-S10D-4_030513(0.0-2.0)_SO_BFDATA	7440-39-3	Barium	INORG_SOSD	28		mg/kg	28	mg/kg	3/5/13	Soil	0.00	2.00	Backfill Data - Calculated 2012 Ave

Notes:

(1)Includes soil and Sediment data collected from zero to two feet below ground surface.

(2)Non-detected data are presented as one-half the reporting limit.

(3)Samples with BFDATA postfix represent sample results for locations where there is now two feet of clean fill on top of the existing sample. The analytical results are for the clean fill.

(4)Samples with DC postfix represent samples where two results were combined using the following decision rules:

1. If both results were detected values, then the two values were averaged.
2. If one result was detected and one was not detected, then the detected value was used as the concentration for that sample location.
3. If both results were not detected, the lowest detection limit value was used as the concentration for that sample.

Table D-3: Clean Backfill Metals Data

Sample ID	Cas Number	Analyte	Results	Reporting Limit	Units	Qual	Media	Date Collected	Analytical Method	Source
3604-2	7440-38-2	Arsenic	1.2	0.51	mg/kg		Soil	12/4/12	6020 - Metals (ICP/MS)	Lab Report - Backfill Data
3604-2	7440-39-3	Barium	39	26	mg/kg		Soil	12/4/12	6020 - Metals (ICP/MS)	Lab Report - Backfill Data
3604-2	7440-43-9	Cadmium	0.30	0.26	mg/kg		Soil	12/4/12	6020 - Metals (ICP/MS)	Lab Report - Backfill Data
3604-2	7440-47-3	Chromium	13	2.6	mg/kg		Soil	12/4/12	6020 - Metals (ICP/MS)	Lab Report - Backfill Data
3604-2	7439-92-1	Lead	9.1	5.1	mg/kg		Soil	12/4/12	6020 - Metals (ICP/MS)	Lab Report - Backfill Data
3604-2	7440-22-4	Silver	10.0	10.0	mg/kg	U	Soil	12/4/12	6020 - Metals (ICP/MS)	Lab Report - Backfill Data
3604-2	7782-49-2	Selenium	0.51	0.51	mg/kg	U	Soil	12/4/12	6020 - Metals (ICP/MS)	Lab Report - Backfill Data
3604-2	7440-66-6	Zinc	33	13	mg/kg		Soil	12/4/12	6020 - Metals (ICP/MS)	Lab Report - Backfill Data
3604-2	7439-97-6	Mercury	0.032	0.020	mg/kg		Soil	12/4/12	7471A - Mercury (CVAA)	Lab Report - Backfill Data
3604-3	7440-38-2	Arsenic	1.4	0.51	mg/kg		Soil	12/4/12	6020 - Metals (ICP/MS)	Lab Report - Backfill Data
3604-3	7440-39-3	Barium	37	25	mg/kg		Soil	12/4/12	6020 - Metals (ICP/MS)	Lab Report - Backfill Data
3604-3	7440-43-9	Cadmium	0.31	0.25	mg/kg		Soil	12/4/12	6020 - Metals (ICP/MS)	Lab Report - Backfill Data
3604-3	7440-47-3	Chromium	13	2.5	mg/kg		Soil	12/4/12	6020 - Metals (ICP/MS)	Lab Report - Backfill Data
3604-3	7439-92-1	Lead	9.2	5.1	mg/kg		Soil	12/4/12	6020 - Metals (ICP/MS)	Lab Report - Backfill Data
3604-3	7440-22-4	Silver	10.0	10.0	mg/kg	U	Soil	12/4/12	6020 - Metals (ICP/MS)	Lab Report - Backfill Data
3604-3	7782-49-2	Selenium	0.51	0.51	mg/kg	U	Soil	12/4/12	6020 - Metals (ICP/MS)	Lab Report - Backfill Data
3604-3	7440-66-6	Zinc	32	13	mg/kg		Soil	12/4/12	6020 - Metals (ICP/MS)	Lab Report - Backfill Data
3604-3	7439-97-6	Mercury	0.035	0.020	mg/kg		Soil	12/4/12	7471A - Mercury (CVAA)	Lab Report - Backfill Data
3604	7440-38-2	Arsenic	3.3	1.0	mg/kg		Soil	10/16/12	6010b - Metals (ICP)	Lab Report - Backfill Data
3604	7440-39-3	Barium	9.3	1.0	mg/kg		Soil	10/16/12	6010b - Metals (ICP)	Lab Report - Backfill Data
3604	7440-43-9	Cadmium	0.21	0.21	mg/kg	U	Soil	10/16/12	6010b - Metals (ICP)	Lab Report - Backfill Data
3604	7440-47-3	Chromium	4.5	1.0	mg/kg		Soil	10/16/12	6010b - Metals (ICP)	Lab Report - Backfill Data
3604	7439-92-1	Lead	5.8	0.52	mg/kg		Soil	10/16/12	6010b - Metals (ICP)	Lab Report - Backfill Data
3604	7440-22-4	Silver	0.52	1.0	mg/kg	U	Soil	10/16/12	6010b - Metals (ICP)	Lab Report - Backfill Data
3604	7782-49-2	Selenium	1.0	0.52	mg/kg	U	Soil	10/16/12	6010b - Metals (ICP)	Lab Report - Backfill Data
3604	7440-66-6	Zinc	28	2.1	mg/kg		Soil	10/16/12	6010b - Metals (ICP)	Lab Report - Backfill Data
3604	7439-97-6	Mercury	0.021	0.021	mg/kg		Soil	10/16/12	7471A - Mercury (CVAA)	Lab Report - Backfill Data
3604-AVERAGE	7440-38-2	Arsenic	2.0	0.67	mg/kg		Soil	3/5/13	Calculated Average	Backfill Data - Calculated 2012 Ave
3604-AVERAGE	7440-39-3	Barium	28	17	mg/kg		Soil	3/5/13	Calculated Average	Backfill Data - Calculated 2012 Ave
3604-AVERAGE	7440-43-9	Cadmium	0.31	0.26	mg/kg		Soil	3/5/13	Calculated Average	Backfill Data - Calculated 2012 Ave
3604-AVERAGE	7440-47-3	Chromium	10	2.0	mg/kg		Soil	3/5/13	Calculated Average	Backfill Data - Calculated 2012 Ave
3604-AVERAGE	7439-92-1	Lead	8.0	3.6	mg/kg		Soil	3/5/13	Calculated Average	Backfill Data - Calculated 2012 Ave
3604-AVERAGE	7440-22-4	Silver	0.52	7.0	mg/kg	U	Soil	3/5/13	Calculated Average	Backfill Data - Calculated 2012 Ave
3604-AVERAGE	7782-49-2	Selenium	0.51	0.51	mg/kg	U	Soil	3/5/13	Calculated Average	Backfill Data - Calculated 2012 Ave
3604-AVERAGE	7440-66-6	Zinc	31	9.4	mg/kg		Soil	3/5/13	Calculated Average	Backfill Data - Calculated 2012 Ave
3604-AVERAGE	7439-97-6	Mercury	0.029	0.020	mg/kg		Soil	3/5/13	Calculated Average	Backfill Data - Calculated 2012 Ave

Notes:

- Results are displayed as two significant figures except for samples greater than 10 are rounded to the nearest whole number.
- Data was used to replace soil and sediment samples 0-2 feet below ground surface located in the "Backfill Area".
- Sample ID 3604-Average is a calculated result based on sample ID's 3604, 3604-2, 3604-3 results by the following:

  If samples were detected, then the average of the detected values were used;

  If samples were both nondetect and detected, then the average of the detected values were used.

  If the samples were nondetect, then the lowest reporting limit was used.

Table D-4: Summary Statistics for Natural Area (0 - 2 feet bgs)

Cas Number	Analyte	Datagroup	Units	Number of Samples	Number of Hits	Frequency of Detection	Minimum Nondetect Value	Maximum Nondetect Value	Minimum Detected Value	Maximum Detected Value	Mean	Median	Mode	Standard Deviation	95% UCL	Log Mean	Log UCL 95%	Distribution Type at 95%(1)	EPC	Type(2)
67-64-1	Acetone	VOC_SOSD	mg/kg	7.0	1.0	14	0.0023	0.0028	0.0024	0.0024	0.0014	0.0013	0.0012	0.00045	0.0017	0.0014	0.0018	Unknown	0.0024	Max Detected Value
71-43-2	Benzene	VOC_SOSD	mg/kg	7.0	1.0	14	0.00060	0.00070	0.00080	0.00080	0.00038	0.00030	0.00030	0.00019	0.00052	0.00038	0.00053	Unknown	0.00080	Max Detected Value
108-88-3	Toluene	VOC_SOSD	mg/kg	7.0	1.0	14	0.00060	0.00070	0.00060	0.00060	0.00035	0.00030	0.00030	0.00011	0.00043	0.00035	0.00044	Unknown	0.00060	Max Detected Value
110-54-3	Hexane, n-	SVOC_SOSD	mg/kg	7.0	3.0	43	0.00060	0.00070	0.00070	0.0013	0.00056	0.00035	0.00030	0.00037	0.00084	0.00057	0.0011	Lognormal	0.0011	Log 95% UCL
7429-90-5	Aluminum	INORG_SOSD	mg/kg	60	60	100	0.0	0.0	266	9,660	2,653	1,890	1,460	2,152	3,121	2,659	3,215	Lognormal	3,215	Log 95% UCL
7440-36-0	Antimony (metallic)	INORG_SOSD	mg/kg	67	52	78	0.25	3.7	0.17	58	3.7	0.91	0.26	9.1	5.6	3.1	4.9	Lognormal	4.9	Log 95% UCL
7440-38-2	Arsenic (inorganic)	INORG_SOSD	mg/kg	126	126	100	0.0	0.0	0.47	84	17	8.6	1.4	20	20	18	24	Unknown	24	ProUCL:95% Chebyshev (Mean, Sd) UCL
7440-39-3	Barium	INORG_SOSD	mg/kg	37	37	100	0.0	0.0	3.2	120	27	13	N/A	30	36	27	39	Unknown	39	Log 95% UCL
7440-41-7	Beryllium	INORG_SOSD	mg/kg	34	27	79	0.072	0.082	0.087	1.8	0.28	0.12	0.12	0.34	0.38	0.28	0.45	Lognormal	0.45	Log 95% UCL
7440-43-9	Cadmium	INORG_SOSD	mg/kg	73	61	84	0.042	0.17	0.054	143	5.7	0.79	0.023	18	9.1	8.2	21	Unknown	15	ProUCL:97.5% KM (Chebyshev) UCL
7440-70-2	Calcium	INORG_SOSD	mg/kg	30	30	100	0.0	0.0	314	24,900	5,513	2,220	N/A	7,324	7,785	6,171	13,586	Unknown	13,586	Log 95% UCL
16887-00-6	Chloride	INORG_SOSD	mg/kg	9.0	8.0	89	13	13	8.3	79	34	11	N/A	31	54	38	142	Unknown	79	Max Detected Value
7440-47-3	Chromium	INORG_SOSD	mg/kg	73	73	100	0.0	0.0	1.5	159	12	3.7	2.6	28	17	8.6	11	Unknown	11	Log 95% UCL
7440-48-4	Cobalt	INORG_SOSD	mg/kg	34	34	100	0.0	0.0	0.23	6.7	2.0	1.9	1.5	1.3	2.4	2.1	2.7	Lognormal	2.7	Log 95% UCL
7440-50-8	Copper	INORG_SOSD	mg/kg	73	64	88	0.95	4.1	0.51	483	29	5.0	1.3	67	42	29	53	Lognormal	53	Log 95% UCL
16984-48-8	Fluoride	INORG_SOSD	mg/kg	9.0	2.0	22	1.0	1.1	1.1	19	2.7	0.55	0.55	6.3	6.6	1.8	8.3	Unknown	8.3	Log 95% UCL
7439-89-6	Iron	INORG_SOSD	mg/kg	60	60	100	0.0	0.0	600	201,000	14,922	4,180	2,960	37,485	23,072	10,337	14,650	Unknown	14,650	Log 95% UCL
7439-92-1	Lead (inorganic)	INORG_SOSD	mg/kg	126	126	100	0.0	0.0	1.7	2,910	274	94	1.7	432	338	547	1,020	Unknown	442	ProUCL:95% Chebyshev (Mean, Sd) UCL
7439-95-4	Magnesium	INORG_SOSD	mg/kg	30	30	100	0.0	0.0	98	11,800	2,087	536	N/A	3,418	3,147	1,837	3,437	Unknown	3,437	Log 95% UCL
7439-96-5	Manganese	INORG_SOSD	mg/kg	30	30	100	0.0	0.0	6.0	818	159	136	N/A	182	216	186	365	Lognormal	365	Log 95% UCL
7439-97-6	Mercury (inorganic)	INORG_SOSD	mg/kg	34	16	47	0.0028	0.015	0.017	0.22	0.047	0.0074	0.0014	0.064	0.066	0.057	0.13	Unknown	0.13	Log 95% UCL
7440-02-0	Nickel (soluble salts)	INORG_SOSD	mg/kg	64	62	97	0.73	0.73	0.92	55	6.8	2.7	2.0	11	9.0	6.1	8.2	Unknown	8.2	Log 95% UCL
7440-09-7	Potassium	INORG_SOSD	mg/kg	30	30	100	0.0	0.0	134	907	330	253	485	191	389	330	401	Lognormal	401	Log 95% UCL
7782-49-2	Selenium (and compounds)	INORG_SOSD	mg/kg	64	17	27	0.36	4.3	0.48	10	0.95	0.57	0.29	1.4	1.2	0.86	1.1	Unknown	1.1	Log 95% UCL
7440-22-4	Silver	INORG_SOSD	mg/kg	34	30	88	0.19	0.23	0.21	1.7	0.57	0.38	0.38	0.47	0.71	0.58	0.81	Unknown	0.81	Log 95% UCL
7440-23-5	Sodium	INORG_SOSD	mg/kg	74	61	82	40	50	6.4	183	63	43	20	50	73	67	84	Normal/Lognormal	84	Log 95% UCL
14808-79-8	Sulfate	INORG_SOSD	mg/kg	9.0	6.0	67	15	23	38	360	81	54	N/A	111	150	94	579	Lognormal	360	Max Detected Value
7440-28-0	Thallium	INORG_SOSD	mg/kg	34	7.0	21	1.3	2.3	0.029	2.6	0.72	0.75	0.69	0.44	0.85	0.91	1.4	Unknown	0.67	ProUCL:99% KM (Chebyshev) UCL
7440-62-2	Vanadium	INORG_SOSD	mg/kg	34	34	100	0.0	0.0	2.2	27	8.1	5.9	N/A	5.9	9.8	8.0	10	Lognormal	10	Log 95% UCL
7440-66-6	Zinc	INORG_SOSD	mg/kg	120	120	100	0.0	0.0	6.8	11,100	1,480	890	1,440	2,053	1,793	2,568	4,246	Lognormal	1,830	ProUCL:95% Approximate Gamma UCL
57-12-5	Cyanide (free)	INORG_SOSD	mg/kg	8.0	0.0	0.0	0.50	0.54	0.0	0.0	--	--	--	--	--	--	--	--	--	
74-97-5	Bromochloromethane	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-27-4	Bromodichloromethane	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-25-2	Bromoform	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
74-83-9	Bromomethane	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-15-0	Carbon Disulfide	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
56-23-5	Carbon Tetrachloride	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-69-4	CFC-11	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-71-8	CFC-12	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
108-90-7	Chlorobenzene	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
67-66-3	Chloroform	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
74-87-3	Chloromethane	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
124-48-1	Dibromochloromethane	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-34-3	Dichloroethane, 1,1-	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
107-06-2	Dichloroethane, 1,2-	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-35-4	Dichloroethene, 1,1-	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
156-59-2	Dichloroethylene, Cis-1,2-	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
156-60-5	Dichloroethylene, Trans-1,2-	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	

Table D-4: Summary Statistics for Natural Area (0 - 2 feet bgs)

Cas Number	Analyte	Datagroup	Units	Number of Samples	Number of Hits	Frequency of Detection	Minimum Nondetect Value	Maximum Nondetect Value	Minimum Detected Value	Maximum Detected Value	Mean	Median	Mode	Standard Deviation	95% UCL	Log Mean	Log UCL 95%	Distribution Type at 95%[1]	EPC	Type[2]
75-09-2	Dichloromethane	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
78-87-5	Dichloropropane, 1,2-	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
10061-01-5	Dichloropropene, Cis-1,3-	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
10061-02-6	Dichloropropene, Trans-1,3-	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
100-41-4	Ethyl Benzene	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-00-3	Ethyl Chloride	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
591-78-6	Hexanone, 2-	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.0011	0.0014	0.0	0.0	--	--	--	--	--	--	--	--	--	
78-93-3	Methyl Ethyl Ketone	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.0011	0.0014	0.0	0.0	--	--	--	--	--	--	--	--	--	
108-10-1	Methyl Isobutyl Ketone	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.0011	0.0014	0.0	0.0	--	--	--	--	--	--	--	--	--	
100-42-5	Styrene	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
79-34-5	Tetrachloroethane, 1,1,2,2-	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
127-18-4	Tetrachloroethylene	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
71-55-6	Trichloroethane, 1,1,1-	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
79-00-5	Trichloroethane, 1,1,2-	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
79-01-6	Trichloroethylene	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-01-4	Vinyl Chloride	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
1330-20-7	Xylenes	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	

Notes:

-- = Not detected

EPC = Exposure Point Concentration.

N/A = Not Applicable

[1]Distribution Type: The distribution type was determined using the Wilk-Shapiro test for sample sizes less than 50 and the D'Agostino test population with a normal distribution. Lognormal = 95% certain that the samples were obtained from a population with a lognormal distribution. Unknown = samples are not normally or lognormally distributed with 95% certainty for sample sizes greater than 50. Normal = 95% certain that the samples were obtained from a population with a normal distribution.

[2]The EPC was determined using the following decision rules:

1. Determined the EPC in ProUCL 4.0 for key constituents.
2. Determined the EPC for othe constituents assuming that non-detected values were present at one-half the reporting limit and using the following decision rules: (1) The 95% UCL was used if the distribution type was normal, (2) The Log 95% UCL was used if the distribution type was lognormal, normal/lognormal, or unknown, and (3) The maximum detected concentration was used as the EPC if it was less than the 95% UCL or the 95% Log UCL.

Table D-5: Summary Statistics for Natural Area/Buffer Zone Extension (0 - 2 feet bgs)

Cas Number	Analyte	Datagroup	Units	Number of Samples	Number of Hits	Frequency of Detection	Minimum Nondetect Value	Maximum Nondetect Value	Minimum Detected Value	Maximum Detected Value	Mean	Median	Mode	Standard Deviation	95% UCL	Log Mean	Log UCL 95%	Distribution Type at 95%(1)	EPC	Type(2)
67-64-1	Acetone	VOC_SOSD	mg/kg	10.0	2.0	20	0.00072	0.045	0.0024	0.019	0.0052	0.0013	0.0012	0.0083	0.010	0.0048	0.025	Unknown	0.019	Max Detected Value
71-43-2	Benzene	VOC_SOSD	mg/kg	10.0	2.0	20	0.000026	0.00070	0.00080	0.0041	0.00068	0.00030	0.00030	0.0012	0.0014	0.00089	0.0091	Lognormal	0.0041	Max Detected Value
75-15-0	Carbon Disulfide	VOC_SOSD	mg/kg	10.0	1.0	10.0	0.000050	0.0091	0.00013	0.00013	0.00069	0.00030	0.00030	0.0014	0.0015	0.00063	0.0029	Unknown	0.00013	Max Detected Value
75-09-2	Dichloromethane	VOC_SOSD	mg/kg	10.0	1.0	10.0	0.00018	0.045	0.00033	0.00033	0.0025	0.00030	0.00030	0.0070	0.0066	0.0012	0.0088	Unknown	0.00033	Max Detected Value
100-41-4	Ethyl Benzene	VOC_SOSD	mg/kg	10.0	1.0	10.0	0.000030	0.00070	0.0054	0.0054	0.00076	0.00030	0.00030	0.0016	0.0017	0.00081	0.0075	Unknown	0.0054	Max Detected Value
78-93-3	Methyl Ethyl Ketone	VOC_SOSD	mg/kg	10.0	2.0	20	0.00016	0.0014	0.00088	0.055	0.0060	0.00063	0.00055	0.017	0.016	0.0030	0.035	Unknown	0.035	Log 95% UCL
108-88-3	Toluene	VOC_SOSD	mg/kg	10.0	3.0	30	0.000031	0.00070	0.000087	0.011	0.0014	0.00030	0.00030	0.0034	0.0033	0.0012	0.013	Unknown	0.011	Max Detected Value
1330-20-7	Xylenes	VOC_SOSD	mg/kg	10.0	1.0	10.0	0.000077	0.00070	0.027	0.027	0.0029	0.00030	0.00030	0.0085	0.0078	0.0014	0.020	Unknown	0.027	Max Detected Value
110-54-3	Hexane, n-	SVOC_SOSD	mg/kg	7.0	3.0	43	0.00060	0.00070	0.00070	0.0013	0.00056	0.00035	0.00030	0.00037	0.00084	0.00057	0.0011	Lognormal	0.0011	Log 95% UCL
7429-90-5	Aluminum	INORG_SOSD	mg/kg	68	68	100	0.0	0.0	266	13,300	3,270	1,920	1,460	2,888	3,855	3,280	4,027	Lognormal	4,027	Log 95% UCL
7440-36-0	Antimony (metallic)	INORG_SOSD	mg/kg	76	59	78	0.25	6.8	0.17	58	4.6	1.2	1.6	9.6	6.5	4.3	6.8	Lognormal	6.8	Log 95% UCL
7440-38-2	Arsenic (inorganic)	INORG_SOSD	mg/kg	205	205	100	0.0	0.0	0.47	84	15	5.9	2.0	20	17	15	19	Unknown	21	ProUCL:95% Chebyshev (Mean, Sd) UCL
7440-39-3	Barium	INORG_SOSD	mg/kg	48	48	100	0.0	0.0	3.2	629	45	18	28	92	67	40	58	Lognormal	58	Log 95% UCL
7440-41-7	Beryllium	INORG_SOSD	mg/kg	38	30	79	0.056	0.082	0.087	1.8	0.32	0.12	0.12	0.40	0.43	0.33	0.53	Lognormal	0.53	Log 95% UCL
7440-42-8	Boron	INORG_SOSD	mg/kg	2.0	2.0	100	0.0	0.0	11	23	17	17	N/A	8.8	56	18	49,886	Unknown	23	Max Detected Value
7440-43-9	Cadmium	INORG_SOSD	mg/kg	152	140	92	0.042	0.17	0.054	370	14	2.1	0.31	43	19	19	34	Lognormal	36	ProUCL:97.5% KM (Chebyshev) UCL
7440-70-2	Calcium	INORG_SOSD	mg/kg	30	30	100	0.0	0.0	314	24,900	5,513	2,220	N/A	7,324	7,785	6,171	13,586	Unknown	13,586	Log 95% UCL
16887-00-6	Chloride	INORG_SOSD	mg/kg	9.0	8.0	89	13	13	8.3	79	34	11	N/A	31	54	38	142	Unknown	79	Max Detected Value
7440-47-3	Chromium	INORG_SOSD	mg/kg	87	87	100	0.0	0.0	1.5	1,940	51	4.4	10	228	92	18	27	Unknown	27	Log 95% UCL
7440-48-4	Cobalt	INORG_SOSD	mg/kg	40	40	100	0.0	0.0	0.23	22	3.1	2.0	1.5	4.4	4.3	2.9	4.0	Unknown	4.0	Log 95% UCL
7440-50-8	Copper	INORG_SOSD	mg/kg	82	73	89	0.95	4.1	0.51	748	52	6.6	1.3	117	73	56	113	Lognormal	113	Log 95% UCL
57-12-5	Cyanide (free)	INORG_SOSD	mg/kg	11	3.0	27	0.50	0.54	0.16	18	2.3	0.26	0.26	5.4	5.3	1.5	11	Unknown	11	Log 95% UCL
16984-48-8	Fluoride	INORG_SOSD	mg/kg	9.0	2.0	22	1.0	1.1	1.1	19	2.7	0.55	0.55	6.3	6.6	1.8	8.3	Unknown	8.3	Log 95% UCL
7439-89-6	Iron	INORG_SOSD	mg/kg	68	68	100	0.0	0.0	600	247,000	25,654	4,665	2,960	56,216	37,045	18,274	28,440	Unknown	28,440	Log 95% UCL
7439-92-1	Lead (inorganic)	INORG_SOSD	mg/kg	205	205	100	0.0	0.0	1.7	4,600	288	85	8.0	541	350	448	684	Unknown	452	ProUCL:95% Chebyshev (Mean, Sd) UCL
7439-95-4	Magnesium	INORG_SOSD	mg/kg	30	30	100	0.0	0.0	98	11,800	2,087	536	N/A	3,418	3,147	1,837	3,437	Unknown	3,437	Log 95% UCL
7439-96-5	Manganese	INORG_SOSD	mg/kg	33	33	100	0.0	0.0	6.0	1,760	238	143	N/A	377	349	261	549	Lognormal	549	Log 95% UCL
7439-97-6	Mercury (inorganic)	INORG_SOSD	mg/kg	43	24	56	0.0028	0.015	0.017	2.1	0.14	0.025	0.029	0.39	0.24	0.11	0.28	Unknown	0.28	Log 95% UCL
7440-02-0	Nickel (soluble salts)	INORG_SOSD	mg/kg	73	71	97	0.73	0.73	0.92	159	12	3.1	2.0	25	17	9.4	13	Unknown	13	Log 95% UCL
7440-09-7	Potassium	INORG_SOSD	mg/kg	30	30	100	0.0	0.0	134	907	330	253	485	191	389	330	401	Lognormal	401	Log 95% UCL
7782-49-2	Selenium (and compounds)	INORG_SOSD	mg/kg	78	20	26	0.36	11	0.48	10	1.1	0.57	0.26	1.6	1.4	1.0	1.3	Lognormal	1.3	Log 95% UCL
7440-22-4	Silver	INORG_SOSD	mg/kg	43	33	77	0.13	0.52	0.15	3.9	0.63	0.28	0.26	0.72	0.81	0.62	0.86	Lognormal	0.86	Log 95% UCL
7440-23-5	Sodium	INORG_SOSD	mg/kg	74	61	82	40	50	6.4	183	63	43	20	50	73	67	84	Normal/Lognormal	84	Log 95% UCL
14808-79-8	Sulfate	INORG_SOSD	mg/kg	9.0	6.0	67	15	23	38	360	81	54	N/A	111	150	94	579	Lognormal	360	Max Detected Value
7440-28-0	Thallium	INORG_SOSD	mg/kg	38	8.0	21	0.71	9.7	0.029	9.7	1.1	0.75	0.69	1.6	1.5	1.2	1.9	Unknown	3.1	ProUCL:99% KM (Chebyshev) UCL
7440-31-5	Tin	INORG_SOSD	mg/kg	3.0	3.0	100	0.0	0.0	1.1	394	234	306	N/A	206	581	12,824	3.2E+48	Normal/Lognormal	394	Max Detected Value
7440-32-6	Titanium	INORG_SOSD	mg/kg	3.0	3.0	100	0.0	0.0	51	241	174	229	N/A	106	353	208	268,105	Normal/Lognormal	241	Max Detected Value
7440-62-2	Vanadium	INORG_SOSD	mg/kg	40	40	100	0.0	0.0	2.2	43	11	6.5	3.7	10	13	10	13	Unknown	13	Log 95% UCL
7440-66-6	Zinc	INORG_SOSD	mg/kg	198	198	100	0.0	0.0	6.8	17,000	1,600	648	31	2,429	1,886	2,370	3,348	Lognormal	1,880	ProUCL:95% Approximate Gamma UCL
123-91-1	Dioxane, 1,4-	SVOC_SOSD	mg/kg	3.0	0.0	0.0	0.011	0.77	0.0	0.0	--	--	--	--	--	--	--	--	--	
110-57-6	trans-1,4-Dichloro-2-butene	SVOC_SOSD	mg/kg	3.0	0.0	0.0	0.00011	0.0086	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-05-8	Acetonitrile	VOC_SOSD	mg/kg	3.0	0.0	0.0	0.00042	0.14	0.0	0.0	--	--	--	--	--	--	--	--	--	
107-02-8	Acrolein	VOC_SOSD	mg/kg	3.0	0.0	0.0	0.00031	0.068	0.0	0.0	--	--	--	--	--	--	--	--	--	
107-13-1	Acrylonitrile	VOC_SOSD	mg/kg	3.0	0.0	0.0	0.00031	0.059	0.0	0.0	--	--	--	--	--	--	--	--	--	
107-05-1	Allyl Chloride	VOC_SOSD	mg/kg	3.0	0.0	0.0	0.00010	0.010	0.0	0.0	--	--	--	--	--	--	--	--	--	
74-97-5	Bromochloromethane	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-27-4	Bromodichloromethane	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000032	0.0054	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-25-2	Bromoform	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000038	0.0059	0.0	0.0	--	--	--	--	--	--	--	--	--	
74-83-9	Bromomethane	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000062	0.011	0.0	0.0	--	--	--	--	--	--	--	--	--	
56-23-5	Carbon Tetrachloride	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000042	0.0054	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-69-4	CFC-11	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000039	0.0038	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-71-8	CFC-12	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000057	0.0024	0.0	0.0	--	--	--	--	--	--	--	--	--	
126-99-8	Chloro-1,3-Butadiene, 2-	VOC_SOSD	mg/kg	3.0	0.0	0.0	0.000042	0.0050	0.0	0.0	--	--	--	--	--	--	--	--	--	
108-90-7	Chlorobenzene	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000038	0.0029	0.0	0.0	--	--	--	--	--	--	--	--	--	
67-66-3	Chloroform	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000033	0.0054	0.0	0.0	--	--	--	--	--	--	--	--	--	
74-87-3	Chloromethane	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000047	0.0024	0.0	0.0	--	--	--	--	--	--	--	--	--	
96-12-8	Dibromo-3-chloropropane, 1,2-	VOC_SOSD	mg/kg	3.0	0.0	0.0	0.00015	0.027	0.0	0.0	--	--	--	--	--	--	--	--	--	
124-48-1	Dibromochloromethane	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000063	0.0031	0.0	0.0	--	--	--	--	--	--	--	--	--	
106-93-4	Dibromoethane, 1,2-	VOC_SOSD	mg/kg	3.0	0.0	0.0	0.000057	0.0045	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-34-3	Dichloroethane, 1,1-	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000041	0.0033	0.0	0.0	--	--	--	--	--	--	--	--	--	
107-06-2	Dichloroethane, 1,2-	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000039	0.0042	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-35-4	Dichloroethene, 1,1-	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000059	0.0038	0.0	0.0	--	--	--	--	--	--	--	--	--	
156-59-2	Dichloroethylene, Cis-1,2-	VOC_SOSD	mg/kg	7.0	0.0	0.0	0.00060	0.00070	0.0	0.0	--	--	--	--	--	--	--	--	--	
156-60-5	Dichloroethylene, Trans-1,2-	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000047	0.0050	0.0	0.0	--	--	--	--	--	--	--	--	--	
78-87-5	Dichloropropane, 1,2-	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000079	0.0034	0.0	0.0	--	--	--	--	--	--	--	--	--	

Table D-5: Summary Statistics for Natural Area/Buffer Zone Extension (0 - 2 feet bgs)

Cas Number	Analyte	Datagroup	Units	Number of Samples	Number of Hits	Frequency of Detection	Minimum Nondetect Value	Maximum Nondetect Value	Minimum Detected Value	Maximum Detected Value	Mean	Median	Mode	Standard Deviation	95% UCL	Log Mean	Log UCL 95%	Distribution Type at 95%[1]	EPC	Type[2]
10061-01-5	Dichloropropene, Cis-1,3-	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000039	0.0025	0.0	0.0	--	--	--	--	--	--	--	--	--	
10061-02-6	Dichloropropene, Trans-1,3-	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000062	0.0024	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-00-3	Ethyl Chloride	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000098	0.029	0.0	0.0	--	--	--	--	--	--	--	--	--	
97-63-2	Ethyl Methacrylate	VOC_SOSD	mg/kg	3.0	0.0	0.0	0.000047	0.0039	0.0	0.0	--	--	--	--	--	--	--	--	--	
591-78-6	Hexanone, 2-	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000072	0.011	0.0	0.0	--	--	--	--	--	--	--	--	--	
78-83-1	Isobutyl Alcohol	VOC_SOSD	mg/kg	3.0	0.0	0.0	0.0039	0.26	0.0	0.0	--	--	--	--	--	--	--	--	--	
126-98-7	Methacrylonitrile	VOC_SOSD	mg/kg	3.0	0.0	0.0	0.000032	0.014	0.0	0.0	--	--	--	--	--	--	--	--	--	
74-88-4	Methyl iodide	VOC_SOSD	mg/kg	3.0	0.0	0.0	0.000062	0.011	0.0	0.0	--	--	--	--	--	--	--	--	--	
108-10-1	Methyl Isobutyl Ketone	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000062	0.0050	0.0	0.0	--	--	--	--	--	--	--	--	--	
80-62-6	Methyl methacrylate	VOC_SOSD	mg/kg	3.0	0.0	0.0	0.000062	0.0077	0.0	0.0	--	--	--	--	--	--	--	--	--	
74-95-3	Methylene Bromide	VOC_SOSD	mg/kg	3.0	0.0	0.0	0.000072	0.0029	0.0	0.0	--	--	--	--	--	--	--	--	--	
107-12-0	Propionitrile	VOC_SOSD	mg/kg	3.0	0.0	0.0	0.00032	0.043	0.0	0.0	--	--	--	--	--	--	--	--	--	
100-42-5	Styrene	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000017	0.013	0.0	0.0	--	--	--	--	--	--	--	--	--	
630-20-6	Tetrachloroethane, 1,1,1,2-	VOC_SOSD	mg/kg	3.0	0.0	0.0	0.000071	0.0059	0.0	0.0	--	--	--	--	--	--	--	--	--	
79-34-5	Tetrachloroethane, 1,1,2,2-	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000039	0.0037	0.0	0.0	--	--	--	--	--	--	--	--	--	
127-18-4	Tetrachloroethylene	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000059	0.0041	0.0	0.0	--	--	--	--	--	--	--	--	--	
71-55-6	Trichloroethane, 1,1,1-	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000064	0.0043	0.0	0.0	--	--	--	--	--	--	--	--	--	
79-00-5	Trichloroethane, 1,1,2-	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000045	0.0045	0.0	0.0	--	--	--	--	--	--	--	--	--	
79-01-6	Trichloroethylene	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000048	0.0054	0.0	0.0	--	--	--	--	--	--	--	--	--	
96-18-4	Trichloropropane, 1,2,3-	VOC_SOSD	mg/kg	3.0	0.0	0.0	0.00010	0.0063	0.0	0.0	--	--	--	--	--	--	--	--	--	
108-05-4	Vinyl Acetate	VOC_SOSD	mg/kg	3.0	0.0	0.0	0.000029	0.0077	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-01-4	Vinyl Chloride	VOC_SOSD	mg/kg	10.0	0.0	0.0	0.000045	0.0072	0.0	0.0	--	--	--	--	--	--	--	--	--	

Notes:

-- = Not detected

EPC = Exposure Point Concentration.

N/A = Not Applicable

[1]Distribution Type: The distribution type was determined using the Wilk-Shapiro test for sample sizes less than 50 and the D'Agostino test population with a normal distribution. Lognormal = 95% certain that the samples were obtained from a population with a lognormal distribution. Unknown = samples are not normally or lognormally distributed with 95% certainty for sample sizes greater than 50. Normal = 95% certain that the samples were obtained from a population with a normal distribution.

[2]The EPC was determined using the following decision rules:

1. Determined the EPC in ProUCL 4.0 for key constituents.
2. Determined the EPC for othe constituents using the following decision rules: (1) The 95% UCL was used if the distribution type was normal, (2) The Log 95% UCL was used if the distribution type was lognormal, normal/lognormal, or unknown, and (3) The maximum detected concentration was used as the EPC if it was less than the 95% UCL or the 95% Log UCL.

Table D-6: Summary Statistics for Natural Area (0 - 6 inches bgs)

Cas Number	Analyte	Datagroup	Units	Number of Samples	Number of Hits	Frequency of Detection	Minimum Nondetect Value	Maximum Nondetect Value	Minimum Detected Value	Maximum Detected Value	Mean	Median	Mode	Standard Deviation	95% UCL	Log Mean	Log UCL 95%	Distribution Type at 95% (1)	EPC	Type(2)
7429-90-5	Aluminum	INORG_SOSD	mg/kg	35	35	100	0.0	0.0	266	9,660	3,089	1,730	1,530	2,636	3,845	3,187	4,428	Lognormal	4,428	Log 95% UCL
7440-36-0	Antimony (metallic)	INORG_SOSD	mg/kg	39	32	82	0.50	3.7	0.46	58	5.5	1.9	0.26	12	8.6	5.0	9.2	Lognormal	9.2	Log 95% UCL
7440-38-2	Arsenic (inorganic)	INORG_SOSD	mg/kg	77	77	100	0.0	0.0	0.47	84	19	11	1.4	20	23	22	32	Unknown	24	ProUCL: 95% Approximate Gamma UCL
7440-39-3	Barium	INORG_SOSD	mg/kg	12	12	100	0.0	0.0	4.8	120	55	55	N/A	38	75	64	155	Normal/Lognormal	120	Max Detected Value
7440-41-7	Beryllium	INORG_SOSD	mg/kg	12	12	100	0.0	0.0	0.12	1.8	0.56	0.53	N/A	0.44	0.78	0.57	1.0	Lognormal	1.0	Log 95% UCL
7440-43-9	Cadmium	INORG_SOSD	mg/kg	48	43	90	0.042	0.067	0.060	143	8.0	1.8	0.023	21	13	17	63	Unknown	21	ProUCL: 95% KM (Chebyshev) UCL
7440-70-2	Calcium	INORG_SOSD	mg/kg	8.0	8.0	100	0.0	0.0	2,470	16,600	8,055	6,930	N/A	5,053	11,441	8,363	16,251	Normal/Lognormal	16,251	Log 95% UCL
7440-47-3	Chromium	INORG_SOSD	mg/kg	39	39	100	0.0	0.0	1.8	159	18	5.1	2.6	36	28	14	22	Unknown	22	Log 95% UCL
7440-48-4	Cobalt	INORG_SOSD	mg/kg	12	12	100	0.0	0.0	0.37	6.7	2.7	2.3	N/A	1.9	3.7	3.0	5.6	Normal/Lognormal	5.6	Log 95% UCL
7440-50-8	Copper	INORG_SOSD	mg/kg	39	37	95	0.95	0.98	0.95	483	49	13	1.3	86	72	71	195	Lognormal	195	Log 95% UCL
7439-89-6	Iron	INORG_SOSD	mg/kg	35	35	100	0.0	0.0	600	201,000	21,972	4,750	10,200	47,888	35,709	16,875	31,502	Unknown	31,502	Log 95% UCL
7439-92-1	Lead (inorganic)	INORG_SOSD	mg/kg	77	77	100	0.0	0.0	1.7	2,910	335	196	2.6	481	427	775	1,751	Lognormal	452	ProUCL: 95% Adjusted Gamma UCL
7439-95-4	Magnesium	INORG_SOSD	mg/kg	8.0	8.0	100	0.0	0.0	396	7,640	2,201	1,080	N/A	2,417	3,820	2,263	7,498	Lognormal	7,498	Log 95% UCL
7439-96-5	Manganese	INORG_SOSD	mg/kg	8.0	8.0	100	0.0	0.0	128	818	357	314	N/A	229	510	366	678	Normal/Lognormal	678	Log 95% UCL
7439-97-6	Mercury (inorganic)	INORG_SOSD	mg/kg	12	12	100	0.0	0.0	0.017	0.22	0.11	0.12	N/A	0.069	0.15	0.12	0.25	Normal/Lognormal	0.22	Max Detected Value
7440-02-0	Nickel (soluble salts)	INORG_SOSD	mg/kg	39	39	100	0.0	0.0	0.92	55	9.2	3.5	2.3	13	13	8.5	13	Unknown	13	Log 95% UCL
7440-09-7	Potassium	INORG_SOSD	mg/kg	8.0	8.0	100	0.0	0.0	240	907	508	522	N/A	219	655	517	765	Normal/Lognormal	765	Log 95% UCL
7782-49-2	Selenium (and compounds)	INORG_SOSD	mg/kg	39	13	33	0.46	4.3	0.69	10	1.2	0.61	0.29	1.8	1.7	1.2	1.7	Unknown	1.7	Log 95% UCL
7440-22-4	Silver	INORG_SOSD	mg/kg	12	12	100	0.0	0.0	0.38	1.7	0.99	1.2	0.38	0.48	1.2	1.0	1.6	Unknown	1.6	Log 95% UCL
7440-23-5	Sodium	INORG_SOSD	mg/kg	37	35	95	46	49	6.4	183	69	49	N/A	55	84	76	112	Unknown	112	Log 95% UCL
7440-28-0	Thallium	INORG_SOSD	mg/kg	12	1.0	8.3	1.3	2.3	2.6	2.6	0.98	0.82	N/A	0.52	1.2	0.97	1.2	Unknown	2.6	Max Detected Value
7440-62-2	Vanadium	INORG_SOSD	mg/kg	12	12	100	0.0	0.0	2.6	27	13	13	N/A	7.3	17	14	23	Normal/Lognormal	23	Log 95% UCL
7440-66-6	Zinc	INORG_SOSD	mg/kg	77	77	100	0.0	0.0	9.7	11,100	1,718	1,300	1,490	2,011	2,101	2,637	4,365	Unknown	2,165	ProUCL: 95% Approximate Gamma UCL

Notes:

-- = Not detected

EPC = Exposure Point Concentration.

N/A = Not Applicable

[2]The EPC was determined using the following decision rules:

1. Determined the EPC in ProUCL 4.0 for key constituents.
2. Determined the EPC for othe constituents assuming that non-detected values were present at one-half the reporting limit and using the following decision rules: (1) The 95% UCL was used if the distribution type was normal, (2) The Log 95% UCL was used if the distribution type was lognormal, normal/lognormal, or unknown, and (3) The maximum detected concentration was used as the EPC if it was less than the 95% UCL or the 95% Log UCL.

Table D-7: Summary Statistics for Natural Area/Buffer Zone Extension (0 - 6 inches bgs)

Cas Number	Analyte	Datagroup	Units	Number of Samples	Number of Hits	Frequency of Detection	Minimum Nondetect Value	Maximum Nondetect Value	Minimum Detected Value	Maximum Detected Value	Mean	Median	Mode	Standard Deviation	95% UCL	Log Mean	Log UCL 95%	Distribution Type at 95%(1)	EPC	Type(2)
71-43-2	Benzene	VOC_SOSD	mg/kg	2.0	1.0	50	0.000026	0.000026	0.0041	0.0041	0.0021	0.0021	N/A	0.0029	0.015	0.91	6.6E+200	Unknown	0.0041	Max Detected Value
75-09-2	Dichloromethane	VOC_SOSD	mg/kg	2.0	1.0	50	0.045	0.045	0.00033	0.00033	0.011	0.011	N/A	0.016	0.081	0.23	3.2E+107	Unknown	0.00033	Max Detected Value
100-41-4	Ethyl Benzene	VOC_SOSD	mg/kg	2.0	1.0	50	0.000030	0.000030	0.0054	0.0054	0.0027	0.0027	N/A	0.0038	0.020	1.6	2.7E+210	Unknown	0.0054	Max Detected Value
78-93-3	Methyl Ethyl Ketone	VOC_SOSD	mg/kg	2.0	1.0	50	0.00016	0.00016	0.055	0.055	0.028	0.028	N/A	0.039	0.20	90	8.8E+260	Unknown	0.055	Max Detected Value
108-88-3	Toluene	VOC_SOSD	mg/kg	2.0	1.0	50	0.000031	0.000031	0.011	0.011	0.0055	0.0055	N/A	0.0078	0.040	20	6.4E+262	Unknown	0.011	Max Detected Value
1330-20-7	Xylenes	VOC_SOSD	mg/kg	2.0	1.0	50	0.000077	0.000077	0.027	0.027	0.014	0.014	N/A	0.019	0.099	47	1.7E+262	Unknown	0.027	Max Detected Value
7429-90-5	Aluminum	INORG_SOSD	mg/kg	42	42	100	0.0	0.0	266	13,300	3,911	2,035	1,530	3,382	4,790	4,102	5,701	Lognormal	5,701	Log 95% UCL
7440-36-0	Antimony (metallic)	INORG_SOSD	mg/kg	47	39	83	0.50	3.7	0.46	58	6.7	2.0	0.26	12	9.5	6.7	12	Lognormal	12	Log 95% UCL
7440-38-2	Arsenic (inorganic)	INORG_SOSD	mg/kg	137	137	100	0.0	0.0	0.47	84	16	6.9	1.4	19	19	17	22	Unknown	24	ProUCL: 95% Approximate Gamma UCL
7440-39-3	Barium	INORG_SOSD	mg/kg	19	19	100	0.0	0.0	4.8	629	87	55	28	137	141	86	173	Lognormal	173	Log 95% UCL
7440-41-7	Beryllium	INORG_SOSD	mg/kg	15	14	93	0.056	0.056	0.12	1.8	0.55	0.52	N/A	0.50	0.78	0.65	1.5	Lognormal	1.5	Log 95% UCL
7440-42-8	Boron	INORG_SOSD	mg/kg	1.0	1.0	100	0.0	0.0	23	23	23	23	N/A	0.0	N/A	23	N/A	Unknown	23	Max Detected Value
7440-43-9	Cadmium	INORG_SOSD	mg/kg	108	103	95	0.042	0.067	0.060	370	17	3.4	5.1	51	25	26	55	Lognormal	21	ProUCL: 95% KM (Chebyshev) UCL
7440-70-2	Calcium	INORG_SOSD	mg/kg	8.0	8.0	100	0.0	0.0	2,470	16,600	8,055	6,930	N/A	5,053	11,441	8,363	16,251	Normal/Lognormal	16,251	Log 95% UCL
7440-47-3	Chromium	INORG_SOSD	mg/kg	49	49	100	0.0	0.0	1.8	1,940	73	6.0	2.6	288	142	31	60	Unknown	60	Log 95% UCL
7440-48-4	Cobalt	INORG_SOSD	mg/kg	17	17	100	0.0	0.0	0.37	22	4.6	2.2	N/A	6.1	7.2	4.5	9.1	Lognormal	9.1	Log 95% UCL
7440-50-8	Copper	INORG_SOSD	mg/kg	47	45	96	0.95	0.98	0.95	748	80	30	1.3	143	115	126	345	Lognormal	345	Log 95% UCL
57-12-5	Cyanide (free)	INORG_SOSD	mg/kg	2.0	2.0	100	0.0	0.0	0.16	18	9.1	9.1	N/A	13	66	455	2.0E+138	Unknown	18	Max Detected Value
7439-89-6	Iron	INORG_SOSD	mg/kg	42	42	100	0.0	0.0	600	211,000	32,646	5,845	10,200	60,349	48,328	28,605	56,449	Unknown	56,449	Log 95% UCL
7439-92-1	Lead (inorganic)	INORG_SOSD	mg/kg	137	137	100	0.0	0.0	1.7	2,910	305	130	2.6	489	374	509	836	Lognormal	452	ProUCL: 95% Adjusted Gamma UCL
7439-95-4	Magnesium	INORG_SOSD	mg/kg	8.0	8.0	100	0.0	0.0	396	7,640	2,201	1,080	N/A	2,417	3,820	2,263	7,498	Lognormal	7,498	Log 95% UCL
7439-96-5	Manganese	INORG_SOSD	mg/kg	10.0	10.0	100	0.0	0.0	46	1,260	416	314	N/A	372	631	456	1,204	Normal/Lognormal	1,204	Log 95% UCL
7439-97-6	Mercury (inorganic)	INORG_SOSD	mg/kg	17	16	94	0.014	0.014	0.017	1.6	0.20	0.12	0.029	0.37	0.36	0.20	0.58	Lognormal	0.58	Log 95% UCL
7440-02-0	Nickel (soluble salts)	INORG_SOSD	mg/kg	47	47	100	0.0	0.0	0.92	159	14	4.4	2.3	26	20	12	19	Unknown	19	Log 95% UCL
7440-09-7	Potassium	INORG_SOSD	mg/kg	8.0	8.0	100	0.0	0.0	240	907	508	522	N/A	219	655	517	765	Normal/Lognormal	765	Log 95% UCL
7782-49-2	Selenium (and compounds)	INORG_SOSD	mg/kg	49	16	33	0.46	11	0.69	10	1.4	0.62	0.29	1.9	1.9	1.4	2.1	Unknown	2.1	Log 95% UCL
7440-22-4	Silver	INORG_SOSD	mg/kg	17	14	82	0.13	0.52	0.15	2.2	0.87	1.1	0.26	0.63	1.1	0.99	1.9	Normal/Lognormal	1.9	Log 95% UCL
7440-23-5	Sodium	INORG_SOSD	mg/kg	37	35	95	46	49	6.4	183	69	49	N/A	55	84	76	112	Unknown	112	Log 95% UCL
7440-28-0	Thallium	INORG_SOSD	mg/kg	15	2.0	13	0.71	2.3	2.6	9.7	1.5	0.80	0.65	2.3	2.6	1.3	2.1	Unknown	2.1	Log 95% UCL
7440-31-5	Tin	INORG_SOSD	mg/kg	2.0	2.0	100	0.0	0.0	1.1	306	154	154	N/A	216	1,116	50,454	7.8E+196	Unknown	306	Max Detected Value
7440-32-6	Titanium	INORG_SOSD	mg/kg	2.0	2.0	100	0.0	0.0	51	241	146	146	N/A	134	746	202	6.2E+16	Unknown	241	Max Detected Value
7440-62-2	Vanadium	INORG_SOSD	mg/kg	17	17	100	0.0	0.0	2.6	43	15	13	3.7	12	21	16	26	Lognormal	26	Log 95% UCL
7440-66-6	Zinc	INORG_SOSD	mg/kg	136	136	100	0.0	0.0	9.7	17,000	1,774	1,065	1,300	2,475	2,126	2,367	3,356	Lognormal	2,165	ProUCL: 95% Approximate Gamma UCL
123-91-1	Dioxane, 1,4-	SVOC_SOSD	mg/kg	2.0	0.0	0.0	0.011	0.77	0.0	0.0	--	--	--	--	--	--	--	--	--	
110-57-6	trans-1,4-Dichloro-2-butene	SVOC_SOSD	mg/kg	2.0	0.0	0.0	0.00011	0.0086	0.0	0.0	--	--	--	--	--	--	--	--	--	
67-64-1	Acetone	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.00072	0.045	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-05-8	Acetonitrile	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.00042	0.14	0.0	0.0	--	--	--	--	--	--	--	--	--	
107-02-8	Acrolein	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.00031	0.068	0.0	0.0	--	--	--	--	--	--	--	--	--	
107-13-1	Acrylonitrile	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.00031	0.059	0.0	0.0	--	--	--	--	--	--	--	--	--	
107-05-1	Allyl Chloride	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.00010	0.010	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-27-4	Bromodichloromethane	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000032	0.0054	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-25-2	Bromoform	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000038	0.0059	0.0	0.0	--	--	--	--	--	--	--	--	--	
74-83-9	Bromomethane	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000062	0.011	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-15-0	Carbon Disulfide	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000050	0.0091	0.0	0.0	--	--	--	--	--	--	--	--	--	
56-23-5	Carbon Tetrachloride	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000042	0.0054	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-69-4	CFC-11	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000039	0.0038	0.0	0.0	--	--	--	--	--	--	--	--	--	

Table D-7: Summary Statistics for Natural Area/Buffer Zone Extension (0 - 6 inches bgs)

Cas Number	Analyte	Datagroup	Units	Number of Samples	Number of Hits	Frequency of Detection	Minimum Nondetect Value	Maximum Nondetect Value	Minimum Detected Value	Maximum Detected Value	Mean	Median	Mode	Standard Deviation	95% UCL	Log Mean	Log UCL 95%	Distribution Type at 95%[1]	EPC	Type[2]
75-71-8	CFC-12	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000057	0.0024	0.0	0.0	--	--	--	--	--	--	--	--	--	
126-99-8	Chloro-1,3-Butadiene, 2-	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000042	0.0050	0.0	0.0	--	--	--	--	--	--	--	--	--	
108-90-7	Chlorobenzene	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000038	0.0029	0.0	0.0	--	--	--	--	--	--	--	--	--	
67-66-3	Chloroform	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000033	0.0054	0.0	0.0	--	--	--	--	--	--	--	--	--	
74-87-3	Chloromethane	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000047	0.0024	0.0	0.0	--	--	--	--	--	--	--	--	--	
96-12-8	Dibromo-3-chloropropane, 1,2	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.00015	0.027	0.0	0.0	--	--	--	--	--	--	--	--	--	
124-48-1	Dibromochloromethane	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000063	0.0031	0.0	0.0	--	--	--	--	--	--	--	--	--	
106-93-4	Dibromoethane, 1,2-	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000057	0.0045	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-34-3	Dichloroethane, 1,1-	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000041	0.0033	0.0	0.0	--	--	--	--	--	--	--	--	--	
107-06-2	Dichloroethane, 1,2-	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000039	0.0042	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-35-4	Dichloroethene, 1,1-	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000059	0.0038	0.0	0.0	--	--	--	--	--	--	--	--	--	
156-60-5	Dichloroethylene, Trans-1,2-	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000047	0.0050	0.0	0.0	--	--	--	--	--	--	--	--	--	
78-87-5	Dichloropropane, 1,2-	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000079	0.0034	0.0	0.0	--	--	--	--	--	--	--	--	--	
10061-01-5	Dichloropropene, Cis-1,3-	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000039	0.0025	0.0	0.0	--	--	--	--	--	--	--	--	--	
10061-02-6	Dichloropropene, Trans-1,3-	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000062	0.0024	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-00-3	Ethyl Chloride	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000098	0.029	0.0	0.0	--	--	--	--	--	--	--	--	--	
97-63-2	Ethyl Methacrylate	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000047	0.0039	0.0	0.0	--	--	--	--	--	--	--	--	--	
591-78-6	Hexanone, 2-	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000072	0.011	0.0	0.0	--	--	--	--	--	--	--	--	--	
78-83-1	Isobutyl Alcohol	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.0039	0.26	0.0	0.0	--	--	--	--	--	--	--	--	--	
126-98-7	Methacrylonitrile	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000032	0.014	0.0	0.0	--	--	--	--	--	--	--	--	--	
74-88-4	Methyl iodide	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000062	0.011	0.0	0.0	--	--	--	--	--	--	--	--	--	
108-10-1	Methyl Isobutyl Ketone	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000062	0.0050	0.0	0.0	--	--	--	--	--	--	--	--	--	
80-62-6	Methyl methacrylate	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000062	0.0077	0.0	0.0	--	--	--	--	--	--	--	--	--	
74-95-3	Methylene Bromide	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000072	0.0029	0.0	0.0	--	--	--	--	--	--	--	--	--	
107-12-0	Propionitrile	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.00032	0.043	0.0	0.0	--	--	--	--	--	--	--	--	--	
100-42-5	Styrene	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000017	0.013	0.0	0.0	--	--	--	--	--	--	--	--	--	
630-20-6	Tetrachloroethane, 1,1,1,2-	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000071	0.0059	0.0	0.0	--	--	--	--	--	--	--	--	--	
79-34-5	Tetrachloroethane, 1,1,2,2-	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000039	0.0037	0.0	0.0	--	--	--	--	--	--	--	--	--	
127-18-4	Tetrachloroethylene	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000059	0.0041	0.0	0.0	--	--	--	--	--	--	--	--	--	
71-55-6	Trichloroethane, 1,1,1-	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000064	0.0043	0.0	0.0	--	--	--	--	--	--	--	--	--	
79-00-5	Trichloroethane, 1,1,2-	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000045	0.0045	0.0	0.0	--	--	--	--	--	--	--	--	--	
79-01-6	Trichloroethylene	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000048	0.0054	0.0	0.0	--	--	--	--	--	--	--	--	--	
96-18-4	Trichloropropane, 1,2,3-	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.00010	0.0063	0.0	0.0	--	--	--	--	--	--	--	--	--	
108-05-4	Vinyl Acetate	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000029	0.0077	0.0	0.0	--	--	--	--	--	--	--	--	--	
75-01-4	Vinyl Chloride	VOC_SOSD	mg/kg	2.0	0.0	0.0	0.000045	0.0072	0.0	0.0	--	--	--	--	--	--	--	--	--	

Notes:

'-- = Not detected

EPC = Exposure Point Concentration

N/A = Not Applicable

[1]Distribution Type: The distribution type was determined using the Wilk-Shapiro test for sample sizes less than 50 and the D'Agostino test population with a normal distribution. Lognormal = 95% certain that the samples were obtained from a population with a lognormal distribution. Unknown = samples are not normally or lognormally distributed with 95% certainty for sample sizes greater than 50. Normal = 95% certain that the samples were obtained from a population with a normal distribution.

[2]The EPC was determined using the following decision rules:

1. Determined the EPC in ProUCL 4.0 for key constituents.

2. Determined the EPC for othe constituents assuming that non-detected values were present at one-half the reporting limit and using the following decision rules: (1) The 95% UCL was used if the distribution type was normal, (2) The Log 95% UCL was used if the distribution type was lognormal, normal/lognormal, or unknown, and (3) The maximum detected concentration was used as the EPC if it was less than the 95% UCL or the 95% Log UCL.

Table D-8: Summary Statistics for Natural Area Pre-Interim Remedial Measures Surface Water

Cas Number	Analyte	Datagroup	Units	Number of Samples	Number of Hits	Frequency of Detection	Minimum Nondetect Value	Maximum Nondetect Value	Minimum Detected Value	Maximum Detected Value	Mean	Median	Mode	Standard Deviation	95% UCL	Log Mean	Log UCL 95%	Distribution Type at 95%[1]	EPC	Type[2]
7429-90-5	Aluminum	Total	mg/l	8	4	50	0.031	0.031	0.031	0.095	0.033	0.023	0.016	0.027	0.052	0.033	0.066	Lognormal	0.066	Log 95% UCL
7440-36-0	Antimony (metallic)	Total	mg/l	8	5	62.5	0.00063	0.00063	0.00070	0.0042	0.0014	0.00085	0.00032	0.0014	0.0024	0.0015	0.0061	Lognormal	0.0042	Max Detected Value
7440-38-2	Arsenic (inorganic)	Total	mg/l	8	8	100	0.0	0.0	0.00065	0.049	0.012	0.0034	N/A	0.019	0.025	0.014	0.18	Lognormal	0.041	ProUCL:95% Chebyshev(Mean, Sd) UCL
7440-39-3	Barium	Total	mg/l	8	8	100	0.0	0.0	0.018	0.039	0.031	0.033	N/A	0.0077	0.036	0.031	0.038	Normal/Lognormal	0.038	Log 95% UCL
24959-67-9	Bromide	Total	mg/l	8	0	0	0.057	0.057	0.0	0.0	--	--	--	--	--	--	--	--	--	--
7440-43-9	Cadmium	Total	mg/l	8	4	50	0.00012	0.00012	0.00014	0.00022	0.00012	0.00010	0.000060	0.000072	0.00017	0.00013	0.00023	Unknown	0.00022	Max Detected Value
7440-70-2	Calcium	Total	mg/l	8	8	100	0.0	0.0	45	260	130	125	N/A	72	178	134	241	Normal/Lognormal	241	Log 95% UCL
7440-44-0	Carbon	Total	mg/l	8	8	100	0.0	0.0	8.2	21	14	13	11	4.7	17	14	18	Normal/Lognormal	18	Log 95% UCL
16887-00-6	Chloride	Total	mg/l	8	8	100	0.0	0.0	2.7	13	6.0	5.4	N/A	3.1	8.1	6.1	9.1	Normal/Lognormal	9.1	Log 95% UCL
7440-47-3	Chromium	Total	mg/l	8	0	0	0.00059	0.00059	0.0	0.0	--	--	--	--	--	--	--	--	--	--
7440-48-4	Cobalt	Total	mg/l	8	1	12.5	0.00043	0.00043	0.0018	0.0018	0.00041	0.00022	0.00022	0.00056	0.00079	0.00037	0.00083	Unknown	0.0018	Max Detected Value
7440-50-8	Copper	Total	mg/l	8	8	100	0.0	0.0	0.00056	0.0024	0.0012	0.0010	N/A	0.00058	0.0015	0.0012	0.0017	Normal/Lognormal	0.0017	Log 95% UCL
16984-48-8	Fluoride	Total	mg/l	8	8	100	0.0	0.0	0.62	4.2	2.1	1.8	N/A	1.4	3.0	2.2	4.8	Normal/Lognormal	4.2	Max Detected Value
7439-89-6	Iron	Total	mg/l	8	8	100	0.0	0.0	0.19	7.1	2.0	0.57	N/A	2.9	3.9	2.1	20	Lognormal	7.1	Max Detected Value
7439-92-1	Lead (inorganic)	Total	mg/l	8	8	100	0.0	0.0	0.00025	0.0069	0.0018	0.0012	N/A	0.0021	0.0032	0.0018	0.0067	Lognormal	0.0067	Log 95% UCL
7439-95-4	Magnesium	Total	mg/l	8	8	100	0.0	0.0	5.7	19	13	15	17	5.1	17	14	21	Normal	17	95% UCL
7439-96-5	Manganese	Total	mg/l	8	8	100	0.0	0.0	0.081	3.1	0.68	0.31	N/A	1.0	1.4	0.70	4.2	Lognormal	3.1	Max Detected Value
7440-02-0	Nickel (soluble salts)	Total	mg/l	8	7	87.5	0.00031	0.00031	0.00041	0.015	0.0027	0.00065	N/A	0.0051	0.0061	0.0026	0.029	Lognormal	0.015	Max Detected Value
14797-55-8	Nitrate	Total	mg/l	8	4	50	0.043	0.043	0.061	0.094	0.048	0.041	0.022	0.029	0.067	0.049	0.096	Unknown	0.094	Max Detected Value
14797-65-0	Nitrite	Total	mg/l	8	8	100	0.0	0.0	0.0036	0.052	0.011	0.0044	N/A	0.017	0.022	0.0090	0.026	Unknown	0.026	Log 95% UCL
7440-09-7	Potassium	Total	mg/l	8	8	100	0.0	0.0	1.6	5.0	3.3	2.9	2.7	1.1	4.0	3.3	4.4	Normal/Lognormal	4.4	Log 95% UCL
7782-49-2	Selenium (and compounds)	Total	mg/l	8	2	25	0.00037	0.00037	0.00048	0.00054	0.00027	0.00019	0.00019	0.00015	0.00037	0.00027	0.00040	Unknown	0.00040	Log 95% UCL
7440-21-3	Silicon	Total	mg/l	8	8	100	0.0	0.0	1.1	14	6.2	4.6	N/A	4.3	9.1	6.7	16	Normal/Lognormal	14	Max Detected Value
7440-23-5	Sodium	Total	mg/l	8	8	100	0.0	0.0	3.9	50	15	9.9	N/A	15	25	14	33	Lognormal	33	Log 95% UCL
14808-79-8	Sulfate	Total	mg/l	8	8	100	0.0	0.0	35	660	206	149	N/A	211	347	226	966	Lognormal	660	Max Detected Value
7440-32-6	Titanium	Total	mg/l	8	3	37.5	0.00067	0.00067	0.00099	0.0041	0.0011	0.00034	0.00034	0.0013	0.0020	0.0011	0.0038	Unknown	0.0038	Log 95% UCL
7440-62-2	Vanadium	Total	mg/l	8	1	12.5	0.00071	0.00071	0.00088	0.00088	0.00042	0.00036	0.00036	0.00019	0.00054	0.00042	0.00054	Unknown	0.00088	Max Detected Value
7440-66-6	Zinc	Total	mg/l	8	8	100	0.0	0.0	0.0086	1.7	0.25	0.036	0.030	0.59	0.65	0.20	3.6	Lognormal	1.7	Max Detected Value
7429-90-5	Aluminum	Dissolved	mg/l	8	2	25	0.031	0.031	0.032	0.037	0.020	0.016	0.016	0.0089	0.026	0.020	0.027	Unknown	0.027	Log 95% UCL
7440-36-0	Antimony (metallic)	Dissolved	mg/l	8	5	62.5	0.00063	0.00063	0.00070	0.0040	0.0013	0.00083	0.00032	0.0013	0.0022	0.0014	0.0048	Lognormal	0.0040	Max Detected Value
7440-38-2	Arsenic (inorganic)	Dissolved	mg/l	8	8	100	0.0	0.0	0.00054	0.035	0.0084	0.0030	N/A	0.012	0.017	0.0091	0.082	Lognormal	0.035	Max Detected Value
7440-39-3	Barium	Dissolved	mg/l	8	8	100	0.0	0.0	0.018	0.042	0.030	0.031	0.033	0.0078	0.035	0.030	0.037	Normal/Lognormal	0.037	Log 95% UCL
7440-43-9	Cadmium	Dissolved	mg/l	8	0	0	0.00012	0.00012	0.0	0.0	--	--	--	--	--	--	--	--	--	--
7440-70-2	Calcium	Dissolved	mg/l	8	8	100	0.0	0.0	45	280	128	120	120	77	179	132	238	Normal/Lognormal	238	Log 95% UCL
7440-47-3	Chromium	Dissolved	mg/l	8	0	0	0.00059	0.00059	0.0	0.0	--	--	--	--	--	--	--	--	--	--
7440-48-4	Cobalt	Dissolved	mg/l	8	1	12.5	0.00043	0.00043	0.0018	0.0018	0.00041	0.00022	0.00022	0.00056	0.00079	0.00037	0.00083	Unknown	0.0018	Max Detected Value
7440-50-8	Copper	Dissolved	mg/l	8	6	75	0.00041	0.00041	0.00049	0.0015	0.00074	0.00071	0.00021	0.00045	0.0010	0.00079	0.0018	Normal/Lognormal	0.0015	Max Detected Value
7439-89-6	Iron	Dissolved	mg/l	8	8	100	0.0	0.0	0.076	4.6	1.3	0.34	N/A	1.9	2.6	1.5	22	Lognormal	4.6	Max Detected Value
7439-92-1	Lead (inorganic)	Dissolved	mg/l	8	7	87.5	0.00013	0.00013	0.00013	0.0025	0.00054	0.00019	N/A	0.00082	0.0011	0.00052	0.0027	Lognormal	0.0025	Max Detected Value
7439-95-4	Magnesium	Dissolved	mg/l	8	8	100	0.0	0.0	5.7	19	13	14	N/A	5.0	16	13	20	Normal/Lognormal	19	Max Detected Value
7439-96-5	Manganese	Dissolved	mg/l	8	8	100	0.0	0.0	0.078	2.9	0.64	0.28	0.14	0.94	1.3	0.64	3.7	Lognormal	2.9	Max Detected Value
7440-02-0	Nickel (soluble salts)	Dissolved	mg/l	8	8	100	0.0	0.0	0.00038	0.014	0.0026	0.00074	N/A	0.0047	0.0057	0.0022	0.014	Unknown	0.014	Log 95% UCL
7440-09-7	Potassium	Dissolved	mg/l	8	8	100	0.0	0.0	1.6	4.9	3.2	2.8	2.6	1.1	3.9	3.2	4.3	Normal/Lognormal	4.3	Log 95% UCL
7782-49-2	Selenium (and compounds)	Dissolved	mg/l	8	2	25	0.00037	0.00037	0.00049	0.00050	0.00026	0.00019	0.00019	0.00014	0.00036	0.00026	0.00039	Unknown	0.00039	Log 95% UCL
7440-21-3	Silicon	Dissolved	mg/l	8	8	100	0.0	0.0	0.91	14	6.0	4.4	N/A	4.2	8.8	6.5	17	Normal/Lognormal	14	Max Detected Value
14808-60-7	SiO2, Silica	Dissolved	mg/l	8	8	100	0.0	0.0	2.0	31	13	9.4	N/A	9.4	19	14	37	Normal/Lognormal	31	Max Detected Value
7440-23-5	Sodium	Dissolved	mg/l	8	8	100	0.0	0.0	3.8	53	15	9.4	N/A	16	25	15	35	Lognormal	35	Log 95% UCL
7440-32-6	Titanium	Dissolved	mg/l	8	2	25	0.00067	0.00067	0.0016	0.0018	0.00068	0.00034	0.00034	0.00063	0.0011	0.00067	0.0015	Unknown	0.0015	Log 95% UCL
7440-62-2	Vanadium	Dissolved	mg/l	8	0	0	0.00071	0.00071	0.0	0.0	0.00036	0.00036	N/A	0.0	0.00036	0.00036	0.00036	Unknown	0.0	Max Detected Value
7440-66-6	Zinc	Dissolved	mg/l	8	7	87.5	0.0066	0.0066	0.0066	1.0	0.15	0.023	0.023	0.34	0.38	0.13	4.8	Lognormal	1.0	Max Detected Value

Notes:

'-- = Not detected

EPC = Exposure Point Concentration

N/A = Not Applicable

[1]Distribution Type: The distribution type was determined using the Wilk-Shapiro test for sample sizes less than 50 and the D'Agostino test population with a normal distribution. Lognormal = 95% certain that the samples were obtained from a population with a lognormal distribution. Unknown = samples are not normally or lognormally distributed with 95% certainty.for sample sizes greater than 50. Normal = 95% certain that the samples were obtained from a population with a normal distribution.

[2]The EPC was determined using the following decision rules:

1. Determined the EPC in ProUCL 4.0 for key constituents.

2. Determined the EPC for othe constituents assuming that non-detected values were present at one-half the reporting limit and using the following decision rules: (1) The 95% UCL was used if the distribution type was normal, (2) The Log 95% UCL was used if the distribution type was lognormal, normal/lognormal, or unknown, and (3) The maximum detected concentration was used as the EPC if it was less than the 95% UCL or the 95% Log UCL.

Table D-9: Summary Statistics for Natural Area/Extended Buffer Zone Pre-Interim Remedial Measures Surface Water

Cas Number	Analyte	Datagroup	Units	Number of Samples	Number of Hits	Frequency of Detection	Minimum Nondetect Value	Maximum Nondetect Value	Minimum Detected Value	Maximum Detected Value	Mean	Median	Mode	Standard Deviation	95% UCL	Log Mean	Log UCL 95%	Distribution Type at 95%[1]	EPC	Type[2]
7429-90-5	Aluminum	Total	mg/l	16	8	50	0.031	0.031	0.031	0.383	0.067	0.023	0.016	0.11	0.11	0.059	0.12	Unknown	0.12	Log 95% UCL
7440-36-0	Antimony (metallic)	Total	mg/l	16	10	62.5	0.00063	0.00063	0.0007	0.0114	0.0022	0.00082	0.00032	0.0030	0.0035	0.0023	0.0061	Unknown	0.0061	Log 95% UCL
7440-38-2	Arsenic (inorganic)	Total	mg/l	16	16	100	0	0	0.00045	0.15	0.017	0.0029	0.0014	0.038	0.034	0.016	0.077	Lognormal	0.077	Log 95% UCL
EVS0319	Arsenic III	Total	mg/l	2	1	50	0.0011	0.0011	0.0046	0.0046	0.0026	0.0026	N/A	0.0029	0.015	0.0049	9.1E+24	Unknown	0.0046	Max Detected Value
EVS0673	Arsenic V	Total	mg/l	2	2	100	0	0	0.0025	0.0044	0.0035	0.0035	N/A	0.0013	0.0094	0.0036	0.20	Unknown	0.0044	Max Detected Value
7440-39-3	Barium	Total	mg/l	16	16	100	0	0	0.0135	0.049	0.030	0.030	N/A	0.011	0.034	0.030	0.036	Normal/Lognormal	0.036	Log 95% UCL
7440-42-8	Boron	Total	mg/l	2	2	100	0	0	0.104	0.166	0.14	0.14	N/A	0.044	0.33	0.14	1.9	Unknown	0.17	Max Detected Value
24959-67-9	Bromide	Total	mg/l	16	0	0	0.057	0.081	0	0	--	--	--	--	--	--	--	--	--	--
7440-43-9	Cadmium	Total	mg/l	16	8	50	0.00012	0.00066	0.00014	0.0026	0.00044	0.00016	0.000060	0.00073	0.00076	0.00039	0.0011	Unknown	0.0011	Log 95% UCL
7440-70-2	Calcium	Total	mg/l	16	16	100	0	0	45	533	217	190	200	141	279	226	347	Normal/Lognormal	347	Log 95% UCL
7440-44-0	Carbon	Total	mg/l	14	14	100	0	0	7.1	21	13	12	15	4.3	15	13	15	Normal/Lognormal	15	Log 95% UCL
16887-00-6	Chloride	Total	mg/l	16	16	100	0	0	1	18	6.7	4.8	2.7	5.1	8.9	6.9	11	Lognormal	11	Log 95% UCL
7440-47-3	Chromium	Total	mg/l	16	0	0	0.00059	0.0022	0	0	--	--	--	--	--	--	--	--	--	--
7440-48-4	Cobalt	Total	mg/l	16	4	25	0.00043	0.0017	0.00057	0.0043	0.00066	0.00022	0.00022	0.0011	0.0011	0.00056	0.0011	Unknown	0.0011	Log 95% UCL
7440-50-8	Copper	Total	mg/l	16	13	81.25	0.00041	0.0045	0.00056	0.0024	0.0013	0.0012	0.0023	0.00071	0.0016	0.0013	0.0020	Normal/Lognormal	0.0020	Log 95% UCL
16984-48-8	Fluoride	Total	mg/l	16	16	100	0	0	0.53	5.8	2.3	2.0	2.0	1.6	3.0	2.5	4.0	Normal/Lognormal	4.0	Log 95% UCL
7439-89-6	Iron	Total	mg/l	16	16	100	0	0	0.19	7.1	1.5	0.52	0.48	2.2	2.5	1.4	3.5	Unknown	3.5	Log 95% UCL
7439-92-1	Lead (inorganic)	Total	mg/l	16	14	87.5	0.00013	0.0019	0.00023	0.01	0.0024	0.0012	N/A	0.0030	0.0038	0.0029	0.0096	Lognormal	0.0096	Log 95% UCL
7439-95-4	Magnesium	Total	mg/l	16	16	100	0	0	4.5	23	12	12	12	5.4	15	13	17	Normal/Lognormal	17	Log 95% UCL
7439-96-5	Manganese	Total	mg/l	16	16	100	0	0	0.081	3.1	0.62	0.44	0.12	0.72	0.94	0.64	1.2	Lognormal	1.2	Log 95% UCL
7440-02-0	Nickel (soluble salts)	Total	mg/l	16	15	93.75	0.00031	0.00031	0.00041	0.026	0.0046	0.0011	0.00053	0.0073	0.0078	0.0049	0.019	Lognormal	0.019	Log 95% UCL
14797-55-8	Nitrate	Total	mg/l	14	5	35.714286	0.043	0.043	0.061	0.12	0.043	0.022	0.022	0.033	0.059	0.043	0.066	Unknown	0.066	Log 95% UCL
14797-65-0	Nitrite	Total	mg/l	14	14	100	0	0	0.0036	0.052	0.0089	0.0049	N/A	0.013	0.015	0.0080	0.013	Unknown	0.013	Log 95% UCL
7440-09-7	Potassium	Total	mg/l	16	16	100	0	0	0.926	12.5	3.5	2.9	2.7	2.7	4.7	3.6	5.1	Lognormal	5.1	Log 95% UCL
7782-49-2	Selenium (and compounds)	Total	mg/l	16	4	25	0.00037	0.0041	0.00048	0.00069	0.00052	0.00019	0.00019	0.00063	0.00080	0.00049	0.00086	Unknown	0.00069	Max Detected Value
7631-86-9	Silica	Total	mg/l	2	2	100	0	0	29.8	35.1	32	32	N/A	3.7	49	33	52	Unknown	35	Max Detected Value
7440-21-3	Silicon	Total	mg/l	14	14	100	0	0	1.1	18	9.2	9.6	11	5.3	12	10	17	Normal/Lognormal	17	Log 95% UCL
7440-23-5	Sodium	Total	mg/l	16	16	100	0	0	3.5	100	23	12	3.9	26	34	23	47	Lognormal	47	Log 95% UCL
14808-79-8	Sulfate	Total	mg/l	16	16	100	0	0	35	1600	468	275	N/A	463	670	555	1,454	Lognormal	1,454	Log 95% UCL
7440-32-6	Titanium	Total	mg/l	16	5	31.25	0.00067	0.0053	0.00096	0.0041	0.0011	0.00034	0.00034	0.0012	0.0016	0.0011	0.0021	Unknown	0.0021	Log 95% UCL
7440-62-2	Vanadium	Total	mg/l	16	3	18.75	0.00071	0.00071	0.00088	0.005	0.00078	0.00036	0.00036	0.0012	0.0013	0.00067	0.0011	Unknown	0.0011	Log 95% UCL
7440-66-6	Zinc	Total	mg/l	16	16	100	0	0	0.0086	5.65	1.0	0.097	0.030	1.8	1.8	1.7	25	Lognormal	5.7	Max Detected Value
7429-90-5	Aluminum	Dissolved	mg/l	16	6	37.5	0.031	0.031	0.032	0.388	0.061	0.016	0.016	0.11	0.11	0.049	0.10	Unknown	0.10	Log 95% UCL
7440-36-0	Antimony (metallic)	Dissolved	mg/l	16	8	50	0.00063	0.00063	0.0007	0.0131	0.0022	0.00051	0.00032	0.0034	0.0037	0.0022	0.0064	Unknown	0.0064	Log 95% UCL
7440-38-2	Arsenic (inorganic)	Dissolved	mg/l	16	16	100	0	0	0.00048	0.041	0.0086	0.0030	N/A	0.013	0.014	0.0094	0.033	Lognormal	0.033	Log 95% UCL
7440-39-3	Barium	Dissolved	mg/l	16	16	100	0	0	0.0142	0.079	0.032	0.029	0.033	0.016	0.039	0.032	0.041	Lognormal	0.041	Log 95% UCL
7440-42-8	Boron	Dissolved	mg/l	2	2	100	0	0	0.111	0.172	0.14	0.14	N/A	0.043	0.33	0.14	1.4	Unknown	0.17	Max Detected Value
7440-43-9	Cadmium	Dissolved	mg/l	16	4	25	0.00012	0.00066	0.00015	0.0027	0.00033	0.000060	0.000060	0.00068	0.00062	0.00025	0.00065	Unknown	0.00065	Log 95% UCL
7440-70-2	Calcium	Dissolved	mg/l	16	16	100	0	0	45	590	244	185	120	175	320	255	417	Normal/Lognormal	417	Log 95% UCL
7440-47-3	Chromium	Dissolved	mg/l	16	1	6.25	0.00059	0.0022	0.00073	0.00073	0.00042	0.00030	0.00030	0.00029	0.00055	0.00041	0.00053	Unknown	0.00073	Max Detected Value
7440-48-4	Cobalt	Dissolved	mg/l	16	3	18.75	0.00043	0.0017	0.0018	0.0041	0.00081	0.00022	0.00022	0.0013	0.0014	0.00069	0.0015	Unknown	0.0015	Log 95% UCL
7440-50-8	Copper	Dissolved	mg/l	16	11	68.75	0.00041	0.0045	0.00043	0.0023	0.0011	0.00088	0.00021	0.00074	0.0014	0.0011	0.0020	Normal/Lognormal	0.0020	Log 95% UCL
7439-89-6	Iron	Dissolved	mg/l	16	16	100	0	0	0.076	14	1.8	0.30	0.30	3.6	3.3	1.6	6.7	Lognormal	6.7	Log 95% UCL
7439-92-1	Lead (inorganic)	Dissolved	mg/l	16	10	62.5	0.00013	0.0019	0.00013	0.0025	0.00052	0.00020	0.000065	0.00064	0.00080	0.00055	0.0014	Lognormal	0.0014	Log 95% UCL
7439-95-4	Magnesium	Dissolved	mg/l	16	16	100	0	0	4.5	45	14	13	11	9.8	18	14	20	Lognormal	20	Log 95% UCL
7439-96-5	Manganese	Dissolved	mg/l	16	16	100	0	0	0.078	3.5	0.77	0.43	0.14	0.99	1.2	0.77	1.7	Lognormal	1.7	Log 95% UCL
7440-02-0	Nickel (soluble salts)	Dissolved	mg/l	16	16	100	0	0	0.00038	0.027	0.0048	0.0014	N/A	0.0074	0.0080	0.0048	0.016	Lognormal	0.016	Log 95% UCL
7440-09-7	Potassium	Dissolved	mg/l	16	16	100	0	0	0.948	13.2	3.4	2.8	2.6	2.9	4.7	3.4	4.9	Lognormal	4.9	Log 95% UCL
7782-49-2	Selenium (and compounds)	Dissolved	mg/l	16	5	31.25	0.00037	0.0041	0.00045	0.00056	0.00052	0.00019	0.00019	0.00062	0.00079	0.00049	0.00083	Unknown	0.00056	Max Detected Value
7631-86-9	Silica	Dissolved	mg/l	2	2	100	0	0	30.1	33.9	32	32	N/A	2.7	44	32	44	Unknown	34	Max Detected Value
7440-21-3	Silicon	Dissolved	mg/l	14	14	100	0	0	0.91	20	9.6	9.0	N/A	5.9	12	11	20	Normal/Lognormal	20	Log 95% UCL
14808-60-7	SiO2, Silica	Dissolved	mg/l	14	14	100	0	0	2	43	21	20	27	13	27	23	43	Normal/Lognormal	43	Log 95% UCL
7440-23-5	Sodium	Dissolved	mg/l	16	16	100	0	0	3.6	130	30	12	12	38	46	31	74	Lognormal	74	Log 95% UCL
7440-32-6	Titanium	Dissolved	mg/l	16	3	18.75	0.00067	0.0053	0.0015	0.0018	0.00087	0.00034	0.00034	0.00087	0.0012	0.00085	0.0015	Unknown	0.0015	Log 95% UCL
7440-62-2	Vanadium	Dissolved	mg/l	16	2	12.5	0.00071	0.00071	0.0018	0.0057	0.00078	0.00036	0.00036	0.0014	0.0014	0.00063	0.0010	Unknown	0.0010	Log 95% UCL
7440-66-6	Zinc	Dissolved	mg/l	16	14	87.5	0.0066	0.0066	0.0066	5.62	0.96	0.035	0.0033	1.7	1.7	2.4	100	Lognormal	5.6	Max Detected Value

Notes:

'-- = Not detected

EPC = Exposure Point Concentration

N/A = Not Applicable

[1]Distribution Type: The distribution type was determined using the Wilk-Shapiro test for sample sizes less than 50 and the D'Agostino test population with a normal distribution. Lognormal = 95% certain that the samples were obtained from a population with a lognormal distribution. Unknown = samples are not normally or lognormally distributed with 95% certainty.for sample sizes greater than 50. Normal = 95% certain that the samples were obtained from a population with a normal distribution.

[2]The EPC was determined using the following decision rules:

1. Determined the EPC in ProUCL 4.0 for key constituents.

2. Determined the EPC for othe constituents assuming that non-detected values were present at one-half the reporting limit and using the following decision rules: (1) The 95% UCL was used if the distribution type was normal, (2) The Log 95% UCL was used if the distribution type was lognormal, normal/lognormal, or unknown, and (3) The maximum detected concentration was used as the EPC if it was less than the 95% UCL or the 95% Log UCL.

Figures

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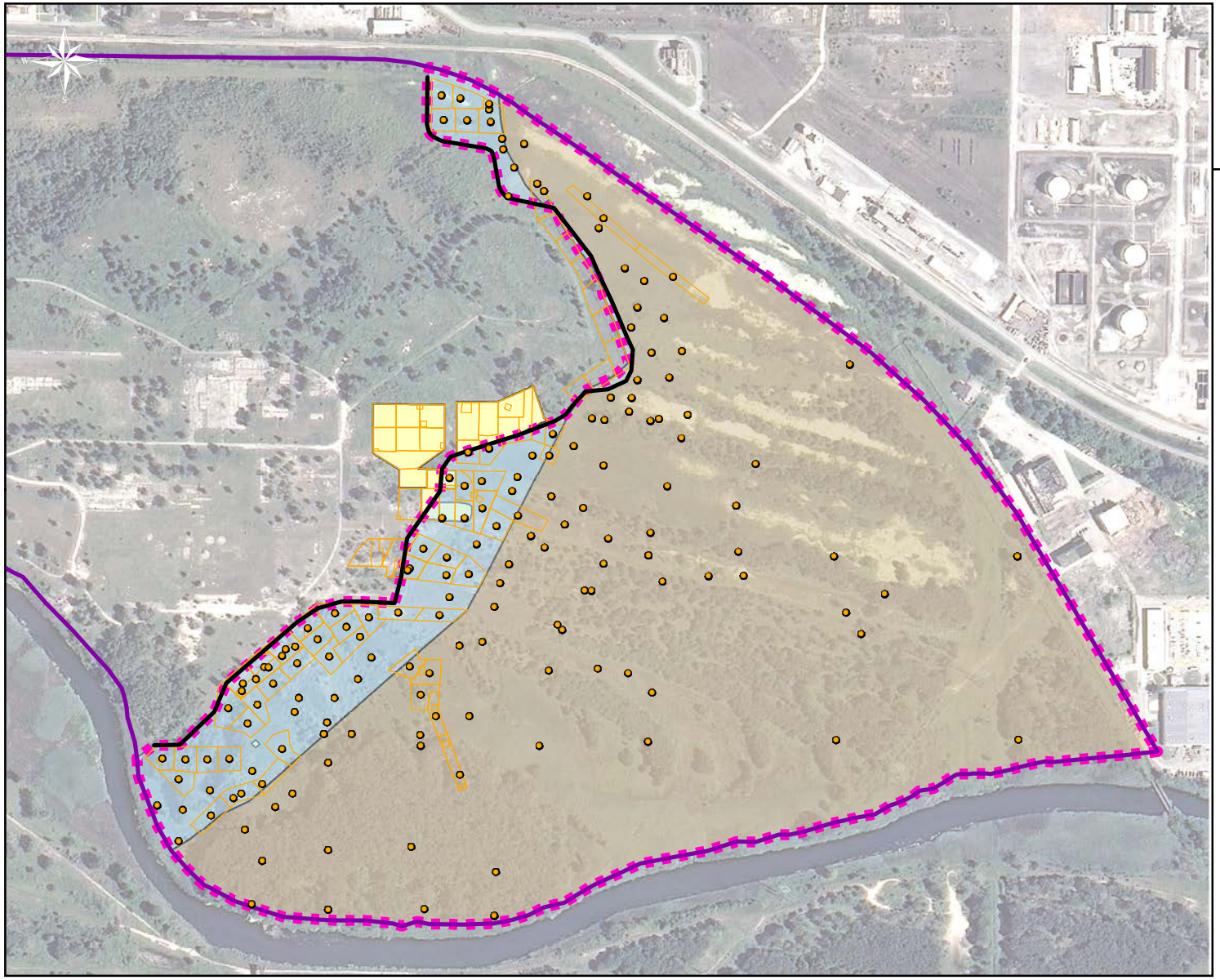

East Chicago Site

Legend

- Sample Locations (0-2' bgs)
- Proposed Fence Location
- Remediation Areas
- Property Boundary
- Natural Area
- Extended Buffer Zone
- Natural Area/Extended Buffer Zone
- Backfill Area

Notes:

- Samples identified as sediment were included in the HHRA and evaluated as soil.
- Only sample results collected from 0-2' bgs were included in this evaluation.

bgs: feet below ground surface

0 250 500 750 1,000 Feet

PIONEER TECHNOLOGIES CORPORATION

Soil Sample Locations (0-2' bgs)
Natural Area Human Health Risk Assessment
DuPont East Chicago Site

Figure D-1

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APPENDIX E
ECOLOGICAL RISK-BASED REFERENCE CONCENTRATIONS FOR SOIL AND SURFACE WATER
DUPONT EAST CHICAGO
(PARSONS 2013)

APPENDIX E

TECHNICAL MEMORANDUM

Subject: Development of Ecological Risk-Based Reference Concentrations for Soil and Surface Water Natural Area, DuPont East Chicago Site East Chicago, Indiana

JULY 2013

Risk-Based Reference Concentrations (RBRCs) were calculated as an estimate of a surface soil exposure concentration likely to represent a minimum ecological risk for adverse effects on ecological receptors at the East Chicago Site. The calculation method followed the approach used by USEPA (2007) in deriving ecological soil screening levels (Eco-SSLs) which includes the following elements:

- Selection of wildlife species as representative ecological receptors at the site;
- Quantification of dietary exposure to surface soil;
- Characterization of potential effects; and
- Calculation of reference values based on the dietary exposure and potential effect levels.

The selection of receptor species, dietary exposure factors, and potential effect levels were based on the *Work Plan for Baseline Ecological Risk Assessment – DuPont East Chicago Site* (Parsons 2011) previously approved by USEPA. Reference values were also derived for the exposure of semi-aquatic organisms in surface water accumulation areas.

1. ECOLOGICAL RECEPTORS

RBRC were calculated for the following species representative of wildlife receptors potentially present at the East Chicago site, previously selected for the ecological risk assessment (Parsons 2011):

Small Receptor Species

- Groundhog (*Marmota monax*), herbivore mammal
- Short-tailed shrew (*Blarina brevicauda*), invertivore mammal
- Song sparrow (*Melospiza melodia*), invertivore bird
- Deer mouse (*Peromyscus maniculatusi*), omnivore mammal
- American robin (*Turdus migratorius*), omnivore bird

Large Foraging Range Receptor Species

- White-tailed deer (*Odocoileus* virginianus), herbivore mammal
- Canada goose (*Branta canadiensis*), herbivore bird
- Red fox (*Vulpes vulpes*), carnivore mammal

- Red-tailed hawk (*Buteo jamaicensis*), carnivore bird

2. EXPOSURE CHARACTERIZATION

Antimony, arsenic, barium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, vanadium and zinc were identified as constituents of potential ecological concern (COPECs) based on previous data analysis of soil conditions of the Buffer Zone separating the Natural Area from former manufacturing and waste disposal areas at the Site.

The exposure by dietary ingestion was calculated as a function of COPEC concentration in the food source, the consumer organism food ingestion rate, and diet composition. A 100% exposure value was assumed for exposure modification factors such as COPEC's bioavailability and the organism's foraging range and/or seasonal presence. Following USEPA (2007) approach, the dietary exposure of an ecological receptor to a given COPEC was estimated as follows

$$ADD_j = [(Soil_j * P_s * FIR) + \sum_{i=1}^{N} (Soil_j * T_{ij}) * P_i * FIR]$$

where,

ADD_j = average daily ingestion of contaminant (j) in diet (mg/kg dry weight-day)
$Soil_j$ = soil exposure point concentration of contaminant (j) (mg/kg dry weight)
P_s = Soil ingestion as a proportion of the diet
FIR = food ingestion rate (kg food [dry weight]/kg body [wet weight]/day)
N = Number of different biota types in diet
T_{ij} = Soil-to-biota transfer factor for contaminant (j) for biota type (i)

Food Ingestion Rate

The food ingestion rate (FIR) is an estimate of the amount of food an ecological receptor might consume on a daily basis. Food ingestion by a given species varies based on a number of factors, including metabolic rate, the energy devoted to growth and reproduction, diet composition, activity levels, and body weight. Table E-1 presents a summary of dietary intake parameters for the nine ecological receptors selected for the BERA evaluation. Information is listed for body weight, incidental soil ingestion rate, typical dietary composition, and typical foraging range for each species. Priority was given to exposure parameters specified in the *Wildlife Exposure Factors Handbook* (USEPA 1997b) and Eco-SSL guidance documents (USEPA 2007).

Soil-to-Biota Transfer Factors

Estimating dietary exposure requires extrapolation of the COPEC concentration in the food source tissues (e.g., plants, invertebrates, or prey organisms) relative to the observed COPEC concentration in surface soil. Empirical soil-to-biota transfer models were used to estimate the COPEC concentration in organism tissues from observed soil concentrations (Table E-2), as adopted by USEPA in the Eco-SSLs development (USEPA 2007, Attachment 4-1, Tables 4a and 4b). These models estimate tissue concentration as a linear function of soil concentration.

3. CHARACTERIZATION OF POTENTIAL EFFECTS

Toxicity reference values (TRVs) were used in the characterization of potential effects to wildlife receptors. A TRV is a dose above which ecologically relevant effects might occur to wildlife species following chronic dietary exposure and below which it is reasonably expected that such effects will not occur (USEPA 2007). TRVs represent the highest exposure level that does not cause a statistically significant difference relative to the control organisms (No-Observed Adverse Effect Level, NOAEL) in toxicological tests measuring effects on growth and reproduction on mammalian and avian test species. NOAEL-based TRVs derived by USEPA in the formulation of Eco-SSLs (USEPA 2007) were used in the RBRC derivation (Table E-3).

4. RISK-BASED REFERENCE CONCENTRATIONS

Table E4 presents surface soil RBRC calculations by individual COPEC and wildlife receptor. RBRCs were derived for a given wildlife receptor species by comparison of the expected exposure dose by dietary ingestion (average daily dose, ADD) and a no-effect dose derived from laboratory tests (TRVs). The RBRC was defined as a soil concentration at which the exposure dose and the no-effect dose are equal.

5. REFERENCE CONCENTRATIONS FOR SEMI-AQUATIC ORGANISMS

No generally accepted criteria are available to assess potential ecological risk for adverse effects on semi-aquatic biota. Table E5 lists individual amphibian tests used in the ecological risk assessment as reference values of potential adverse effects in water accumulation areas. Evaluated test data document survival (lethal concentration resulting in 50% mortality, LC50) under short-term exposure conditions (typically either 48 or 96 hours); in a few cases, 8 day LC-50 or LOAEL data were used. To estimate potential ecological risk, these test results were used as a reference value for potential adverse effects by extrapolation to a low effect chronic exposure value. A combined 1:10 extrapolation factor was used to extrapolate from short-term to chronic exposure.

6. REFERENCES (TEXT AND TABLES)

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Table E-1 Ecological Receptors Dietary Exposure Factors

RED FOX

Parameter	Value	Reference / Notes
Body Weight	4.5 kg	Average of adult males and females from studies in Illinois and Iowa (as summarized in USEPA 1993).
Food Intake Rate (kg dw/kg bw-d)	0.08	Derived from USEPA (1993) data, typical adult food ingestion of 0.08 g/g-day .
Incidental Soil Intake Rate	2.80%	Soil ingestion rate: 2.8% of diet (Beyer et al. 1994).
Predominant Diet	carnivore	Feeds predominantly on small mammals and, to a lesser extent, on birds. The plant material component is typically less than 10% (USEPA 1993).
Foraging Range	240-1,280 acres	Home range: 96-717 hectares, from multiple habitat studies in Minnesota and Wisconsin (Sample and Sutter 1994).

WHITE-TAILED DEER

Parameter	Value	Reference / Notes
Body Weight	56.5 kg	Average for male and female adults (Sample and Sutter 1994)
Food Intake Rate (kg dw/kg bw-d)	0.019	Based on allometric equation for herbivores (USEPA 1993): FIR (kg dry weight/day) = 0.0576 x Wt $^{0.727}$ (kg body weight) = 1.1 kg dry wt/d
Incidental Soil Intake Rate	2%	Soil ingestion rate: less than 2% of diet (Beyer et al. 1994).
Predominant Diet	herbivore	Diet: 100% plant material; an exclusively herbivore species (Sample and Sutter 1994).
Foraging Range	146-1,280 acres	Territory: 59-520 hectares (Sample and Sutter 1994).

CANADA GOOSE

Parameter	Value	Reference / Notes
Body Weight	3.55 kg	lowest of two mean values for Illinois study (listed in USEPA 1993).
Food Intake Rate (kg dw/kg bw-d)	0.04	Based on allometric equation for non-passerine birds (USEPA 1993): FIR (kg dry weight/day) = 0.0569 x Wt $^{0.751}$ (kg body weight) = 0.14 kg dry wt/d
Incidental Soil Intake Rate	8.20%	8.2% of diet (Beyer et al. 1994).
Predominant Diet	herbivore	Diet: 100% plant material (USEPA 1993).
Foraging Range	2,200 acres	Typical home range: 883 hectares average size (USEPA 1993).

Table E-1 Ecological Receptors Dietary Exposure Factors (cont.)

RED-TAILED HAWK

Parameter	Value	Reference / Notes
Body Weight	1.1 kg	50th percentile (USEPA 2003, Attachment 4-1, Table 2).
Food Intake Rate (kg dw/kg bw-d)	0.081	50th percentile FIR of 0.081 kg dry wt / kg body wt-day (USEPA 2003, Attachment 4-1, Table 5).
Incidental Soil Intake Rate	2.55%	Soil ingestion rate: 2.55% of diet (USEPA 2003, Attachment 4-1, Table 7).
Predominant Diet	carnivore	Diet: 100% carnivore, predominantly small mammals
Foraging Range	576 acres	Home range: 233 hectares in pasture and wheat fields (Sample and Sutter 1994).

AMERICAN ROBIN

Parameter	Value	Reference / Notes
Body Weight	0.077 kg	Lowest value for adults from studies in Pennsylvania and New York (as summarized in USEPA 1993).
Food Intake Rate (kg dw/kg bw-d)	0.243	A unit food ingestion of 1.21 g/g-day (avg. USEPA 1993 listed values) was extrapolated to 0.243 dw/kg bw-d assuming an typical 80% moisture [moisture content from USEPA 1993, Tables 4-1 and 4-2].
Incidental Soil Intake Rate	10.4%	Soil intake assumed to be equal to 10.4% intake for woodcock (USEPA 2003, Table 3-4).
Predominant Diet	Omnivore	Dietary composition: 60% plant material, 40% invertebrates based on average seasonal percent of each component for females (Sample and Sutter 1994).
Foraging Range	0.37-2.0 acres	Home range: 0.12-0.84 hectares (USEPA 1993).

SONG SPARROW

Parameter	Value	Reference / Notes
Body Weight	0.02 kg	Typical body weight (DeGraff and Rudis 1986).
Food Intake Rate (kg dw/kg bw-d)	0.198	Based on allometric equation for birds (USEPA 1993): FIR (kg dry weight/day) = = 0.004 kg dry wt/d
Incidental Soil Intake Rate	6.1%	Soil ingestion rate: 6.1%, assumed equal to 50th percentile for ground gleaning bird (dove) (USEPA 2007, Attachment 4-1, Table 3).
Predominant Diet	Invertivore	Diet: insects are the main food items supplemented with plant material (Martin et al. 1961). Diet composition assumed to be 75% invertebrates, 25% plant material.
Foraging Range	0.5-1.5 acres	Home range: 0-2-0.6 hectares (DeGraff and Rudies 1986).

Table E-1 Ecological Receptors Dietary Exposure Factors (cont.)

DEER MOUSE

Parameter	Value	Reference / Notes
Body Weight	0.019 kg	Average of mean values for male and female adults reported in 4 studies (as summarized in USEPA 1993).
Food Intake Rate (kg dw/kg bw-d)	0.17	Based on allometric equation for rodents (USEPA 1993): FIR (kg dry weight/day) = 0.0302 x Wt $^{0.564}$ (kg body weight) = 0.0032 kg dry wt/d
Incidental Soil Intake Rate	2%	Soil ingestion rate: less than 2% of diet for white-footed mouse (Sample and Sutter 1994).
Predominant Diet	omnivore	Diet: species reported as an opportunistic omnivore with substantial regional and seasonal variation in its diet (USEPA 1993). Diet composition assumed to be 50% invertebrates, 50% plant material.
Foraging Range	0.13-0.18 acres	Home range: 0.054-0.072 hectares, reported for a mixed deciduous forest (USEPA 1993).

SHORT-TAILED SHREW

Parameter	Value	Reference / Notes
Body Weight	0.018 kg	50th percentile body weight (USEPA 2003, Attachment 4-1, Table 2).
Food Intake Rate (kg dw/kg bw-d)	0.1	Based on a 50th percentile FIR of 0.1 kg dry wt/kg body wt-day (USEPA 2003, Attachment 4-1, Table 5).
Incidental Soil Intake Rate	13%	Soil ingestion rate: 13% of diet (Sample and Sutter 1994).
Predominant Diet	invertivore	Diet: largely earthworms, insects, slugs and snails and other invertebrates (USEPA 1993). Assumed to be a 100% invertivore.
Foraging Range	0.25-0.89 acres	Home range: 0.1-0.36 hectares, reported for females in a Michigan bluegrass field (USEPA 1993).

GROUNDHOG

Parameter	Value	Reference / Notes
Body Weight	2.0 kg	Typical body weight (Merritt 1987).
Food Intake Rate (kg dw/kg bw-d)	0.051	Based on allometric equation for mammals (USEPA 1993): FIR (kg dry weight/day) = 0.0687 x Wt $^{0.822}$ (kg body weight) = 0.1 kg dry wt/d
Incidental Soil Intake Rate	2%	Soil ingestion rate: 2% of diet (Beyer et al. 1994).
Predominant Diet	herbivore	Diet: 100% plant material; the species is wholly vegetarian, mostly herbaceous plants (Martin et al. 1961).
Foraging Range	7 acres	Home range: 3 hectares (Merritt 1987).

Table E-2
Soil-to-Biota Transfer Models

Analyte	SOIL-TO-BIOTA TRANSFER MODELS *		
	Soil to Plants	Soil to Earthworms	Soil to Small Mammals
Antimony	C_p =Exp(0.938*ln(C_s)-3.233)	C_e =C_s	C_m =0.001*50*(C_d)
Arsenic	C_p =0.03752*C_s	C_e =Exp(0.706*ln(C_s)-1.421)	C_m =Exp(0.8188*ln(C_s)-4.8471)
Barium	C_p =0.156*C_s	C_e =0.091*C_s	C_m =0.00015*50*(C_d)
Cadmium	C_p =Exp(0.546*ln(C_s)-0.475)	C_e =Exp(0.795*ln(C_s)+2.114)	C_m =Exp(0.4723*ln(C_s)-1.2571)
Chromium	C_p =0.041*C_s	C_e =0.306*C_s	C_m =Exp(0.7338*ln(C_s)-1.4599)
Cobalt	C_p =0.0075*C_s	C_e =0.122*C_s	C_m =Exp(1.307*ln(C_s)-4.4669)
Copper	C_p =Exp(0.394*ln(C_s)+0.668)	C_e =0.515*C_s	C_m =Exp(0.1444*ln(C_s)+2.042)
Lead	C_p =Exp(0.561*ln(C_s)-1.328)	C_e =Exp(0.807*ln(C_s)-0.218)	C_m =Exp(0.4422*ln(C_s)+0.0761)
Manganese	C_p =0.079*C_s	C_e =Exp(0.682*ln(C_s)-0.809)	C_m =0.0205*C_s
Selenium	C_p =Exp(1.104*ln(C_s)-0.677)	C_e =Exp(0.733*ln(C_s)-0.075)	C_m =Exp(0.3764*ln(C_s)-0.4158)
Silver	C_p =0.014*C_s	C_e =2.045*C_s	C_m =0.004*C_s
Vanadium	C_p =0.00485*C_s	C_e =0.042*C_s	C_m =0.0123*C_s
Zinc	C_p =Exp(0.554*ln(C_s)+1.575)	C_e =Exp(0.328*ln(C_s)+4.449)	C_m =Exp(0.0706*ln(C_d)+4.3632)

C_s - soil concentration (mg/kg)
C_p , C_e ,C_m - tissue concentration in plants, earthworms and small mammals, respectively (mg/kg dry weight)
C_d - concentration in diet, where small mammal diet is assumed to be 100% earthworms (mg/kg dry weight)

* Transfer models compiled by USEPA (2007a, Attachment 4-1, Tables 4a and 4b). A default value of 1.0 was used when data were unavailable.

Table E-3
Toxicity Reference Values for Mammalian Receptor Species

	TRVs Based on No Observed Adverse Effect Level (mg/kg-d) [1]		
Analyte	**Mammalian**	**Avian**	**Reference**
Antimony	0.059	n/a	USEPA (2005a)
Arsenic	1.04	2.24	USEPA (2005b)
Barium	51.8	n/a	USEPA (2005c)
Cadmium	0.77	1.47	USEPA (2005d)
Chromium	2.4	2.66	USEPA (2008)
Cobalt	7.33	7.61	USEPA (2005e)
Copper	5.6	4.05	USEPA (2007b)
Lead	4.7	1.63	USEPA (2005f)
Manganese	51.5	179	USEPA (2007c)
Selenium	0.143	0.29	USEPA (2007e)
Silver	6.02	2.02	USEPA (2006b)
Vanadium	4.16	0.344	USEPA (2005g)
Zinc	75.4	66.1	USEPA (2007f)

[1] Multi-species GM: adjusted geometric mean of NOAELs from validated toxicological test data on growth and reproduction of multiple test species used in Eco-SSL derivation.

Table E-4 Surface Soil Risk-Based Reference Concentrations

DuPont East Chicago - Natural Area

RED-TAILED HAWK EXPOSURE PARAMETERS					
Diet Composition			Weight	FIR (1)	Soil
Plant	Invert.	Prey	(kg)	(kg/kg-d)	Intake (2)
0%	0%	100%	1.08	0.081	2.55%

	Soil-to-Biota Transfer Factors, TF_i (kg dw/kg)			Exposure Point Concentration EPC (mg/kg)			Average Daily Dose, ADD (mg dw/kg-d)						NOAEL TRV	ADD / TRV Ratio	Surface Soil RBRC (3)
							Food Ingestion				Soil	Total			
	Plant	Invert.	Prey	Plant	Invert.	Prey	Plant	Invert.	Prey	Total	Ingestion	Dose	(mg dw/kg-d)	(unitless)	(mg/kg)
Arsenic	0.038	0.032	0.002	37.52	31.69	2.25	0.00	0.00	0.182	0.182	2.066	2.25	2.24	1.0	1,000
Cadmium	0.037	2.316	0.011	18.507	1158.19	5.355	0.00	0.00	0.434	0.434	1.033	1.5	1.47	1.0	500.0
Chromium	0.041	0.306	0.045	18.94	141.4	20.96	0.00	0.00	1.697	1.697	0.95	2.65	2.66	1.0	462.0
Cobalt	0.008	0.122	0.090	6.19	100.65	74.45	0.00	0.00	6.030	6.030	1.70	7.73	7.61	1.0	825.00
Copper	0.028	0.515	0.019	31.01	576.8	21.2	0.00	0.00	1.720	1.720	2.31	4.03	4.05	1.0	1,120
Lead	0.022	0.271	0.047	6.25	75.9	13.04	0.00	0.00	1.056	1.056	0.58	1.63	1.63	1.0	280
Manganese	0.079	0.014	0.021	3792.0	693.8	984.0	0.00	0.00	79.704	79.704	99.1	178.8	179	1.0	48,000
Selenium	0.742	0.351	0.068	28.19	13.35	2.59	0.00	0.00	0.210	0.210	0.078	0.289	0.29	1.0	38.00
Silver	0.014	2.045	0.004	11.83	1728.0	3.38	0.00	0.00	0.274	0.274	1.75	2.02	2.02	1.0	845.0
Vanadium	0.005	0.042	0.012	0.54	4.7	1.38	0.00	0.00	0.112	0.112	0.23	0.34	0.344	1.0	112.000
Zinc	0.052	0.093	0.006	1340.0	2391	161	0.00	0.00	13.0	13.0	53.1	66.1	66.1	1.0	25,700

CANADA GOOSE EXPOSURE PARAMETERS					
Diet Composition			Weight	FIR (1)	Soil
Plant	Invert.	Prey	(kg)	(kg/kg-d)	Intake (2)
100%	0%	0%	3.55	0.042	8.20%

	Soil-to-Biota Transfer Factors, TF_i (kg dw/kg)			Exposure Point Concentration EPC (mg/kg)			Average Daily Dose, ADD (mg dw/kg-d)						NOAEL TRV	ADD / TRV Ratio	Surface Soil RBRC (3)
							Food Ingestion				Soil	Total			
	Plant	Invert.	Prey	Plant	Invert.	Prey	Plant	Invert.	Prey	Total	Ingestion	Dose	(mg dw/kg-d)	(unitless)	(mg/kg)
Arsenic	0.038	0.040	0.003	16.70	17.89	1.16	0.701	0.000	0.000	0.701	1.533	2.23	2.24	1.0	445
Cadmium	0.049	2.636	0.015	13.113	701.26	3.975	0.551	0.000	0.000	0.551	0.916	1.5	1.47	1.0	266
Chromium	0.041	0.306	0.044	21.07	157.3	22.66	0.885	0.000	0.000	0.885	1.77	2.66	2.66	1.0	514
Cobalt	0.008	0.122	0.119	15.15	246.44	239.96	0.636	0.000	0.000	0.636	6.96	7.59	7.61	1.0	2020
Copper	0.033	0.515	0.024	27.62	430.0	20.4	1.160	0.000	0.000	1.160	2.88	4.04	4.05	1.0	835
Lead	0.019	0.255	0.039	7.44	97.5	14.96	0.313	0.000	0.000	0.313	1.32	1.63	1.63	1.0	382
Manganese	0.079	0.017	0.021	2093.5	462.7	543.3	87.927	0.000	0.000	87.927	91.3	179.2	179	1.0	26,500
Selenium	0.642	0.509	0.162	6.10	4.83	1.54	0.256	0.000	0.000	0.256	0.033	0.289	0.29	1.0	9.5
Silver	0.014	2.045	0.004	7.00	1022.5	2.00	0.294	0.000	0.000	0.294	1.72	2.02	2.02	1.0	500
Vanadium	0.005	0.042	0.012	0.46	3.9	1.16	0.019	0.000	0.000	0.019	0.32	0.34	0.344	1.0	94.0
Zinc	0.081	0.179	0.015	781.1	1737	150	32.805	0.000	0.0	32.8	33.4	66.2	66.1	1.0	9,700

(1) FIR - food ingestion rate (kg dry weight/kg body weight-day)

(2) Incidental soil ingestion as a fraction of diet (dry weight)

(3) RBRC = risk-based reference concentration back-calculated for ADD = TRV

Table E-4 Surface Soil Risk-Based Reference Concentrations (cont.)
DuPont East Chicago - Natural Area

AMERICAN ROBIN EXPOSURE PARAMETERS					
Diet Composition			Weight	FIR [1]	Soil
Plant	Invert.	Prey	(kg)	(kg/kg-d)	Intake [2]
60%	40%	0%	0.08	0.243	10.4%

	Soil-to-Biota Transfer Factors, TF_i (kg dw/kg)			Exposure Point Concentration EPC (mg/kg)			Average Daily Dose, ADD (mg dw/kg-d)						NOAEL TRV	ADD / TRV Ratio	Surface Soil RBRC [3]
							Food Ingestion				Soil	Total			
	Plant	Invert.	Prey	Plant	Invert.	Prey	Plant	Invert.	Prey	Total	Ingestion	Dose	(mg dw/kg-d)	(unitless)	(mg/kg)
Arsenic	0.038	0.073	0.004	2.21	4.30	0.22	0.32	0.42	0.00	0.740	1.490	2.23	2.24	1.0	59.0
Cadmium	0.474	7.325	0.207	0.86	13.33	0.377	0.13	1.29	0.00	1.4	0.046	1.5	1.47	1.0	1.82
Chromium	0.041	0.306	0.085	1.78	13.3	3.70	0.26	1.29	0.00	1.55	1.10	2.65	2.66	1.0	43.5
Cobalt	0.008	0.122	0.058	1.50	24.40	11.68	0.22	2.37	0.00	2.59	5.05	7.64	7.61	1.0	200
Copper	0.215	0.515	0.343	8.18	19.6	13.0	1.19	1.90	0.00	3.09	0.96	4.05	4.05	1.0	38.0
Lead	0.070	0.448	0.200	1.4	9.2	4.1	0.21	0.90	0.00	1.11	0.52	1.63	1.63	1.0	20.6
Manganese	0.079	0.031	0.021	355.5	138.1	92.3	51.80	13.41	0.00	65.2	113.7	179	179	1.0	4,500
Selenium	0.533	0.820	0.494	0.85	1.30	0.79	0.12	0.13	0.00	0.250	0.040	0.290	0.29	1.0	1.59
Silver	0.014	2.045	0.004	0.12	18.2	0.04	0.02	1.77	0.00	1.79	0.22	2.01	2.02	1.0	8.9
Vanadium	0.005	0.042	0.012	0.06	0.5	0.14	0.01	0.05	0.00	0.05	0.29	0.34	0.344	1.0	11.4
Zinc	0.452	2.407	0.563	91.7	489	114	13.36	47.47	0.00	60.8	5.1	66.0	66.1	1.0	203

SONG SPARROW EXPOSURE PARAMETERS					
Diet Composition			Weight	FIR [1]	Soil
Plant	Invert.	Prey	(kg)	(kg/kg-d)	Intake [2]
25%	75%	0%	0.02	0.198	6.1%

	Soil-to-Biota Transfer Factors, TF_i (kg dw/kg)			Exposure Point Concentration EPC (mg/kg)			Average Daily Dose, ADD (mg dw/kg-d)						NOAEL TRV	ADD / TRV Ratio	Surface Soil RBRC [3]
							Food Ingestion				Soil	Total			
	Plant	Invert.	Prey	Plant	Invert.	Prey	Plant	Invert.	Prey	Total	Ingestion	Dose	(mg dw/kg-d)	(unitless)	(mg/kg)
Arsenic	0.038	0.063	0.003	3.56	6.01	0.33	0.18	0.89	0.00	1.069	1.147	2.22	2.24	1.0	95.0
Cadmium	0.577	8.005	0.261	0.68	9.45	0.308	0.03	1.40	0.00	1.4	0.014	1.5	1.47	1.0	1.18
Chromium	0.041	0.306	0.085	1.80	13.5	3.73	0.09	2.00	0.00	2.09	0.53	2.62	2.66	1.0	44.0
Cobalt	0.008	0.122	0.062	1.84	29.89	15.23	0.09	4.44	0.00	4.53	2.96	7.49	7.61	1.0	245
Copper	0.207	0.515	0.325	8.38	20.9	13.2	0.42	3.10	0.00	3.51	0.49	4.00	4.05	1.0	40.5
Lead	0.072	0.454	0.206	1.4	8.8	4.0	0.07	1.31	0.00	1.38	0.23	1.61	1.63	1.0	19.4
Manganese	0.079	0.025	0.021	711.0	221.5	184.5	35.2	32.9	0.00	68.1	108.7	176.8	179	1.0	9,000
Selenium	0.543	0.783	0.444	1.03	1.48	0.84	0.05	0.22	0.00	0.270	0.023	0.293	0.29	1.0	1.9
Silver	0.014	2.045	0.004	0.09	13.0	0.03	0.00	1.93	0.00	1.93	0.08	2.01	2.02	1.0	6.3
Vanadium	0.005	0.042	0.012	0.09	0.8	0.23	0.00	0.11	0.00	0.12	0.22	0.34	0.344	1.0	18.3
Zinc	0.578	3.486	0.939	67.6	408	110	3.34	60.57	0.00	63.9	1.4	65.3	66.1	1.0	117

(1) FIR - food ingestion rate (kg dry weight/kg body weight-day)

(2) Incidental soil ingestion as a fraction of diet (dry weight)

(3) RBRC = risk-based reference concentration back-calculated for ADD = TRV

Table E-4 Surface Soil Risk-Based Reference Concentrations (cont.)

DuPont East Chicago - Natural Area

RED FOX EXPOSURE PARAMETERS					
Diet Composition			Weight	FIR [1]	Soil
Plant	Invert.	Prey	(kg)	(kg/kg-d)	Intake [2]
10%	0%	90%	4.50	0.083	2.80%

	Soil-to-Biota Transfer Factors, TF_i (kg dw/kg)			Exposure Point Concentration EPC (mg/kg)			Average Daily Dose, ADD (mg dw/kg-d)						NOAEL TRV	ADD / TRV Ratio	Surface Soil RBRC [3]
							Food Ingestion				Soil	Total			
	Plant	Invert.	Prey	Plant	Invert.	Prey	Plant	Invert.	Prey	Total	Ingestion	Dose	(mg dw/kg-d)	(unitless)	(mg/kg)
Antimony	0.034	1.000	0.050	0.32	9	0.47	0.00	0.00	0.03	0.037	0.022	0.059	0.059	1.0	9.3
Arsenic	0.038	0.043	0.003	13.7	15.6	0.99	0.11	0.00	0.07	0.188	0.851	1.038	1.04	1.0	366
Barium	0.156	0.091	0.001	2200	1283	9.62	18.26	0.00	0.72	18.98	32.8	51.74	51.8	1.0	14,100
Cadmium	0.058	2.840	0.018	10.75	525.41	3.35	0.09	0.00	0.25	0.34	0.430	0.77	0.77	1.0	185
Chromium	0.041	0.306	0.048	15.79	117.8	18.33	0.13	0.00	1.37	1.50	0.89	2.40	2.40	1.0	385
Cobalt	0.008	0.122	0.090	6.04	98.21	72.10	0.05	0.00	5.39	5.44	1.87	7.31	7.33	1.0	805
Copper	0.023	0.515	0.014	35.33	803.4	22.3	0.29	0.00	1.66	1.96	3.63	5.58	5.60	1.0	1,560
Lead	0.012	0.205	0.021	14.0	242.3	24.6	0.12	0.00	1.84	1.96	2.7	4.7	4.70	1.0	1,180
Manganese	0.079	0.023	0.021	900.6	260.3	233.7	7.47	0.00	17.46	24.93	26.5	51.43	51.5	1.0	11,400
Selenium	0.613	0.572	0.214	3.74	3.49	1.30	0.03	0.00	0.10	0.128	0.014	0.143	0.143	1.0	6.10
Silver	0.014	2.045	0.004	30.80	4499.0	8.80	0.26	0.00	0.66	0.913	5.11	6.026	6.02	1.0	2200
Vanadium	0.005	0.042	0.012	6.16	53.3	15.62	0.05	0.00	1.17	1.218	2.95	4.169	4.16	1.0	1270
Zinc	0.055	0.101	0.007	1254.0	2299	159	10.41	0.00	11.91	22.3	53.0	75.3	75.4	1.0	22,800

WHITE-TAILED EXPOSURE PARAMETERS					
Diet Composition			Weight	FIR [1]	Soil
Plant	Invert.	Prey	(kg)	(kg/kg-d)	Intake [2]
100%	0%	0%	56.50	0.019	2.00%

	Soil-to-Biota Transfer Factors, TF_i (kg dw/kg)			Exposure Point Concentration EPC (mg/kg)			Average Daily Dose, ADD (mg dw/kg-d)						NOAEL TRV	ADD / TRV Ratio	Surface Soil RBRC [3]
							Food Ingestion				Soil	Total			
	Plant	Invert.	Prey	Plant	Invert.	Prey	Plant	Invert.	Prey	Total	Ingestion	Dose	(mg dw/kg-d)	(unitless)	(mg/kg)
Antimony	0.031	1.000	0.050	1.88	62	3.08	0.04	0.00	0.00	0.036	0.023	0.059	0.059	1.0	61.5
Arsenic	0.038	0.032	0.002	35.6	30.6	2.15	0.68	0.00	0.00	0.677	0.361	1.038	1.04	1.0	950
Barium	0.156	0.091	0.001	2418	1411	10.6	45.94	0.00	0.00	45.94	5.9	51.83	51.8	1.0	15,500
Cadmium	0.030	2.093	0.008	24.25	1716.25	6.76	0.46	0.00	0.00	0.46	0.312	0.77	0.77	1.0	820
Chromium	0.041	0.306	0.030	84.87	633.4	62.98	1.61	0.00	0.00	1.61	0.79	2.40	2.40	1.0	2070
Cobalt	0.008	0.122	0.215	105.00	1708.00	3013.28	2.00	0.00	0.00	2.00	5.32	7.32	7.33	1.0	14000
Copper	0.007	0.515	0.003	76.01	5613.5	29.5	1.44	0.00	0.00	1.44	4.14	5.59	5.60	1.0	10,900
Lead	0.005	0.136	0.006	46.5	1359.3	63.4	0.88	0.00	0.00	0.88	3.8	4.7	4.70	1.0	10,000
Manganese	0.079	0.017	0.021	2172.5	474.5	563.8	41.28	0.00	0.00	41.28	10.5	51.73	51.5	1.0	27,500
Selenium	0.653	0.487	0.146	7.32	5.45	1.64	0.14	0.00	0.00	0.139	0.004	0.143	0.143	1.0	11.2
Silver	0.014	2.045	0.004	130.90	19120.8	37.40	2.49	0.00	0.00	2.487	3.55	6.040	6.02	1.0	9350
Vanadium	0.005	0.042	0.012	42.68	369.6	108.24	0.81	0.00	0.00	0.811	3.34	4.155	4.16	1.0	8800
Zinc	0.032	0.045	0.002	2443.3	3413	174	46.42	0.00	0.00	46.4	28.9	75.3	75.4	1.0	76,000

(1) FIR - food ingestion rate (kg dry weight/kg body weight-day)

(2) Incidental soil ingestion as a fraction of diet (dry weight)

(3) RBRC = risk-based reference concentration back-calculated for ADD = TRV

Table E-4 Surface Soil Risk-Based Reference Concentrations (cont.)

DuPont East Chicago - Natural Area

DEER MOUSE EXPOSURE PARAMETERS					
Diet Composition			Weight	FIR [1]	Soil
Plant	Invert.	Prey	(kg)	(kg/kg-d)	Intake [2]
50%	50%	0%	0.02	0.171	2.00%

	Soil-to-Biota Transfer Factors, TF_i (kg dw/kg)			Exposure Point Concentration EPC (mg/kg)			Average Daily Dose, ADD (mg dw/kg-d) Food Ingestion				Soil	Total	NOAEL TRV	ADD / TRV Ratio	Surface Soil RBRC [3]
	Plant	Invert.	Prey	Plant	Invert.	Prey	Plant	Invert.	Prey	Total	Ingestion	Dose	(mg dw/kg-d)	(unitless)	(mg/kg)
Antimony	0.041	1.000	0.050	0.03	0.64	0.032	0.00	0.05	0.00	0.057	0.002	0.059	0.059	1.0	0.64
Arsenic	0.038	0.066	0.000	3.15	5.51	0.04	0.27	0.47	0.00	0.741	0.287	1.03	1.04	1.0	84.0
Barium	0.156	0.091	0.001	328	191	1.43	28.01	16.34	0.00	44.3	7.2	51.5	51.8	1.0	2,100
Cadmium	0.619	8.264	0.283	0.625	8.35	0.286	0.05	0.71	0.00	0.8	0.003	0.77	0.77	1.0	1.01
Chromium	0.041	0.306	0.074	2.95	22.0	5.36	0.25	1.88	0.00	2.14	0.25	2.4	2.4	1.0	72.0
Cobalt	0.008	0.122	0.078	3.78	61.49	39.10	0.32	5.26	0.00	5.58	1.72	7.3	7.3	1.0	504
Copper	0.123	0.515	0.155	11.78	49.4	14.9	1.01	4.23	0.00	5.23	0.33	5.6	5.6	1.0	96.0
Lead	0.030	0.308	0.067	4.32	44.6	9.75	0.37	3.82	0.00	4.18	0.50	4.7	4.7	1.0	145
Manganese	0.079	0.032	0.021	312.1	126.3	81.0	26.68	10.80	0.00	37.5	13.5	51.0	51.5	1.0	3,950
Selenium	0.516	0.894	0.605	0.59	1.03	0.70	0.05	0.09	0.00	0.139	0.004	0.143	0.143	1.0	1.15
Silver	0.014	2.045	0.004	0.47	68.3	0.13	0.04	5.84	0.00	5.88	0.11	5.99	6.02	1.0	33.4
Vanadium	0.005	0.042	0.012	2.72	23.5	6.89	0.23	2.01	0.00	2.24	1.92	4.16	4.16	1.0	560
Zinc	0.282	1.182	0.210	164.8	692	123	14.09	59.12	0.00	73.2	2.0	75.2	75.4	1.0	585

SHORT-TAILED SHREW EXPOSURE PARAMETERS					
Diet Composition			Weight	FIR [1]	Soil
Plant	Invert.	Prey	(kg)	(kg/kg-d)	Intake [2]
0%	100%	0%	0.02	0.100	13.0%

	Soil-to-Biota Transfer Factors, TF_i (kg dw/kg)			Exposure Point Concentration EPC (mg/kg)			Average Daily Dose, ADD (mg dw/kg-d) Food Ingestion				Soil	Total	NOAEL TRV	ADD / TRV Ratio	Surface Soil RBRC [3]
	Plant	Invert.	Prey	Plant	Invert.	Prey	Plant	Invert.	Prey	Total	Ingestion	Dose	(mg dw/kg-d)	(unitless)	(mg/kg)
Antimony	0.041	1.000	0.008	0.02	0.52	0.004	0.00	0.05	0.00	0.052	0.007	0.1	0.059	1.0	0.52
Arsenic	0.038	0.076	0.001	1.92	3.88	0.03	0.00	0.39	0.00	0.388	0.664	1.05	1.04	1.0	51.1
Barium	0.156	0.091	0.001	367	214	1.60	0.00	21.39	0.00	21.4	30.6	51.9	51.8	1.0	2,350
Cadmium	0.649	8.443	0.299	0.591	7.68	0.272	0.00	0.77	0.00	0.8	0.012	0.8	0.77	1.0	0.91
Chromium	0.041	0.306	0.080	2.28	17.0	4.43	0.00	1.70	0.00	1.70	0.72	2.42	2.4	1.0	55.6
Cobalt	0.008	0.122	0.065	2.18	35.38	18.98	0.00	3.54	0.00	3.54	3.77	7.31	7.33	1.0	290
Copper	0.130	0.515	0.169	11.33	44.8	14.7	0.00	4.48	0.00	4.48	1.13	5.61	5.6	1.0	87.0
Lead	0.035	0.329	0.081	3.57	33.9	8.38	0.00	3.39	0.00	3.39	1.34	4.72	4.7	1.0	103
Manganese	0.079	0.034	0.021	248.9	108.3	64.6	0.00	10.83	0.00	10.8	41.0	51.8	51.5	1.0	3,150
Selenium	0.530	0.831	0.510	0.80	1.25	0.77	0.00	0.13	0.00	0.125	0.020	0.145	0.143	1.0	1.51
Silver	0.014	2.045	0.004	0.39	57.3	0.11	0.00	5.73	0.00	5.73	0.36	6.09	6.02	1.0	28.0
Vanadium	0.005	0.042	0.012	1.16	10.1	2.95	0.00	1.01	0.00	1.01	3.12	4.13	4.16	1.0	240
Zinc	0.284	1.197	0.214	163.1	687	123	0.00	68.72	0.00	68.7	7.5	76.2	75.4	1.0	574

(1) FIR - food ingestion rate (kg dry weight/kg body weight-day)

(2) Incidental soil ingestion as a fraction of diet (dry weight)

(3) RBRC = risk-based reference concentration back-calculated for ADD = TRV

Table E-4 Surface Soil Risk-Based Reference Concentrations (cont.)

DuPont East Chicago - Natural Area

GROUNDHOG EXPOSURE PARAMETERS					
Diet Composition			Weight	FIR [1]	Soil
Plant	Invert.	Prey	(kg)	(kg/kg-d)	Intake [2]
100%	0%	0%	2.00	0.051	2.00%

	Soil-to-Biota Transfer Factors, TF_i (kg dw/kg)			Exposure Point Concentration EPC (mg/kg)			Average Daily Dose, ADD (mg dw/kg-d) Food Ingestion						NOAEL TRV	ADD / TRV Ratio	Surface Soil RBRC [3]
	Plant	Invert.	Prey	Plant	Invert.	Prey	Plant	Invert.	Prey	Total	Soil Ingestion	Total Dose	(mg dw/kg-d)	(unitless)	(mg/kg)
Antimony	0.033	1.000	0.050	0.72	22.00	1.10	0.04	0.00	0.00	0.037	0.022	0.1	0.059	1.0	22
Arsenic	0.038	0.043	0.003	13.28	15.22	0.96	0.68	0.00	0.00	0.677	0.361	1.04	1.04	1.0	354
Barium	0.156	0.091	0.001	889	519	3.89	45.35	0.00	0.00	45.3	5.8	51.2	51.8	1.0	5,700
Cadmium	0.056	2.804	0.021	11.130	552.33	4.142	0.57	0.00	0.00	0.6	0.201	0.8	0.77	1.0	197
Chromium	0.041	0.306	0.040	31.57	235.6	30.48	1.61	0.00	0.00	1.61	0.79	2.40	2.4	1.0	770
Cobalt	0.008	0.122	0.159	39.00	634.40	825.78	1.99	0.00	0.00	1.99	5.30	7.29	7.33	1.0	5200
Copper	0.015	0.515	0.008	46.61	1622.3	24.7	2.38	0.00	0.00	2.38	3.21	5.59	5.6	1.0	3,150
Lead	0.008	0.168	0.012	25.17	562.4	39.07	1.28	0.00	0.00	1.28	3.42	4.70	4.7	1.0	3,350
Manganese	0.079	0.024	0.021	805.8	241.3	209.1	41.10	0.00	0.00	41.1	10.4	51.5	51.5	1.0	10,200
Selenium	0.594	0.621	0.258	2.67	2.79	1.16	0.14	0.00	0.00	0.136	0.005	0.141	0.143	1.0	4.50
Silver	0.014	2.045	0.004	48.30	7055.3	13.80	2.46	0.00	0.00	2.46	3.52	5.98	6.02	1.0	3450.0
Vanadium	0.005	0.042	0.012	15.76	136.5	39.98	0.80	0.00	0.00	0.80	3.32	4.12	4.16	1.0	3250
Zinc	0.061	0.118	0.009	1100.1	2128	157	56.11	0.00	0.00	56.1	18.4	74.5	75.4	1.0	18,000

(1) FIR - food ingestion rate (kg dry weight/kg body weight-day)

(2) Incidental soil ingestion as a fraction of diet (dry weight)

(3) RBRC = risk-based reference concentration back-calculated for ADD = TRV

Table E-5
Reference Values on Potential Adverse Effects on Amphibian Species

Analyte	Common Name		Lifestage	Effect Concentration (ug/L) [1] 48-hr LC_{50}	96-hr LC_{50}	Reference
Arsenic	Marbled salamander	*(Ambystoma opacum)*	unknown	--	1400 [2]	Eisler 1988a (8-day LC_{50} reported) [2]
				96-hr LC_{50} Average	**1,400**	
Cadmium	Common toad	*(Bufo arenarum)*	tadpole	3,150	2,650	Ferrari et al. 1993 *
	Common toad	*(Bufo arenarum)*	tadpole	8,600	6,770	Ferrari et al. 1993 *
	Common toad	*(Bufo arenarum)*	tadpole	2,520	2,080	Muino et al. 1990 *
	Black-spined toad	*(Bufo melanostictus)*	tadpole	11,910	8,180	Khangarot and Ray 1987 *
	Ornate rice frog	*(Microhyla ornata)*	tadpole	2,480	1,580	Jayaprakask and Madhyastha 1987 *
	Ornate rice frog	*(Microhyla ornata)*	tadpole	2,480	1,580	Rao and Madhyastha 1987 *
	Columbia spotted frog	*(Rana luteiventris)*	tadpole	16,590	15,810	Leftcort et al. 1998 *
	African clawed frog	*(Xenopus laevis)*	larvae	32,000	--	Slooff and Baerselman 1980 *
	African clawed frog	*(Xenopus laevis)*	larvae	3,200	--	Canton and Slooff 1982a *
				96-hr LC_{50} Average	**5,521**	
Chromium	Black-spined toad	*(Bufo melanostictus)*	tadpole	53,430	49,290	Khangarot and Ray 1987 *
	Black-spined toad	*(Bufo melanostictus)*	tadpole	53,430	224,910	Pant and Gill 1982 *
				96-hr LC_{50} Average	**137,100**	
Copper	Jefferson salamander	*(Ambystoma jeffersonianum)*	embryo	--	315	Horne and Dunson 1994 *
	Black-spined toad	*(Bufo melanostictus)*	tadpole	446	320	Khangarot and Ray 1987 *
	Gray treefrog	*(Hyla chrysocelis)*	tadpole	--	25	Gottschalk 1995 *
	Ornate rice frog	*(Microhyla ornata)*	tadpole	5,310	5,040	Jayaprakask and Madhyastha 1987 *
	Ornate rice frog	*(Microhyla ornata)*	tadpole	5,310	5,380	Rao and Madhyastha 1987 *
	Northern leopard frog	*(Rana pipiens)*	tadpole	--	76	Gottschalk 1995 *
				96-hr LC_{50} Average	**1,859**	
Lead	Common toad	*(Bufo arenarum)*	embryo	470	--	Perez-Coll et al. 1988 *
	Marbled salamander	*(Ambystoma opacum)*	unknown	--	1400 [2]	Eisler 1988b (8-day LC_{50} reported) [2]
	Southern leopard frog	*(Rana utricularia)*	tadpole	--	500 [2]	Eisler 1988b (LOAEL reported) [2]
				96-hr LC_{50} Average	**950**	
Manganese	Ornate rice frog	*(Microhyla ornata)*	tadpole	16,030	14,330	Rao and Madhyastha 1987 *
	Ornate rice frog	*(Microhyla ornata)*	tadpole	16,030	14,840	Jayaprakask and Madhyastha 1987 *
				96-hr LC_{50} Average	**14,585**	
Nickel	Black-spined toad	*(Bufo melanostictus)*	tadpoles	34,300	**25,320**	Khangarot and Ray 1987 *
				96-hr LC_{50} Average	**25,300**	
Zinc	Gray treefrog	*(Hyla chrysocelis)*	tadpoles	--	4,700	Gottschalk 1995 *
	Ornate rice frog	*(Microhyla ornata)*	tadpoles	16,030	14,330	Rao and Madhyastha 1987 *
	Ornate rice frog	*(Microhyla ornata)*	tadpoles	23,420	22,410	Jayaprakask and Madhyastha 1987 *
	Columbia spotted frog	*(Rana luteiventris)*	tadpoles	--	28,380	Leftcort et al. 1998 *
	Northern leopard frog	*(Rana pipiens)*	tadpoles	--	10,200	Gottschalk 1995 *
				96-hr LC_{50} Average	**16,004**	

* Test data as summarized by Pauli et al. 2000.

[1] The effect value is a 50% mortality (lethal concentration 50%, LC_{50}) over a 48 hr or 96 hr exposure period.

[2] Listed values from tests using longer exposure (8-day LC50), or a lower effect endpoint (lowest observable adverse effect level, LOAEL).

APPENDIX F
HUMAN HEALTH RISK ASSESSMENT FOR THE NATURAL AREA (PIONEER 2013)

Natural Area Human Health Risk Assessment – East Chicago

DuPont East Chicago Site
East Chicago, Indiana

PREPARED FOR:

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JULY 2013

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TABLE 5-2: RISKS FOR NATURAL AREA AND NATURAL AREA /EXTENDED BUFFER ZONE BY PATHWAY

TABLE 5-3: SUMMARY OF LEAD EXCEEDANCE FACTORS

TABLE 5-4: SUMMARY OF THE RISKS FOR NATURAL AREA AND NATURAL AREA/EXTENDED BUFFER ZONE

FIGURES

FIGURE 1-1: SOIL SAMPLE LOCATIONS

ACRONYMS AND ABBREVIATIONS

ACRONYM	EXPLANATION
ADD	Average Daily Dose
ALM	Adult Lead Model
bgs	Below Ground Surface
CAL/EPA	California Environmental Protection Agency
CDC	Centers for Disease Control
CMS	Corrective Measures Study
COPC	Constituent of Potential Concern
CSF	Cancer Slope Factor
DuPont	E.I. du Pont de Nemours and Company
EF	Exceedance Factor
EPC	Exposure Point Concentration
ft	Feet
GI	Gastrointestinal
GSD	Geometric Standard Deviation
HEAST	Health Effects Assessment Summary Tables
HHRA	Human Health Risk Assessment
HI	Hazard Index
HQ	Hazard Quotient
IEPA	Illinois Environmental Protection Agency
IRM	Interim Remedial Measures
IRS	Ingestion Rate
kg	Kilogram
kg-day/mg	Kilograms of Body Weight per Milligram of Constituent per Day
LADD	Lifetime Average Daily Dose
mg/kg-day	Milligrams of Constituent per Kilogram of Body Weight per Day
Natural Area/Extended Buffer Zone	Natural Area with the Extended Buffer Zone,
NHANES	National Health and Nutritional Examination Survey
PbB	Blood Lead
PIONEER	PIONEER Technologies Corporation
PPTRV	Provisional Peer Reviewed Toxicity Value
RAGS	Risk Assessment Guidance for Superfund
RCRA	Resource Conservation and Recovery Act
RfC	Reference Concentration
RfD	Reference Dose
RME	Reasonable Maximum Exposure
RSL	Regional Screening Level
Site	DuPont East Chicago Site
TNC	The Nature Conservancy
UCL	Upper Confidence Limit
ug	Microgram

ACRONYM	EXPLANATION
*u*g/dl	Micrograms per deciliter
UIR	Unit Inhalation Risk
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey

SECTION 1 – INTRODUCTION

E.I. du Pont de Nemours and Company (DuPont) owns a former manufacturing facility in East Chicago, Indiana. A Corrective Measures Study (CMS) is being conducted as part of the Resource Conservation and Recovery Act (RCRA) corrective action process at the DuPont East Chicago Site (Site). A human health risk assessment (HHRA) was conducted for the Natural Area, and the Natural Area plus the Extended Buffer Zone (Natural Area/Extended Buffer Zone) portions of the East Chicago Site on behalf of DuPont (see Figure 1-1). The purpose of the HHRA was to evaluate environmental sampling results from (1) the Natural Area and (2) the Natural Area/Extended Buffer Zone to determine the potential human health risks to trespassers and to The Nature Conservancy (TNC) workers potentially being exposed to constituents in soil[1] while working in the Natural Area or the Natural Area/Extended Buffer Zone portions of the Site. The methodology and assumptions presented in the United States Environmental Protection Agency (US EPA) approved *Human Health Risk Assessment – East Chicago* report were used in Natural Area HHRA (PIONEEER Technologies Corporation [PIONEER] 2012).

1.1 Report Organization

The remaining sections of this HHRA are organized as follows:

- Section 2: Analytical Data – This section describes the data used in the HHRA and the process used to calculate exposure point concentrations (EPCs).
- Section 3: Exposure Assessment – This section presents the receptors, property uses, TNC-specific exposure information, and exposure algorithms and factors used to estimate daily intakes.
- Section 4: Toxicity Assessment – This section presents the toxicity values (i.e., noncancer reference doses and cancer slope factors) used to estimate risk.
- Section 5: Risk Characterization – This section presents each area's quantitative estimates of the cancer risks, noncancer hazards, and potential risks from exposure to lead for each receptor.
- Section 6: References – This section provides citations for the reports referenced in the HHRA.

[1] Samples identified as sediment were included in the HHRA and evaluated as soil.

SECTION 2 – ANALYTICAL DATA

The analytical data used in the HHRA and the process used to calculate EPCs for each constituent is presented in Appendix D.

2.1 Analytical Data

2.1.1 Soil Data

The following data were included in the HHRA (see Figure 1-1 and Appendix D, Table D-3):

- Soil samples results collected from zero to two feet below ground surface (bgs) in the Natural Area and the Natural Area/Extended Buffer Zone; and,
- Soil sample results from clean backfill were substituted for locations that were covered with two feet of fill.

The following data were not included in the HHRA:

- Soil sample results collected from portions of the Natural Area and the Natural Area/Extended Buffer Zone that were removed during the Interim Remedial Measures (IRM); and,
- Soil sample results collected from locations that were covered with two feet of fill.

The number of samples by area and depth are as follows:

Area	Number of Samples	
	0-2 Feet Below Ground Surface	0-6 Inches Below Ground Surface
Natural Area	127	77
Natural Area/Extended Buffer Zone	207	137

2.1.2 Surface Water Data

Surface water samples were collected in the Natural Area in 2011 prior to the IRM. However, the objective of the IRM was to remove or cover soil that could be contributing constituents to surface water (see Figure 14 n the Main Report). Thus the existing data are likely not representative of current conditions as constituent concentrations are expected to decrease in the future due to the IRM. In the absence of post-IRM surface water data, these data were included and evaluated in the risk assessment even though they likely overestimate current and future conditions. In addition, surface water samples will be collected and evaluated in the future as part of the Long-Term Monitoring Plan (See Section 6 in the Main Report).

2.2 Calculation of EPCs

Exposure Point Concentrations (EPCs) are concentrations of constituents in a given medium to which a receptor may be exposed. Consistent with the *Human Health Risk Assessment – East Chicago* report, EPCs for the HHRA were calculated as the 95% upper confidence limit (UCL) on the mean or the maximum detected concentration, whichever was lower for samples detected more than two times (PIONEER 2012). The EPCs for the key constituents in soil (i.e., arsenic, cadmium, lead, thallium, and

zinc) and surface water (i.e., arsenic) were calculated using the latest version of the US EPA ProUCL software (v. 4.1.00) (US EPA 2010). The soil EPCs identified for the HHRA are presented in Appendix D, Tables D-4 through D-7. The surface water EPCs are presented in Appendix D, Table D-8 and D-9 and the total concentrations were used in the evaluation.

SECTION 3 – EXPOSURE ASSESSMENT

The objective of the exposure assessment is to identify complete exposure pathways and estimate the type and magnitude of potential exposures to constituents. The exposure assessment is accomplished by determining current and potential future land uses, receptors, media, and exposure pathways. Exposures are then quantitatively estimated for the complete exposure pathways.

3.1 Land Use and Complete Soil Exposure Pathways

The Natural Area of the East Chicago Site has been managed by TNC since 1999. TNC is conducting a restoration program in the Natural Area that involves preventing new invasive species from establishing, controlling existing non-native species to prevent them from expanding or dominating their current range, and reducing coverage of all dominant weed species to five percent. Restoration activities could result in exposure to surface soil and surface water in the Natural Area/Extended Buffer Zone, as follows:

Receptor	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Windblown Dust	Dermal Contact with Surface Water	Incidental Surface Water Ingestion
Project Supervisor	✓	✓	✓	✓	✓
Restoration Workers	✓	✓	✓	✓	✓
Trespasser	✓	✓	✓	✓	✓

Exposure to soil from zero to two feet bgs is anticipated for restoration workers who may be weeding or planting. Exposure to soil from zero to six inches is anticipated for trespassers. Contact with soil greater than two feet bgs is not expected in the Natural Area, and therefore was not evaluated in the HHRA. Exposure to surface water is anticipated for restoration workers and trespassers.

3.2 TNC Use Survey

A survey was conducted to determine the extent to which TNC workers would be working in the Natural Area and Natural Area/Extended Buffer Area, and the types of workers involved. TNC was asked to complete a questionnaire that asked:

- What types of workers conduct activities in the Natural Area?
- How many days would they likely work in the Natural Area each month?
- How many hours/day they would be expected to work?
- How many years are the work activities expected to occur?

Paul Labus of the TNC responded to the survey, and the results are presented in Table 3-1. These results were used to determine the long-term exposure frequency for a restoration project supervisor and worker to soil and surface water assuming that they access the Natural Area for 25 years, which is the USEPA

standard default exposure duration for a worker (see Table 3-2) (Labus 2013a; 2013b). For soil, it was assumed that exposure could occur every day when work is conducted. For surface water, it was assumed that exposure could occur 25% of the time a worker performed restoration activities in the natural area, based on the survey results. The number of days when surface water contact occurs was not subtracted from the total number of days per year of soil exposure, which likely resulted in an overestimate of potential exposure to soil. The TNC survey results also indicated that restoration workers may access the Natural Area five to six hours per day. However, an exposure duration of eight hours per day (the USEPA standard default), was assumed for soil exposure.

3.3 Calculation of Constituent Daily Intakes

The intake of a constituent is estimated from at least six basic parameters: constituent concentration, exposure frequency, exposure duration, ingestion or contact rate, body weight, and averaging time. Each of the exposure parameters has a range of possible values. The exposure parameter values chosen for each receptor (i.e., TNC Supervisor, TNC worker, and trespasser) were selected so that the combination of all exposure variables resulted in a Reasonable Maximum Exposure (RME) for the given receptor.

Exposures for carcinogens were averaged over the lifetime of the exposed individual (i.e., 70 years) to derive a Lifetime Average Daily Dose (LADD). Exposures for noncarcinogens were averaged over the duration of exposure to derive an Average Daily Dose (ADD).

The exposure parameters presented in the *Human Health Risk Assessment – East Chicago* for the Redevelopment Worker receptor were also used for the Project Supervisor and the Restoration Worker in this HHRA, with the exception of the area-specific exposure frequency, exposure duration, and relative soil arsenic bioavailability (PIONEER 2012, USEPA 2012). The exposure parameters presented in the *Human Health Risk Assessment – East Chicago* report for the trespasser was also used for the trespasser in this HHRA, with the exception of the relative soil arsenic bioavailability. Exposure parameters for this HHRA are presented in Tables 3-2 through 3-5. All exposure and risk calculations were performed using Visual SmartRISK™.

SECTION 4 – TOXICITY ASSESSMENT

The toxicity values used in this assessment include noncarcinogenic reference doses (RfDs) and cancer slope factors (CSFs). Noncarcinogenic and carcinogenic health effects must be considered when evaluating potential human health impacts. The potential for adverse noncarcinogenic health effects can result from exposure to any constituent; conversely, the potential for producing carcinogenic effects is limited to certain constituents (i.e., carcinogens). Therefore, in many cases a constituent may only have a noncarcinogenic toxicity value and no carcinogenic toxicity value.

Noncarcinogenic RfDs and CSFs are derived through an evaluation of the relationship between the amount of a constituent which is either administered, absorbed or believed to be effective and changes in certain aspects of the biological system (usually toxic effects) in the exposed population (animals and/or humans) in response to that constituent.

The toxicity of any constituent depends on the route of entry into the body. In some cases, a constituent may produce toxic effects only through a specific route of entry and may not be toxic through other routes of exposure. Route-specific toxicity values (i.e., oral, dermal, and inhalation) were used in this evaluation.

4.1 Reference Doses and Reference Concentrations

An RfD is defined as "an estimate (with uncertainty spanning perhaps an order of magnitude or greater) of a daily exposure level for the human population, including sensitive subgroups, that is likely to be without an appreciable risk of deleterious effects during a portion of the lifetime" (USEPA 1989). The USEPA has developed RfDs for subchronic exposures (i.e., short-term exposures) and chronic exposures (i.e., multiple exposures occurring over an extended period of time). RfDs are expressed in units of milligrams of constituent per kilogram of body weight per day (mg/kg-day). For the purposes of this evaluation, noncancer inhalation toxicity values (i.e., reference concentrations [RfCs]) were converted to RfDs by multiplying the RfC by the average adult daily inhalation rate of 20 cubic meters/day and dividing by the average adult body weight of 70 kg. RfDs were used in the HHRA to calculate non-carcinogenic risk estimates.

4.2 Cancer Slope Factors and Inhalation Unit Risks

A CSF is a numerical estimate of the carcinogenic potency of a constituent. CSFs are expressed in units of kilogram of body weight-day per milligram of constituent (kg-day/mg), which is the inverse of dose (i.e., mg/kg-day). Cancer inhalation toxicity values (i.e., unit inhalation risks [UIRs]) were converted to CSFs by multiplying the UIR by 70 kg, 1,000 micrograms (ug) per milligram, and dividing by 20 cubic meters/day. Cancer potency factors were used in this HHRA to calculate risk estimates.

4.3 Dermal Toxicity Values

Dermal toxicity values were derived by adjusting the oral values based on constituent-specific gastrointestinal (GI) absorption rates, as described in the USEPA Dermal Risk Assessment Guidance (USEPA 2004). If constituent-specific GI absorption rates were not available, GI absorption was

assumed to be 100 percent. The GI absorption values used in this evaluation are presented in Table 4-1.

4.4 Toxicity Values Used in the HHRA

The toxicity values used in the HHRA are presented in Table 4-1 and were obtained from the following hierarchy of sources:

- USEPA's Integrated Risk Information System (IRIS) (USEPA 2011b)
- USEPA's Provisional Peer Reviewed Toxicity Values (USEPA 2011c)
- USEPA's Regional Screening Level Table June, 2011 (USEPA 2011c)
- USEPA's Health Effects Assessment Summary Tables (HEAST) (USEPA 1997a)

4.5 Evaluation of Lead

The USEPA determined it was inappropriate to derive an RfD for lead because an RfD is typically derived from a concentration below which adverse health effects are not expected, and existing evidence indicates that adverse health effects may occur at very low exposures to lead. Alternatively, based on the wide body of knowledge available regarding lead absorption, distribution, metabolism, and excretion it is regulated based on blood-lead (PbB) concentration which can be associated with exposure. The USEPA and the Centers for Disease Control (CDC) have determined that childhood PbB concentrations at or above 10 micrograms per deciliter (ug/dL) of blood present health risks to children. Therefore, the USEPA identified a risk reduction goal for contaminated sites to limit the probability of a child's PbB concentration exceeding 10 ug/dL to five percent or less (USEPA 2003). To address potential risk to adults, the USEPA developed the Adult Lead Model (ALM), which estimates the fetal PbB concentration in women exposed to lead-contaminated soils.

The ALM was used in the HHRA to evaluate potential soil lead exposures to adults and adolescents. Using receptor-specific parameters, default ALM model parameters, and USEPA/CDC recommended maximum PbB levels for adults and adolescents, health-protective soil screening levels for lead were derived for each receptor. Input parameters used in the ALM are presented in Table 4-2. The resulting soil lead screening levels are presented in Appendix F and were compared to soil lead EPCs in the Risk Characterization (Section 5).

The ALM does not incorporate a consideration of adult incidental ingestion of groundwater or surface water and therefore was not used to evaluate lead for these media.

4.6 Constituents without Available Toxicity Values

Toxicity criteria were not available for sulfate, and therefore it was not evaluated quantitatively in the HHRA.

SECTION 5 – RISK CHARACTERIZATION

Risk characterization involves integrating exposure and toxicity information into a quantitative estimate of cancer risks and noncancer hazard indices. The exposure equations, parameter values, and toxicity values used to calculate human health risks were presented in the Exposure Assessment (Section 3) and Toxicity Assessment (Section 4). The procedures used to estimate risks, including cancer risks and noncancer hazards, and the benchmark values used for these risks are presented below. Risk estimates were calculated for each constituent, exposure pathway, and receptor. The risks were then summed to estimate the total human-health risks for each receptor and area.

5.1 Evaluation of Noncancer Risk

The potential for noncancer effects is quantitatively expressed as a hazard quotient (HQ) and/or a hazard index (HI). The HQ is the ratio of the calculated ADD of a particular constituent to the RfD for that constituent. The HI is the sum of HQs for each constituent.

$$HQ = \frac{ADD}{RfD}$$

$$HI = \sum HQ_1 + HQ_2 + HQ_3 ... HQ_n$$

where,

Parameter	Definition
HQ	Hazard Quotient – the ratio of the calculated average daily dose of a constituent to the RfD
HI	Hazard Index – the sum of HQs for each constituent
ADD	Average Daily Dose of a constituent (mg/kg-day)
RfD	Reference Dose for a constituent (mg/kg-day)

5.2 Evaluation of Cancer Risk

The incremental risk of cancer from exposure to a constituent is described in terms of the probability that an exposed individual will develop cancer during a lifetime from that exposure. The risk estimate is calculated by multiplying the LADD of a particular constituent by the CSF.

$$Cancer\ Risk = LADD \times CSF$$

where,

Parameter	Definition
Cancer Risk	Lifetime probability of developing cancer due to exposure to a constituent
LADD	Lifetime Average Daily Dose of a constituent (mg/kg-day)
CSF	Cancer Slope Factor for a constituent $(mg/kg\text{-}day)^{-1}$

The cancer risks associated with each constituent, exposure pathway, and medium are summed to yield the total cancer risk for each receptor.

5.3 Risk Benchmarks

Risk benchmarks are the risk levels used by risk managers to evaluate the significance of risks to receptors exposed to a constituent. Risk benchmarks are used to provide perspective and help risk managers determine which areas and media will require further evaluation and potential remedial action.

5.3.1 Benchmarks for Evaluating Cancer Risk

The US EPA's Advance Notice of Proposed Rulemaking for Corrective Action of Releases from Solid Waste Management Units references an incremental cancer risk range for risk management purposes of 1.0E-06 to 1.0E-04 (US EPA 1996). The background arsenic concentration in soil is 13 mg/kg, (which corresponds to an incremental cancer risk of 3.9E-06 for a Natural Area Restoration Worker). Therefore, a 1.0E-05 cancer risk is the appropriate benchmark for evaluating cancer risk estimates associated with soil.

5.3.2 Benchmark for Evaluating Noncancer Risks

A HI of one was identified as the noncancer benchmark for the Natural Area/Extended Buffer Zone. An HI is the estimate of the total noncancer hazard, and a value of one is typically set as the benchmark below which adverse, noncancer health effects are not expected.[2]

5.3.3 Benchmark for Evaluating Lead Risks

Lead screening levels for each receptor (calculated using the Adult Lead Model [ALM]) were identified based on a US EPA default blood-lead concentration of 10 micrograms per deciliter (ug/dl). Screening levels were compared to Natural Area and Natural Area/Extended Buffer Zone lead concentrations to determine exceedance factors (EFs) (US EPA 2003). An EF greater than one indicates that the screening level was exceeded, and that the baseline blood-lead concentration of the receptor, under the assumed exposure conditions, may exceed the screening level.

5.4 HHRA Results

The risks associated with each constituent were summed for each exposure route to estimate the total human health risk for each receptor for all constituents. The HHRA results for each constituent and receptor in the Natural Area and the Natural Area/Extended Buffer Zone are presented in Table 5-1. The cancer risks for all receptors are less than the benchmark of 1.0E-05. The noncancer hazard indices for all receptors are less than 1. The majority of the cancer risks and noncancer hazards are associated with exposure to arsenic.

Table 5-2 summarizes the risks for each receptor by exposure pathway. The majority of the risk for soil is associated with incidental soil ingestion. The majority of the risk for surface water is associated with

[2] If the HI is greater than one as a consequence of summing several HQs, it is then appropriate to segregate the compounds by effect and by mechanism of action and to derive separate hazard indices for each group.

incidental ingestion of surface water. In addition, the risks for the Natural Area discretely are similar to the risks for the combined Natural Area/Extended Buffer Zone.

Table 5-3 presents a summary of the lead exposure point concentrations, the associated screening values, and the resulting lead EFs. The lead EFs for all receptors are less than 1 indicating that the baseline PbB concentration of the receptor under the assumed exposure conditions would not exceed the health-based PbB concentration of 10 ug/dl.

Based on the results of the HHRA, the incremental soil cancer risks (i.e., the total cancer risk minus the arsenic background cancer risk), for a Project Supervisor and Trespasser are approximately one in one million (1.0E-06), and the incremental soil cancer risk for a Restoration Worker are two to three in one million (see Table 5-4). The surface water cancer risks for a Project Supervisor, Restoration Worker, and Trespasser range from five in ten million to two in a million. The risks for the Natural Area discretely are similar to the risks for the combined Natural Area/Extended Buffer Zone.

In summary, the cumulative cancer risks for all receptors are less than the benchmark of 1.0E-05. The noncancer hazard indices and the lead EFs for all receptors are less than 1. The majority of the cancer risks and noncancer hazards are associated with exposure to arsenic.

5.5 Conclusions

The results of this HHRA demonstrate that the cancer risks and the noncancer hazards associated with the Natural Area and the Natural Area/Extended Buffer Zone soil are all below benchmark values. Risks are expected to decrease in the future as concentrations of constituents in surface water decrease due to the completion of IRM activities. In addition, the cancer risks and noncancer hazards are similar for the Natural Area and the Natural Area/Extended Buffer Zone.

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Tables

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Table 3-1: TNC Activity Patterns in the Natural Area

Individual	Average Number of Days Spent by an Individual in the Natural Area Each Month During the First Three Years of Exposure												Winter Work	Summer Work	Exposure Frequency (days/year)	Exposure Time (hours/day)
	Winter					Summer										
	November	December	January	February	March	April	May	June	July	August	September	October				
Restoration Worker #1	10	10	10	--	--	5	10	10	15	15	15	5	30	75	105	6
Restoration Worker #2	10	10	10	--	--	5	10	5	--	10	20	--	30	50	80	6
Short-Term Worker	--	--	--	--	--	--	5	20	23	22	--	--	0	70	70	6
Project Supervisor	2	2	2	--	2	2	4	4	5	4	4	--	8	23	31	5
Fire Crew	--	--	--	--	--	--	--	--	--	--	--	--	0	0	6[(2)]	6

Notes:

- Compiled data from the "East Chicago Natural Area Land Use Questionnaire" that was answered by Paul Labus on March 7, 2013.

[(1)] As stated in the questionnaire answered by P. Labus, "within 3 years the winter work should decrease to approximately 10 total days; within 5 years summer treatment should decrease to approximately 45 days each for one restoration worker and one short-term field worker."

[(2)] It is anticipated that the fire crew will spend five days to prepare fire line and one day for the control burn, based on the questionnaire .

Table 3-2: Estimated Exposure Frequency for East Chicago Natural Area Receptors

Individual	Exposure Frequency (Days/Year)						Exposure Duration (Years)	Days/Year in Natural Area		Days/Year Potentially Contacting Soil[5]		Days/Year Potentially Contacting Surface Water[6]	
								Noncancer	Cancer	Noncancer	Cancer	Noncancer	Cancer
	Year 1	Year 2	Year 3	Year 4 [1]	Year 5 [1]	Year 6 to 25 [2]		Exposure Frequency for Years 1-3 (days/year)	Average Exposure Frequency (days/year)	Exposure Frequency for Years 1-3 (days/year)	Average Exposure Frequency (days/year)	Exposure Frequency for Years 1-3 (days/year)	Average Exposure Frequency (days/year)
Restoration Worker #1[3]	105	105	105	85	85	55	25	105	63	105	98	26	16
Restoration Worker #2	80	80	80	60	60	--	25	80	72	80	45	20	18
Short-Term Worker	70	70	70	70	70	45	25	70	50	70	67	18	13
Project Supervisor[3]	31	31	31	31	31	31	25	31	31	31	31	8	8
Fire Crew [4]	6	6	6	6	6	6	25	6	6	6	7	NA	NA

Notes:

[1] The long-term exposure frequencies for the restoration worker and short-term worker was determined by:
Years 4 and 5 = Winter work decreases to a total of 10 days
Years 6 to 25 = Summer work decreases to a total of 45 days

[2] A standard US EPA default exposure duration of 25 years was assumed. Therefore, it was assumed that the activity patterns identified in year 5 would also apply to years 6 through 25.

[3] Receptor was evaluated in the HHRA.

[4] It is anticipated that the fire crew will spend five days to prepare fire line and one day for the control burn, based on the questionnaire .

[5] The number of days when surface water contact occurs was not subtracted from the total number of days per year of soil exposure which likely results in an overestimate of potential exposure to soil.

[6] The amount of time spent in potential contact with surface water each year will vary based on rainfall, water levels, and activities (e.g., killing phragmites, conducting abundance counts, or replanting, etc). Much of the time when the TNC are working in swales, the water levels are lower and it is drier on site. TNC personnel wear waders or hip boots as to not have direct contact with water and typically there is no direct contact. However, occasionally a wader leaks or water spills over the top. Based on all of these considerations an exposure frequency of 25% represents a reasonable maximum exposure estimate.

Table 3-3: Natural Area – Restoration Worker and Project Supervisor Exposure Parameters for Soil Pathways: Incidental Ingestion, Dermal Contact, and Inhalation of Particulates

Exposure Route	Parameter Code	Parameter Definition	Units	Reasonable Maximum Exposure (RME)	Rationale	Reference
General Parameters	C_S	Concentration in Soil	mg/kg	constituent--specific		
	C_w	Concentration in Surface Water	mg/kg	constituent--specific		
	EF	Soil Exposure Frequency(1)	days/year	31	TNC Project Supervisor	Labus 2013a,b
	EF	Soil Exposure Frequency(1)	days/year	63	TNC Restoration Worker	Labus 2013a,b
	EF	Soil Exposure Frequency(noncancer)(1)	days/year	105	TNC Restoration Worker	Labus 2013a,b
	EF	Surface Water Exposure Frequency	days/year	8	TNC Project Supervisor	Labus 2013a,b
	EF	Surface Water Exposure Frequency	days/year	16	TNC Restoration Worker	Labus 2013a,b
	EF	Surface Water Exposure Frequency(noncancer)	days/year	26	TNC Restoration Worker	Labus 2013a,b
	ET	Exposure Time	hours/day	8	USEPA standard default value for workers	USEPA 1991
	ED	Exposure Duration(1)	years	25	Standard Default for a worker	USEPA 1991
	BW	Body Weight	kg	70	Average adult body weight	USEPA 1989
	FC	Fraction Contacted	unitless	1	Assumes entire exposure time spent at one exposure area	
	CFs	Conversion Factor - Soil	kg/mg	0.000001		
	CFsw	Conversion Factor - Surface Water	l/ml	0.001		
	AT-C	Averaging Time - cancer	days	25,550	70-year lifetime expressed in days for estimating cancer risk	
	AT-N	Averaging Time - non-cancer	days	9,125	ED expressed in days for estimating non-cancer risk	
Soil Incidental Ingestion	IRS	Ingestion Rate	mg/day	330	USEPA recommended value for outdoor worker and construction worker	USEPA 2002
	RBS	Relative Bioavailability in Soil(1)	unitless	constituent-specific	USEPA recommended value to take into account relative bioavailability of constituents in a soil matrix	USEPA 2012
Soil Dermal Contact	AF	Dermal Adherence Factor	mg/cm^2	0.3	USEPA standard default value for construction worker	USEPA 2004
	AB	Dermal Absorption Fraction	unitless	constituent-specific	Chemical-specific dermal absorption fraction	USEPA 2004
	SA	Skin Surface Area	cm^2/day	3,300	USEPA default value for outdoor industrial worker dermal contact per event (day) (assumes face, forearms, and hands exposed)	USEPA 2004
Soil Inhalation	IN	Inhalation Rate	$m^3/hour$	3.3	USEPA recommended value for outdoor worker (upper percentile)	USEPA 1997b
	VF	Volatilization Factor (for volatile constituents)	m^3/kg	constituent-specific	USEPA Region 9 Regional Screening Level (RSL)Table	USEPA 2011c
	PEF	Particulate Emission Factor (for non-volatile constituents)	m^3/kg	1.32E+09	Default value derived for USEPA RSL Technical Background Document	USEPA 2011d
Surface Water Incidental Ingestion	IRS	Ingestion Rate	ml/hour	3.7	Assumes that incidentally ingest water while wading/splashing.	USEPA 2000, USEPA 2011a
Surface Water Dermal Contact	SA	Skin Surface Area	cm^2/day	5,570	USEPA recommended dermal exposure value for adult males (21+ years) (assumes head, arms, hands and feet exposed)	USEPA 2004

Notes:

Project Supervisor		TNC Restoration Worker		
Cancer Intake Factor	Non-Cancer Intake Factor	Cancer Intake Factor	Non-Cancer Intake Factor	Intake Factor is determined by solving the equation and excluding chemical-specific parameters.
1.42E-07	4.00E-07	2.90E-07	1.35E-06	Soil Ingestion Intake Equation (mg /kg-day) = (C_s)(IRS) (RSB) (EF) (ED) (CF_s) (FC)/(AT) (BW)
4.28E-07	1.20E-06	8.71E-07	4.06E-06	Soil Dermal Intake Equation (mg/kg-day) = (C_s)(AB)(SA)(AF)(EF)(ED)(CF_s)(FC)/(AT) (BW)
1.14E-02	3.20E-02	2.32E-02	1.08E-01	Soil Inhalation Intake Equation (mg/kg-day) = (C_S)(IN)(ET)(EF)(ED)(FC)/(PEF or VF)(BW)(AT)
6.20E-06	1.73E-05	1.24E-05	5.64E-05	Surface Water Dermal Intake Equation (mg/kg-day) = (Cw)(SA)(EF)(ED)(CF_s)(FC)/(AT) (BW)
3.31E-09	9.26E-09	6.62E-09	3.01E-08	Surface Water Ingestion Intake Equation (mg /kg-day) = (Cw)(IRsw) (EF) (ED) (CF_s) (FC)/(AT) (BW)

(1) All of the exposure parameters presented in the HHRA for the Redevelopment Worker were used except for these parameters.

Table 3-4: Natural Area – Adolescent[1] Trespasser Exposure Parameters for Soil Pathways: Incidental Ingestion, Dermal Contact, and Inhalation of Particulates

Exposure Route	Parameter Code	Parameter Definition	Units	Reasonable Maximum Exposure (RME)	Rationale	Reference
General Parameters	C_S	Concentration in Soil	mg/kg	constituent--specific		
	C_w	Concentration in Surface Water	mg/kg	constituent--specific		
	EF	Soil Exposure Frequency	days/year	90	USEPA Region IV default value for trespasser	USEPA 2000
	ET	Soil Exposure Time	hours/day	2	Estimated value for daily visit by trespasser	PIONEER 2012
	EF	Surface Water Exposure Frequency	days/year	45	USEPA Region IV default value for trespasser	PIONEER 2012
	ET	Surface Water Exposure Time	hours/day	2	Estimated value for daily visit by trespasser	PIONEER 2012
	ED	Exposure Duration	years	8	Assumes an adolescent trespasser 10 to 18 years of age	PIONEER 2012
	BW	Body Weight	kg	56	Mean body weight for ages 11 to 16 years	USEPA 2009
	FC	Fraction Contacted	unitless	1	Assumes entire exposure time spent at one exposure area	
	CFs	Conversion Factor, soil	kg/mg	0.000001		
	CFsw	Conversion Factor, surface water	l/ml	0.001		
	AT-C	Averaging Time - cancer	days	25,550	70-year lifetime expressed in days for estimating cancer risk	
	AT-N	Averaging Time - non-cancer	days	2,920	ED expressed in days for estimating non-cancer risk	
Soil Incidental Ingestion	RBS	Relative Bioavailability in Soil	unitless	constituent-specific	USEPA recommended value to take into account relative bioavailability of constituents in a soil matrix	USEPA 2012
	IRS	Ingestion Rate	mg/day	200	USEPA recommended value for high average daily rate	USEPA 1997b
Soil Dermal Contact	AF	Dermal Adherence Factor	mg/cm^2	0.2	USEPA recommended value	USEPA 2004
	AB	Dermal Absorption Fraction	unitless	constituent-specific	Chemical-specific dermal absorption fraction	USEPA 2004
	SA	Skin Surface Area	cm^2/day	4,380	USEPA recommended value for ages 11 to 16 years dermal contact per event (day) (assumes head, arms and hands exposed)	USEPA 2004
Soil Inhalation	IN	Inhalation Rate	$m^3/hour$	1.9	USEPA recommended value for children aged 18 and under (heavy activity)	USEPA 1997b
	VF	Volatilization Factor (for volatile constituents)	m^3/kg	constituent-specific	USEPA Region 9 Regional Screening Level (RSL) Table	USEPA 2011c
	PEF	Particulate Emission Factor (for non-volatile constituents)	m^3/kg	1.32E+09	Default value derived for USEPA RSL Technical Background Document	USEPA 2011d
Surface Water Incidental Ingestion	IRS	Ingestion Rate	ml/hour	3.7	Assumes that incidentally ingest water while wading/splashing.	USEPA 2000, USEPA 2011a
Surface Water Dermal Contact	SA	Skin Surface Area	cm^2/day	5,570	USEPA recommended dermal exposure value for ages 11 to 16 years (assumes head, arms, hands and feet exposed).	USEPA 2004

Notes:

Cancer Intake Factor	Non-Cancer Intake Factor	Intake Factor is determined by solving the equation and excluding chemical-specific parameters.
1.00E-07	8.80E-07	Soil Ingestion Intake Equation (mg /kg-day) = (C_s)(IRS)(RBS) (EF) (ED) (CF_s) (FC)/(AT) (BW)
4.40E-07	3.85E-06	Soil Dermal Intake Equation (mg/kg-day) = (C_s)(AB)(SA)(AF)(EF)(ED)(CF_s)(FC)/(AT) (BW)
1.91E-03	1.67E-02	Soil Inhalation Intake Equation (mg/kg-day) = (C_S)(IN)(ET)(EF)(ED)(FC)/(PEF or VF)(BW)(AT)
2.80E-06	2.45E-05	Surface Water Dermal Intake Equation (mg/kg-day) = (Cw)(SA)(EF)(ED)(CF_s)(FC)/(AT) (BW)
1.86E-09	1.62E-08	Surface Water Ingestion Intake Equation (mg /kg-day) = (Cw)(IRsw) (EF) (ED) (CF_s) (FC)/(AT) (BW)

[1]The adolescent is assumed to be between 10 and 18 years of age. In some cases exposure parameter values were only available for a subset of that age range.

Table 3-5: Constituent-Specific Exposure Factors Factors

Constituent	Soil Dermal Absorption Fraction (ABS) (Unitless)	Water Permeability Coefficient (Kp) (cm/hr)[1]	Relative Bioavailability in Soil (unitless)[2]
Aluminum	--	1.00E-03	--
Antimony	--	1.00E-03	--
Arsenic	0.03	1.00E-03	0.6
Cadmium	0.001	1.00E-03	--
Chromium	--	1.00E-03	--
Cobalt	--	4.00E-04	--
Copper	--	1.00E-03	--
Manganese	--	1.00E-03	--
Thallium	--	1.00E-03	--
Vanadium	--	1.00E-03	--
Zinc	--	6.00E-04	--

Notes:

--: Value is not available, therefore this COPC is not quantitatively assessed for dermal absorption from soil.

Values were obtained from Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005 OSWER 9285.7-02EP PB99-963312 July 2004.

[2]USEPA 2012. Memorandum: Compilation and Review of Data on Relative Bioavailibility of Arsenic in Soil and Recommendations for Default Value for Relative Bioavailibility of Arsenic in Soil Document. OSWER Directive 9200.1-113. December.

Table 4-1: Toxicity Values Used in the HHRA

CAS Number	Analyte	Oral Reference Dose [mg/kg-day]	ORfD Source	Inhalation Reference Dose [mg/kg-day]	Inhalation RfD Source	Dermal RfD [mg/kg-day]	Dermal RfD Source	GI Absorption Factor	Oral Slope Factor $[mg/kg\text{-}day]^{-1}$	Oral Slope Factor Source	Inhalation Slope Factor $[mg/kg\text{-}day]^{-1}$	Inhalation Slope Factor Source	Dermal Slope Factor	Dermal Slope Factor Source
7429-90-5	Aluminum	1.0	PPRTV	0.0050	PPRTV	1.0		1	0.0		0.0		0.0	
7440-36-0	Antimony	0.00040	IRIS, 4Q2010	0.0		0.000060	Calculated	0.15	0.0		0.0		0.0	
7440-38-2	Arsenic (inorganic)	0.00030	IRIS, 4Q2012	0.0000043	CAL/EPA	0.00030	Calculated	1	1.5	IRIS, 4Q2012	15	IRIS, 4Q2012	1.5	Calculated
7440-39-3	Barium	0.20	IRIS, 4Q2012	0.00014	HEAST, 1997	0.014	Calculated	0.07	0.0		0.0		0.0	
7440-41-7	Beryllium	0.0020	IRIS, 4Q2010	0.0000057	IRIS	0.000014	Calculated	0.007	0.0		8.4	IRIS, 4Q2010	0.0	
7440-70-2	Calcium	0.0		0.0		0.0		1	0.0		0.0		0.0	
16887-00-6	Chloride	0.0		0.0		0.0		1	0.0		0.0		0.0	
16065-83-1	Chromium (III)	1.5	IRIS, 4Q2012	0.0		0.038		0.013	0.0		0.0		0.0	
7440-48-4	Cobalt	0.00030	RSL 4Q11, PPRTV	0.0000017	RSL 4Q11, PPRTV	0.00030	Calculated	1	0.0		32	RSL 4Q11, PPTRV	0.0	
7440-50-8	Copper	0.037	HEAST, 1997	0.0		0.037		1	0.0		0.0		0.0	
16984-48-8	Fluoride	0.040	RSL, 4Q11, (Cal/EPA)	0.0029	RSL, 4Q2011, (Cal/EPA)	0.0	Calculated	1	0.0		0.0		0.0	
7439-89-6	Iron	0.70	PPRTV	0.0		0.70		1	0.0		0.0		0.0	
7439-92-1	Lead	Evaluated using Adult Lead Model.												
7439-97-6	Mercury	0.00030	EPA RSL, 4Q2012	0.000086	IRIS	0.0	Calculated	0.07	0.0		0.0		0.0	
7440-02-0	Nickel	0.020	IRIS, 2011	0.000026	RSL 4Q11, ATSDR	0.00080	Calculated	0.04	0.0		0.91	RSL 4Q11, CAL/EPA	0.0	
7440-09-7	Potassium	0.0		0.0		0.0		1	0.0		0.0		0.0	
7782-49-2	Selenium	0.0050	IRIS, 4Q2012	0.0		0.0050	Calculated	1	0.0		0.0		0.0	
7440-22-4	Silver	0.0050	IRIS, 4Q2012	0.0		0.00020	Calculated	0.04	0.0		0.0		0.0	
7440-23-5	Sodium	0.0		0.0		0.0		1	0.0		0.0		0.0	
14808-79-8	Sulfate	0.0		0.0		0.0		1	0.0		0.0		0.0	
7440-28-0	Thallium	0.000010	PPRTV	0.0		0.000010		1	0.0		0.0		0.0	
7440-62-2	Vanadium	0.0070	IRIS, 2011	0.0		0.00018		0.026	0.0		0.0		0.0	
7440-66-6	Zinc	0.30	IRIS, 4Q2012	0.0		0.30		1	0.0		0.0		0.0	
7440-43-9	Cadmium	0.00050	IRIS, 4Q2012	0.0000057	RSL 4Q12, CAL/EPA	0.000013	Calculated	0.025	0.0		6.3	IRIS, 4Q2012	0.0	
7439-95-4	Magnesium	0.0		0.0		0.0		1	0.0		0.0		0.0	
7439-96-5	Manganese	0.14	IRIS, 2011	0.000014	IRIS, 4Q2010	0.14	Calculated	1	0.0		0.0		0.0	
67-64-1	Acetone	0.90	IRIS, 4Q2010	0.0		0.90		1	0.0		0.0		0.0	
71-43-2	Benzene	0.0040	IRIS, 4Q2010	0.0086	IRIS, 4Q2010	0.0040	Calculated	1	0.055	IRIS, 4Q2010	0.027	IRIS, 4Q2010	0.055	Calculated
110-54-3	Hexane, n-	0.060	HEAST, 1997	0.20	IRIS, 4Q2010	0.060		1	0.0		0.0		0.0	
108-88-3	Toluene	0.080	IRIS, 2011	1.4	IRIS, 4Q2010	0.080	Calculated	1	0.0		0.0		0.0	

Table 4-2: ALM Model Input Values and Soil Lead Screening Levels

Receptor	ALM Equation[1]	GSD[2]	Baseline Blood Lead Level (PbB)[3] (ug/dL)	Soil Ingestion Rate[4] (g/day)	Exposure Frequency[5] (days/year)	Soil Lead Screening Level (mg/kg)
TNC Project Supervisor	1	2.1; Heterogeneous	1.7	0.05	31	5,509
Restoration Worker (Adult)	1	2.1; Heterogeneous	1.7	0.05	105	1,627
Trespasser - Soil (Adolescent)	1	2.1; Heterogeneous	0.8	0.05	90	3,419

Notes:

[1]Equation 1 in the ALM estimates the blood lead level in an adult.

[2] A value of 2.1 was used to represent a heterogeneous population. This is a recommended default value obtained from the ALM (US EPA 2003).

[3]Baseline blood-lead level (PbB) – The default value for an adult is 1.7 ug/dL. This value was changed to 0.8 ug/dL for the trespasser (adolescent) receptor. The adolescent value of 0.8 ug/dL is based on data collected by the National Health and Nutritional Examination Survey (NHANES), a series of surveys conducted by the CDC to collect health and nutritional status information on the U.S. population. Both values represent the geometric mean PbB level, and are based on survey data collected from 2007-2008 (CDC 2009).

[4]Default soil ingestion rate from the ALM.

[5]Receptor-specific exposure durations. The rationale for use of these values is presented in the Exposure Assessment (Section 3).

Table 5-1: Risks for Natural Area and Natural Area/Extended Buffer Zone by Constituent

CAS Number	Analyte	Natural Area						Natural Area and Extended Buffer Zone					
		Project Supervisor		Restoration Worker		Trespasser		Project Supervisor		Restoration Worker		Trespasser	
		Cancer	Noncancer	Cancer	Noncancer	Cancer	Noncancer	Cancer	Noncancer	Cancer	Noncancer	Cancer	Noncancer
100-41-4	Ethylbenzene											2.1E-11	0.000000099
1330-20-7	Xylenes												0.0000026
108-88-3	Toluene		5.9E-9		0.000000020								0.00000015
110-54-3	Hexane, n-		7.3E-9		0.000000025		0.000000016						
67-64-1	Acetone		1.1E-9		3.6E-9								
71-43-2	Benzene	7.2E-11	0.00000086	1.5E-10	0.0000029							7.9E-11	0.0000030
78-93-3	Methyl Ethyl Ketone												0.00000013
75-09-2	Methylene Chloride											6.9E-13	7.6E-9
14808-79-8	Sulfate												
16887-00-6	Chloride												
16984-48-8	Fluoride		0.0011		0.0034		0.0017		0.00093		0.0030		0.0016
7429-90-5	Aluminum		0.0013		0.0044		0.0039		0.0000011		0.0000037		0.0050
7439-89-6	Iron		0.0085		0.029		0.040		0.000046		0.00015		0.071
7439-92-1	Lead												
7439-95-4	Magnesium												
7439-96-5	Manganese		0.0023		0.0076		0.0058		0.00023		0.00076		0.0090
7439-97-6	Mercury		0.00018		0.00061		0.00065		0.000039		0.00013		0.0017
7440-02-0	Nickel	6.5E-11	0.00024	1.3E-10	0.00081	1.7E-11	0.00068		0.000093		0.00030	2.5E-11	0.00099
7440-09-7	Potassium												
7440-22-4	Silver		0.000065		0.00022		0.00027						0.00034
7440-23-5	Sodium												
7440-28-0	Thallium		0.027		0.091		0.23						0.18
7440-32-6	Titanium												
7440-36-0	Antimony		0.0062		0.021		0.022		0.0019		0.0062		0.030
7440-38-2	Arsenic (inorganic)	4.0E-06	0.025	8.1E-06	0.084	2.9E-06	0.056	3.9E-06	0.024	7.8E-06	0.081	3.1E-06	0.060
7440-39-3	Barium		0.00013		0.00045		0.00061		0.00011		0.00037		0.00085
7440-41-7	Beryllium	3.3E-11	0.000092	6.6E-11	0.00031	1.2E-11	0.00045					1.8E-11	0.00066
7440-43-9	Cadmium	8.0E-10	0.013	1.6E-09	0.046	2.0E-10	0.045	8.9E-10	0.016	1.8E-09	0.055	2.0E-10	0.047
7440-47-3	Chromium (total)		0.0000030		0.000010		0.000013		0.0000027		0.0000092		0.000035
7440-48-4	Cobalt	7.5E-10	0.0037	1.5E-09	0.013	2.6E-10	0.017		0.000057		0.00018	4.2E-10	0.027
7440-50-8	Copper		0.00058		0.0020		0.0046		0.0000014		0.0000046		0.0082
7440-62-2	Vanadium		0.00066		0.0022		0.0030		0.00011		0.00034		0.0034
7440-66-6	Zinc		0.0026		0.0086		0.0065		0.0019		0.0063		0.0069
7440-70-2	Calcium												
7782-49-2	Selenium		0.000088		0.00030		0.00030		0.0000037		0.000012		0.00037
	Total Risks	**4.0E-06**	**0.093**	**8.1E-06**	**0.31**	**2.9E-06**	**0.43**	**3.9E-06**	**0.046**	**7.8E-06**	**0.15**	**3.1E-06**	**0.46**

Notes:

-- = Constituent not detected or not evaluated

- Results are displayed as two significant figures except for samples greather than 10 are rounded to the nearest whole number.

Table 5-2: Risks for Natural Area and Natural Area/Extended Buffer Zone by Pathway

Pathway	Natural Area						Natural Area and Extended Buffer Zone					
	Project Supervisor		Restoration Worker		Trespasser		Project Supervisor		Restoration Worker		Trespasser	
	Cancer	Noncancer	Cancer	Noncancer	Cancer	Noncancer	Cancer	Noncancer	Cancer	Noncancer	Cancer	Noncancer
Soil Risks												
Dermal Contact with Soil	4.6E-07	0.0042	9.3E-07	0.014	4.7E-07	0.016	3.8E-07	0.0039	7.7E-07	0.013	4.7E-07	0.016
Ingestion of Soil	3.0E-06	0.081	6.2E-06	0.27	2.2E-06	0.41	2.5E-06	0.030	5.1E-06	0.10	2.1E-06	0.43
Inhalation of Particulates from Soil	4.8E-09	0.00089	9.7E-09	0.0030	1.0E-09	0.00079	3.5E-09	0.00019	7.0E-09	0.00063	1.3E-09	0.0013
Soil and Sediment Total	**3.5E-06**	**0.086**	**7.1E-06**	**0.29**	**2.6E-06**	**0.42**	**2.9E-06**	**0.035**	**5.9E-06**	**0.12**	**2.6E-06**	**0.44**
Surface Water Risks												
Dermal Contact with Surface Water	3.8E-07	0.0046	7.7E-07	0.015	1.7E-07	0.0065	7.2E-07	0.0084	1.4E-06	0.027	3.3E-07	0.012
Ingestion of Surface Water	1.2E-07	0.0023	2.5E-07	0.0073	6.9E-08	0.0040	2.3E-07	0.0029	4.6E-07	0.0093	1.3E-07	0.0051
Surface Water Total	**5.1E-07**	**0.0069**	**1.0E-06**	**0.022**	**2.4E-07**	**0.010**	**9.5E-07**	**0.011**	**1.9E-06**	**0.037**	**4.6E-07**	**0.017**
Total Risks	**4.0E-06**	**0.093**	**8.1E-06**	**0.31**	**2.9E-06**	**0.43**	**3.9E-06**	**0.046**	**7.8E-06**	**0.15**	**3.1E-06**	**0.46**

Notes:

- Results are displayed as two significant figures except for samples greather than 10 are rounded to the nearest whole number.

Table 5-3: Summary of Lead Exceedance Factors

Receptor	Medium	Exposure Pathway	Natural Area			Natural Area and Extended Buffer Zone		
			Lead EPC (mg/kg)	Lead Screening Value (mg/kg)	Lead EF	Lead EPC (mg/kg)	Lead Screening Value (mg/kg)	Lead EF
Project Supervisor	Soil and Sediment 0-2 ft bgs	Incidental Ingestion	442	5,509	0.080	452	5,509	0.082
Restoration Worker	Soil and Sediment 0-2 ft bgs	Incidental Ingestion	442	1,627	0.27	452	1,627	0.28
Trespasser	Soil and Sediment 0-0.5 ft bgs	Incidental Ingestion	452	3,419	0.13	377	3,419	0.11

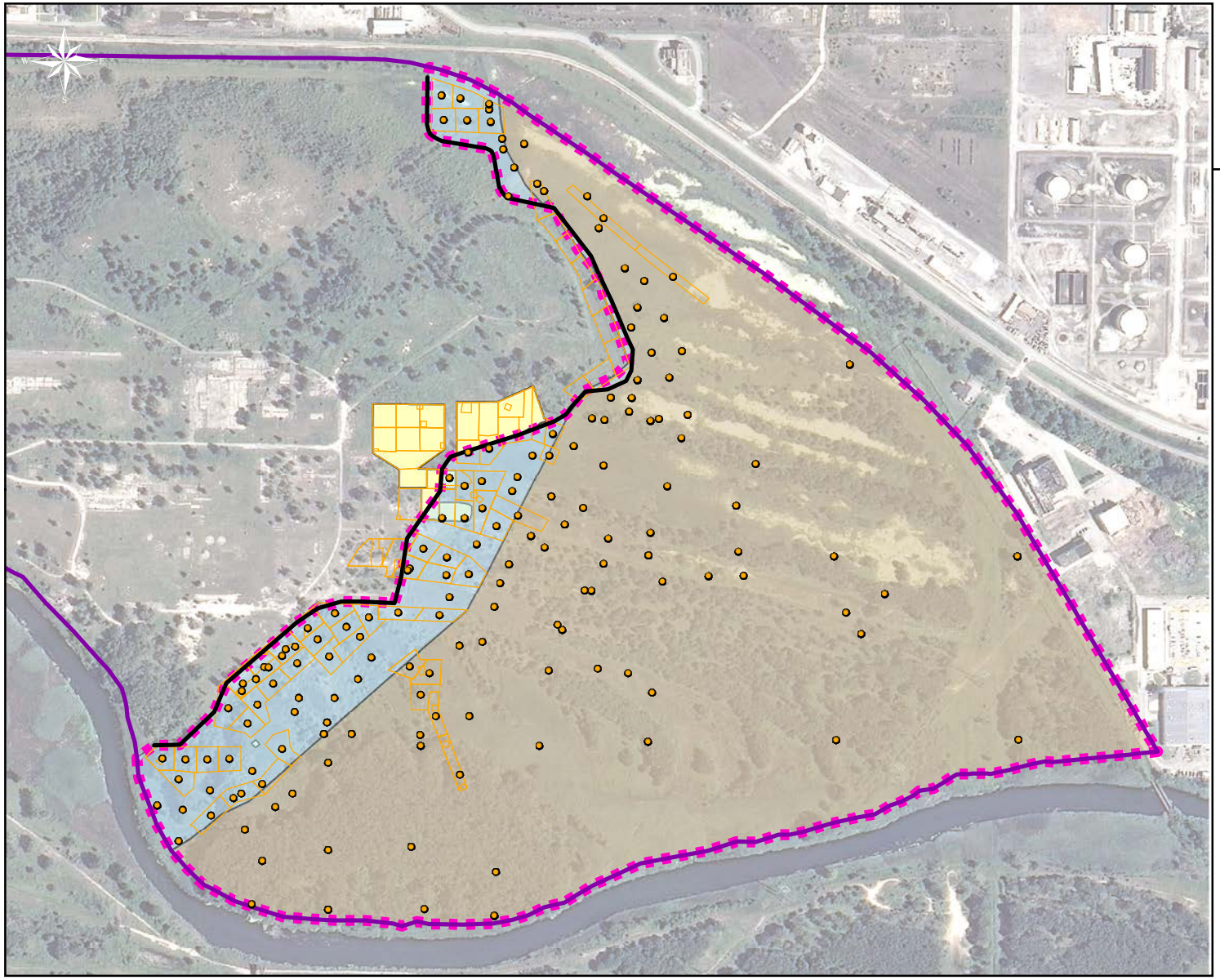
Notes:

- Results are displayed as two significant figures except for samples greather than 10 are rounded to the nearest whole number.

Table 5-4: Summary of the Soil Risks for Natural Area and Natural Area/Extended Buffer Zone

Evaluation	Project Supervisor					Restoration Worker					Trespasser				
	Cancer Risk	Incremental Cancer Risk (Excluding Arsenic Background Risk)	Noncancer Hazard Index	Incremental Noncancer Hazard Index (Excluding Arsenic Background Risk)	Lead Exceedance Factor	Cancer Risk	Incremental Cancer Risk (Excluding Arsenic Background Risk)	Noncancer Hazard Index	Incremental Noncancer Hazard Index (Excluding Arsenic Background Risk)	Lead Exceedance Factor	Cancer Risk	Incremental Cancer Risk (Excluding Arsenic Background Risk)	Noncancer Hazard Index	Incremental Noncancer Hazard Index (Excluding Arsenic Background Risk)	Lead Exceedance Factor
Natural Area	3.5E-06	1.6E-06	0.086	0.074	0.080	7.1E-06	3.2E-06	0.29	0.25	0.27	2.6E-06	1.2E-06	0.42	0.40	0.13
Natural Area and Extended Buffer Zone	2.9E-06	9.9E-07	0.035	0.023	0.082	5.9E-06	2.0E-06	0.12	0.076	0.28	2.6E-06	1.2E-06	0.44	0.41	0.11
Risks for Chicago Metro arsenic concentration of 13 (mg/kg)	1.9E-06		0.012			3.9E-06		0.041			1.4E-06		0.028		

Figures



East Chicago Site

Legend

- Sample Locations (0-2' bgs)
- Proposed Fence Location
- Remediation Areas
- Property Boundary
- Natural Area
- Extended Buffer Zone
- Natural Area/Extended Buffer Zone
- Backfill Area

Notes:

- Samples identified as sediment were included in the HHRA and evaluated as soil.
- Only sample results collected from 0-2' bgs were included in this evaluation.

bgs: feet below ground surface

0 250 500 750 1,000 Feet

PIONEER TECHNOLOGIES CORPORATION

Soil Sample Locations (0-2' bgs)
Natural Area Human Health Risk Assessment
DuPont East Chicago Site

Figure 1-1

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